RECORD OF DECISION

ENVIRONMENTAL IMPACT STATEMENT
DEPARTMENT OF THE AIR FORCE SPECIAL USE AIRSPACE OPTIMIZATION
HOLLOMAN AIR FORCE BASE, NEW MEXICO

INTRODUCTION

The Department of the Air Force (DAF) is issuing this Record of Decision (ROD) to implement actions to achieve Special Use Airspace (SUA) optimization to support F-16 pilots stationed at Holloman Air Force Base (AFB).

This ROD is based on the Special Use Airspace Optimization Final Environmental Impact Statement (Final EIS), Holloman AFB, New Mexico, February 5, 2021 (Federal Register [FR], Vol. 86, No. 23, page 8356). The decision to achieve SUA optimization considered the information, analysis, and public and other comments contained in the Final EIS, along with other relevant factors.

This ROD is prepared in accordance with the Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA) at Title 40 Code of Federal Regulations (CFR) Section 1505.2 (*Record of decision in cases requiring environmental impact statements*) [1] and 32 CFR Part 989, implementing the DAF Environmental Impact Analysis Process (EIAP). The DAF is the Lead Agency and the Federal Aviation Administration (FAA), National Park Service (NPS), and Bureau of Land Management (BLM) are cooperating agencies.

Specifically, this ROD documents the following:

- The DAF's decision;
- The alternatives considered by the DAF in reaching the decision and the alternative considered to be environmentally preferable;
- Relevant factors that were considered among the alternatives and how those factors entered into its decision;
- Whether all practicable means to avoid or minimize environmental impacts resulting from the selected alternative have been adopted, and if not, why they were not; and
- Adoption and summary of a Mitigation Plan and summary of applicable mitigations.

The FAA is responsible for evaluating, processing and charting airspace. The DAF will request FAA, as a Cooperating Agency, to consider and adopt, in whole or in part, the Final EIS as the required NEPA documentation to support FAA decisions on the establishment of SUA. The airspace associated with the Proposed Action and alternatives lies within the jurisdiction of the FAA Albuquerque Air Route Traffic Control Center. Because of their requests and based on their special expertise relating to land managed below the airspace, the National Park Service and the Bureau of Land Management are also cooperating agencies for this proposal.

[1]Note: This EIS was ongoing prior to the 14 September 2020 effective date of the CEQ's final rule updating its regulations for implementing the procedural provisions of NEPA. Accordingly, the revised CEQ regulations were not used for this action pursuant to 40 CFR § 1506.13.

DECISION SYNOPSIS

The DAF has selected Alternative 1: Talon Military Operations Area (MOA) which is also the Preferred Alternative. The DAF, by this decision, will request FAA to chart the Talon MOA airspace which would expand the current Talon MOA to the east and increases the low MOA.

The DAF considered four alternatives (as discussed below) to support optimization efforts for aircraft at Holloman AFB. All action alternatives include returning unused SUA back to the National Airspace System (NAS).

BACKGROUND

The 49th Wing, based at Holloman AFB, New Mexico, currently manages and trains in SUA throughout southeastern New Mexico. One of the primary missions at Holloman AFB is to train F-16 pilots. Most of the SUA utilized by Holloman AFB to train F-16 pilots was developed in the 1970s for airframes no longer in the DAF inventory. Since development of the original aircraft, changes in the threat environment and the corresponding changes to tactics, techniques and procedures, F-16 capabilities of weapons, communications, and sensors require training time be devoted to a range of systems. The evolution and development of the F-16 expanded the pilot training and airspace requirements for the aircraft.

While the current Talon MOA is utilized for F-16 training, it does not provide the optimum volume or attributes to satisfy all of the non-hazardous training needs of F-16 pilots. Optimization of the Talon MOA would improve the training opportunity of F-16 pilots, increase efficiencies, and reduce disruptions to training that currently occur. These training disruptions have resulted in fewer pilots ready for the combat mission.

F-16 pilot training is outlined in Air Force Manual (AFMAN) 11-2F-16, *Flying Operations F-16 Aircrew Training*, addressed in detail in the Final EIS (Page 1-4 thru 1-8, §§1.2.2 - 1.2.4, et seq), and includes: Initial Qualification Training for new F-16 pilots and senior officers; Mission Qualification Training that trains pilots for their specific unit mission; Continuation Training that contains advanced courses; Weapons Employment Qualification that trains pilots in the employment of air-to-surface and air-to-air weapons; and other specialized training. The Formal Training Unit (FTU) at Holloman AFB supports all F-16 pilot training, but Initial Qualification Training constitutes to be the majority.

The training syllabus requires that pilots be trained using a very specific sequence of mission types. This results in limited scheduling flexibility. The required dimensions (area and altitudes) of the SUA are driven by the type of mission being flown and the number of individual aircraft to be flown simultaneously. When airspace appropriate for a specific training mission is not available at the appropriate time during the pilot's training, training is delayed, which disrupts the progress of pilots in training and potentially results in an inability to complete the entire program in a timely manner. This leads to increased training expenses for repeating or delaying a training program. Incomplete training causes reductions in the number of qualified pilots ready to conduct combat operations and degrades mission readiness.

ALTERNATIVES CONSIDERED

The DAF considered four alternatives (Final EIS, Vol I, Page 2-22 thru 2-49, §2.8) to support optimization efforts for aircraft at Holloman AFB. All action alternatives include returning unused SUA back to the National Airspace System (NAS).

Alternative 1- Talon MOA. (Final EIS §2.8.1 and Figures 2.8-1, 2.8-2, and 2.8-3)

This alternative expands the current Talon High MOA into three components (A, B, and C), expands the current Talon Low MOA (Low A), and creates an additional low MOA (Low B).

The floor of the low MOAs would be raised to 500 feet above ground level (AGL), from the current 300 feet AGL, and extended up to but not including 12,500 feet mean sea level (MSL). The high MOAs overlie the low MOAs and have a floor of 12,500 feet MSL and extend up to but not including Flight Level (FL) 180 (approximately 18,000 feet MSL).

The existing Talon Air Traffic Control Assigned Airspace (ATCAA) would also be expanded with the same lateral dimensions as the proposed Talon High A, B, and C MOAs. The ATCAA would expand the usable airspace up to but not including FL510 (approximately 51,000 feet MSL) when requested from the FAA and not needed for civilian use. As part of this alternative, the lower portion of the existing Talon Low MOA from 300 to 500 feet AGL, and three other MOAs (Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA) would be returned to the National Airspace System.

F-16 pilot training from Holloman AFB would constitute the majority of operations within the proposed Talon MOA/ATCAA; however, transient military aircraft (not based at Holloman AFB) could schedule and use the airspace as well in accordance with FAA JO 7400.2M. Approximately 10,000 F-16 sorties and 1,000 transient sorties could occur annually within the Talon MOA/ATCAA. The Talon MOA/ATCAA times of use would be changed slightly to align with the existing Holloman AFB operations window of 0700 to 2200 local time, Monday through Friday, and through the Notice to Airmen (NOTAM) process as necessary. The current times of use are sunrise to sunset, Monday through Friday and other times through NOTAM.

F-16 training activity would occur throughout the low and high MOAs, but most of the activity would be in the high MOAs (above 12,500 feet MSL). The F-16 flights would fly supersonic speeds during approximately 1,000 flights annually. All supersonic flights would be limited to FL300 (approximately 30,000 feet MSL) and above in the ATCAAs. Up to 15,360 chaff and 15,360 flares would be released annually during training activities. Chaff are not currently authorized in the Talon MOA, but flares are currently used. Flare use would continue to be subject to existing fire safety restrictions based on the National Fire Danger Rating employed by Holloman AFB. Neither chaff nor flares would be released below 2,000 feet AGL.

Alternative 2 – Cato, Smitty, and Lobos MOAs. (Final EIS §2.8.2 and Figures 2.8-6, 2.8-7, and 2.8-8)

This alternative would reconfigure and expand the existing Cato MOA and the overlying Smitty MOA and the associated ATCAA to the southeast. The floor of these combined MOAs would remain 500 feet AGL and the ceiling would be up to but not including FL180 (approximately 18,000 feet MSL). The overlying ATCAA would extend the training airspace up to but not including FL510 (approximately 51,000 feet above MSL). Alternative 2 also includes the creation of a new MOA, the Lobos MOA, to the south of the proposed Cato and Smitty MOAs. The proposed Lobos MOA would have a floor of 500 feet AGL and a ceiling up to but not

including FL180 (approximately 18,000 feet MSL). The proposed Lobos MOA would also have an ATCAA above the MOA to extend the training airspace up to but not including FL510 (approximately 51,000 feet above MSL).

Two additional ATCAAs (Christa and Kendra) would be established to the east of the proposed Cato, Smitty, and Lobos ATCAAs to serve as a temporary bridge to and from the airspace above White Sands Missile Range (WSMR). The ATCAAs would have a floor of 18,000 feet MSL and a ceiling up to but not including FL510 (approximately 51,000 feet MSL). Reconfiguring the dimensions of the Cato and Smitty MOAs would allow for the northern portion of the MOAs to be returned to the NAS (approximately 900 square nm). Also as part of this alternative, three other MOAs (Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA) would be returned to the NAS.

As with Alternative 1, F-16 pilot training from Holloman AFB would constitute the majority of operations within the proposed MOAs/ATCAAs; however, transient military aircraft (not based at Holloman AFB) could schedule and use the airspace as well in accordance with FAA JO 7400.2M. Approximately 9,100 F-16 sorties and 1,300 transient sorties could occur annually within the Cato, Smitty, and Lobos MOAs/ATCAAs. The times of use would be changed slightly to align with the existing Holloman AFB operations window of 0700 to 2200 local time, Monday through Friday, and through NOTAM as necessary. The current times of use are 0800 to 2200 local time, Monday through Saturday and other times through NOTAM.

F-16 training activity would occur throughout the low and high MOAs, but most of the activity would be in the high MOAs (above 13,500 feet MSL). The F-16 flights would fly supersonic speeds during approximately 1,000 flights. All supersonic flights would be limited to FL300 (approximately 30,000 feet MSL) and above in the ATCAAs. Up to 15,360 chaff and 15,360 flares would be released annually during training activities. Chaff and flares are currently authorized in the Cato MOA. Use of flares would be in accordance with existing fire safety restrictions based on the National Fire Danger Rating employed by Holloman AFB. Neither chaff nor flares would be released below 2,000 feet AGL. Chaff and flares would not be used in the Christa and Kendra ATCAAs.

Alternative 3 - Talon, Cato, Smitty, and Lobos MOAs Combination. (Final EIS §2.8.3 and Figures 2.8-11 and 2.8-12)

This alternative would be a combination of Alternatives 1 and 2 with the following differences. The proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative 1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL as opposed to the 500 feet AGL proposed under Alternative 2. The times of use would align with the existing Holloman AFB operations window of 0700 to 2200 local time, Monday through Friday, and through NOTAM as necessary. SUA no longer needed by the DAF would be returned to the NAS including the lower portion of the existing Talon Low MOA (300 to 500 feet AGL), the northern portion of the existing Cato and Smitty MOAs, Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA.

The proposed training would be distributed throughout all of the proposed airspace: approximately 6,800 annual sorties would occur in the proposed Talon MOA/ATCAA; and 3,200 annual sorties would occur in the proposed Cato, Smitty, and Lobos MOAs/ATCAAs and the Christa and Kendra ATCAAs. F-16 pilot training from Holloman AFB would constitute the majority of operations within the proposed airspace; however, transient military aircraft (aircraft

not based at Holloman AFB) could schedule and use the airspace as well. For analysis purposes, it is estimated that transient aircraft could conduct 1,300 sorties (700 in the Talon MOA and 600 in the Cato, Smitty and Lobos MOAs) in addition to the Holloman AFB F-16 training sorties. Chaff and flare usage would be approximately 10,752 each annually in the Talon MOA/ATCAA and 4,608 each annually in Cato, Smitty, and Lobos MOAs/ATCAAs.

Alternative 4 – No Action. (Final EIS §2.8.4)

This alternative would not modify any SUA. Training for F-16 aircraft stationed at Holloman AFB would continue to use existing SUA. Existing operations in the Talon, Cato, and Smitty MOAs/ATCAAs, and other MOAs and restricted areas near Holloman AFB would continue (Final EIS §1.2.2; Table 1.2-1, *Airspace Currently Available for F-16 Pilot Training*). The current inefficiencies in accomplishing F-16 pilot training would continue, which would not meet the purpose and need of the proposed action.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

Of the alternatives considered in the Final EIS, the No Action Alternative is identified as the environmentally preferable alternative (Final EIS, Page 2-48, §2.8.4). The No Action Alternative represents a comparatively lower impact on various receptors under the airspace since it represents a smaller surface area in square miles under the airspace than the action alternatives and limits the use of chaff and flares.

PUBLIC INVOLVEMENT

Public involvement was integral to the DAF's development of the Final EIS. The DAF received and considered approximately 17,000 comments (Final EIS, Page 1-9, §1.6), including those received during scoping, at public hearings, and during the public comment period on the Draft EIS. The DAF summarized the substantive comments received during scoping in Final EIS §1.6.1.4. A summary of the substantive comments received on the Draft EIS and DAF responses are provided in the Final EIS (Appendix C, *Draft EIS Public Comment Summary and Responses*). The FAA did not receive any environmental comments from circulating the Talon MOA airspace proposal.

The DAF provided the following public notices, public review periods, and meetings during the EIS process:

- *Notice of Intent*: published August 25, 2017 (Federal Register Vol. 82, No. 164, page 40572-40573).
- *Scoping Period*: initiated August 25, 2017 through September 25, 2017. During this time the DAF held three public meetings in Carlsbad, Las Cruces, and Truth or Consequences, New Mexico.
- *Stakeholder Meetings*: 20 meetings between the DAF, airport representatives, and local governments occurred from October 2017 through June 2018 throughout southern New Mexico.
- *Draft EIS Notice of Availability (NOA):* published on November 1, 2019 (Federal Register Vol. 84, No. 212, page 58713) with associated media announcements.
- *Public Comment and Review Period*: a public review and comment period for the Draft EIS was initiated on November 1, 2019 with the NOA publication in the Federal Register and scheduled to end on December 9, 2019; however, the comment period was extended

to January 31, 2020 (Federal Register Vol. 84, No. 240, page 68169) resulting in a 91-day review and comment period.

- *Public Hearings*: during the public comment and review period, a total of 8 different hearings were held in the cities of Hobbs, Roswell, Artesia, Carlsbad, Socorro, Truth or Consequences, Silver City, and Las Cruces, New Mexico.
- *Final EIS NOA*: a NOA was published in the Federal Register on February 5, 2021 (Vol. 86, No. 23, EIS No. 20210013, page 8356). This initiated the mandatory 30-day waiting period prior to ROD signature.

After publication of the Final EIS on February 5, 2021 and during the 30-day wait period prior to this ROD being signed, DAF received three unsolicited comments. These comments were fully considered in making the decision herein and have been made a part of the administrative record. The scope of comments received included issues such as noise, wildlife impacts, cumulative impacts, economic impacts, and purpose and need for the action. The comments received were all within the scope of comments the DAF received on the Draft EIS. In summary, one of the comments was determined to be non-substantive as it involved military training routes (MTRs) that did not directly pertain to the proposed action or alternatives. Another simply noted the agency had no comments on the Final EIS. The other involved a compilation of more than twenty comments submitted by the Center for Biological Diversity on behalf of itself and various other non-governmental organizations involving the foregoing issues mostly with respect to Alternatives 2 and 3, while the group simultaneously expressed general support for selection of Alternative 1.

COORDINATION AND CONSULTATION

The DAF consulted and coordinated with federal, state, and local agencies and Native American tribes. The DAF considered all substantive public, agency, and Native American tribal comments received during EIS development. Key consultation and coordination letters are reproduced in the Final EIS (Appendix B, *Interagency Coordination*; Appendix H, *USFWS Consultation Correspondence*; and Appendix J, *Section 106 and Government to Government Consultation*).

In compliance with Section 106 of the National Historic Preservation Act (NHPA), the DAF has completed consultations with the State Historic Preservation Offices (SHPOs) from Arizona and New Mexico, U.S. Bureau of Indian Affairs, Apache Tribe of Oklahoma, Fort Sill Apache Tribe of Oklahoma, Mescalero Apache Tribe, San Carlos Apache Tribe, White Mountain Apache Tribe, Comanche Nation of Oklahoma, Hopi Tribe, Kiowa Tribe of Oklahoma, Navajo Nation, and the Pueblos of Acoma, Isleta, Laguna, Tesuque, Ysleta del Sur, Zuni, Cochiti, Jemez, Nambe, Ohkay Owingeh, Picuris, Pojoaque, San Felipe, San Idlefonso, Sandia, Santa Ana, Santa Clara, Santo Domingo, Taos, and Zia (refer to Final EIS Appendix J: Government to Government and Section 106 Correspondence).

In compliance with Section 7 of the Endangered Species Act (ESA), the DAF, as the designated Lead Agency, consulted with the U.S. Fish and Wildlife Service (USFWS) on the potential effects of the Preferred Alternative to threatened and endangered species. The DAF received concurrence from USFWS (Final EIS, Appendix H, *USFWS Consultation Correspondence*) on the DAF's determination that the Preferred Alternative "may affect, is not likely to adversely affect":

- the endangered Southwestern Willow Flycatcher (*Empidonax traillii extimus;* flycatcher), and
- the threatened Yellow-billed Cuckoo (*Coccyzus americanus*; cuckoo), and
- the threatened Mexican Spotted Owl (*Strix occidentalis lucida*; owl), and
- may affect but is not likely to jeopardize the continued existence of the Northern Aplomado Falcon (*Falco femoralis septentrionalis;* falcon) which is considered a nonessential experimental population under section 10(j) of the ESA.

These findings are contained in the Final EIS (§4.5.1.3) and Final EIS, Appendix H, *USFWS Consultation Correspondence* (USFWS letter dated 17 April 2020).

MITIGATION

The DAF has developed non-discretionary mitigations to address concerns expressed in comments provided by the public and governmental agencies. These mitigations were presented in the Final EIS (Page 7-2, §7.2). All mitigations identified in the Final EIS will be implemented and included in a post-ROD Mitigation Plan.

Mitigation by avoidance is achieved by having been incorporated into Alternative 1 as part of the airspace proposal and will, therefore, be implemented automatically as part of the FAA airspace approval and charting process.

Compliance laws and regulations administered by the U.S. Environmental Protection Agency and other regulatory and/or state environmental quality agencies are mandated and some have mitigating effects. These laws and regulations are not considered discretionary with respect to USAF decision making and will be implemented.

To track non-discretionary mitigations the USAF will develop a Mitigation Plan within 90 days of the signature of this ROD that identifies principal and subordinate organizations with responsibility for oversight and execution of these specific actions. In no case will an impact-inducing action be taken or implemented prior to the applicable mitigation measure (defined below) being funded and put in place.

The Mitigation Plan will include, but not be limited to, the following:

- Identification of the specific non-discretionary actions;
- Identification of the responsible organization for each action; and
- Timing for execution of the actions.

Mitigations are divided into three groups to reflect when they will take effect. Group 1 mitigations are mitigations by avoidance and constitute modifications to the structure of the airspace that are reflected in the Preferred Alternative, Alternative 1, and will be implemented automatically as part of the FAA aeronautical approval process. Group 2 mitigations will be implemented by agreed upon dates between FAA and the DAF, allowing for a reasonable time to procure and install the equipment if the equipment is determined to be necessary as a result of the FAA analysis. Group 3 mitigations will be implemented when the airspace is being used. All mitigations will be further described in the Mitigation Plan to be implemented in conjunction with airspace use once airspace is approved and published.

All mitigations will be tracked and coordinated through identified agencies of responsibility, updated, and adjusted to accomplish and meet the intent of the mitigation. Mitigation includes:

Group 1

- Southern boundary of the Talon MOA was adjusted to the north so that:
    - The boundary is four nautical miles from the centerline of the ATS route J66 to eliminate conflict with general aviation along this route.
    - The MOA will not overlap the northern boundary of Carlsbad Caverns National Park.
- Vertical obstructions that intrude into the 500-foot AGL floor of the proposed Talon Low A and B MOAs would be identified on aeronautical charts. Known obstructions include one tower on the edge of Low A and three towers beneath Low B as shown in Final EIS, Appendix I (Figure 2-1).
- The boundaries of the Talon Low A and B MOAs were modified during the proposal to:
    - Avoid conflicts with the approach/departure of Artesia Municipal Airport and Cavern City Air Terminal Airport.
    - Maintain a north-south corridor between Carlsbad and Roswell for general aviation operating below 12,500 feet MSL.

Group 2

- The DAF would pay to improve FAA communication infrastructure to support air traffic control radio coverage of the Talon Low MOA area if the equipment is determined to be necessary as a result of FAA aeronautical study.

Group 3

- The Talon High C MOA and Bronco 3 MOA would not be activated at the same time to maintain one of the approach corridors to Roswell International Airport.
- A record of the amount and type of deployed chaff used in the optimized airspace will be maintained at Holloman AFB for up to six years, or until it is determined that such records are no longer needed.
- Since there are numerous DAF installations in southern New Mexico using training airspace, in an effort to streamline the complaint process for the public, the DAF has made arrangements that any complaints concerning aircraft overflights, chaff, and flares in areas east of WSMR (to include the Talon MOA) should be sent to the Holloman AFB Public Affairs Office:

    Holloman AFB Public Affairs

    Website: https://www.holloman.af.mil/Contact-Us/

    Telephone number: 575.572.7381

ENVIRONMENTAL CONSEQUENCES

All practicable means to mitigate impacts associated with the decision have been adopted. However, some impacts cannot be avoided, and could be perceived as adverse or annoying to affected individuals.

Noise associated with the use of the low MOAs will result in short-term reactions of wildlife or livestock and could include temporary shifts in habitat use or activity (Final EIS §4.5.1). USFWS provided their concurrence with impacts to protected species in a letter dated April 17, 2020 (Final EIS Appendix H, *USFWS Consultation Correspondence*). Observers on the ground could

also be annoyed by the noise and presence of military aircraft, particularly if in an outdoor recreational area (Final EIS §4.3.1 and §4.7.1).

Expanding the Talon MOA/ATCAA will have minor impacts to some civil aviation (Final EIS §4.2.1, and Appendix D §D2.3). Existing Air Traffic Service routes (V-291, V-83, V-68, and V-102 in the MOAs; J-108, Q-20, Q-37, and J-15 in the ATCAAs) pass through the SUA and the air traffic operating under Instrument Flight Rules (IFR) will have to deviate around the MOAs/ATCAAs when they are active. With the exception of V-291 which occurs in both the Low B and High B MOAs, these routes occur in the high MOAs and ATCAAs. If the Talon low MOAs are not active, the civil aviation traffic along these routes could remain below 12,500 feet MSL and pass beneath the MOA. Alternatively, if the ATCAAs are not active the traffic that is able to fly above FL180 can pass over the active MOA. If traffic is not able to pass over or under the active MOA, it will have to deviate around the MOAs. The deviation will increase the travel time for civil aviation from 1 to 9 minutes, depending on the origin and destination of the flight. This impact will only occur during times when the MOAs are active.

No irreversible or irretrievable effects are expected for cultural or natural resources. Impacts to natural resources could occur in the unlikely event of an accident and/or fire. However, while any fire can have short-term impacts to agricultural resources, wildlife, and habitat, the fire's effects are not irreversible in a natural environment.

DECISION

After considering the potential environmental consequences of the proposed actions; comments and concerns from the public, regulatory and other agencies, Native American Tribes and other key stakeholders; as well as other factors related to national defense, current military operational needs and other issues addressed in the Final EIS; the DAF has decided to select the Preferred Alternative, Alternative 1, and adopt the mitigation as discussed above. The DAF will request FAA take those actions necessary to implement this decision by modifying and establishing the requisite airspace.

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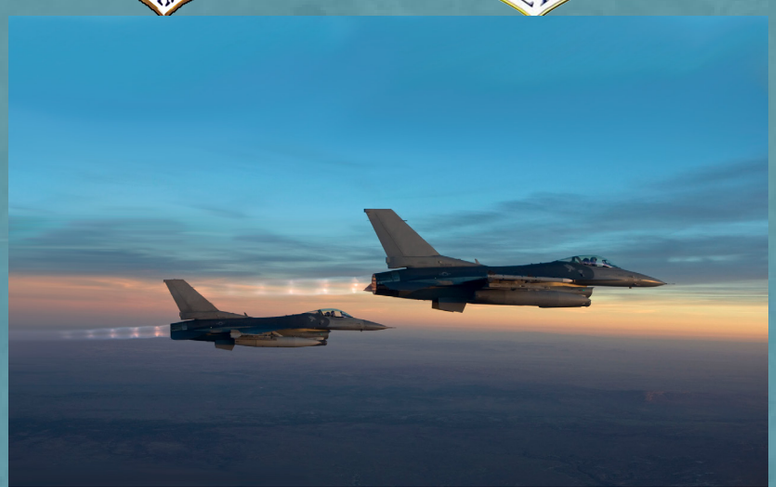
ROBERT E. MORIARTY, P.E., SES
Deputy Assistant Secretary of the Air Force
(Installations)

Date

Final

Environmental Impact Statement for Special Use Airspace Optimization to Support Existing Aircraft at Holloman Air Force Base, New Mexico

January 2021



Privacy Advisory

The Environmental Impact Analysis Process 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.

Providing personal information during public commenting was voluntary. Any personal information provided was used only to identify your desire to make a statement during the public comment portion of any public hearings or to fulfill requests for copies of the EIS or associated documents. Private addresses were compiled to develop a mailing list for those requesting copies of the EIS. However, only the names of the individuals making comments and specific comments were disclosed. Personal home addresses and phone numbers are not published in the Final EIS.

Section 508 Compliance

The electronic version of this document (pdf) is compliant with Section 508 of the Rehabilitation Act. This allows assistive technology to be used to obtain the available information from the document. Due to the nature of graphics, figures, tables, and images occurring in the document, accessibility is limited to a descriptive title for each of these items.

Updated Council on Environmental Quality (CEQ) Regulations

The CEQ issued a final rule to update its regulations for Federal agencies to implement the National Environmental Policy Act (NEPA) on July 16, 2020 with an effective date of September 14, 2020. While the effective date occurred prior to the release of the Final EIS, this EIS had already been underway for four years and released to the public as a Draft EIS prior to that effective date. Therefore, in accordance with the new CEQ regulation (1507.3(a)) this EIS has been prepared in accordance with the original CEQ regulations promulgated in 1978 and associated CEQ guidance documents. All specific references to CEQ regulations refer to the 1978 regulation.

Final

Environmental Impact Statement for Special Use Airspace Optimization to Support Existing Aircraft at Holloman Air Force Base, New Mexico

January 2021

Lead Agency:	U.S. Department of the Air Force
Cooperating Agencies:	Federal Aviation Administration
	National Park Service
	Bureau of Land Management
Title of Proposed Action:	Environmental Impact Statement for Special Use Airspace Optimization to Support Existing Aircraft at Holloman Air Force Base
Affected Region:	Eastern Arizona and Southeastern New Mexico within parts of the following counties: Graham and Greenlee, Arizona; and Catron, Chaves, Eddy, Grant, Hidalgo, Otero, Sierra, Lea, and Socorro, New Mexico

Abstract

This Environmental Impact Statement has been prepared to evaluate the potential environmental impacts from the proposed optimization of special use airspace to support the training of F-16 pilots stationed at Holloman Air Force Base. The special use airspace in this region was created over 30 years ago and does not have the necessary volume or capabilities to support the training needs for pilots of modern aircraft. The Proposed Action includes expanding existing special use airspace or creating new special use airspace within parts of the following counties: Graham and Greenlee, Arizona; and Catron, Chaves, Eddy, Grant, Hidalgo, Otero, Sierra, Lea, and Socorro, New Mexico. The Proposed Action would include aircraft training operations from 500 feet above ground level up to approximately 51,000 feet mean sea level, supersonic flight above approximately 30,000 feet mean sea level, and the use of chaff and flares throughout the proposed airspace. The proposed airspace modifications would result in appropriately sized and configured airspace needed to conduct training activities for F-16 pilots stationed at Holloman Air Force Base.

This Environmental Impact Statement was prepared by the Air Force in cooperation with the Federal Aviation Administration, the National Park Service, and the Bureau of Land Management. The document has been prepared in accordance with the National Environmental Policy Act, the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, the Air Force Environmental Impact Analysis Process promulgated at 32 Code of Federal Regulations Part 989, and Federal Aviation Administration Order 1050.1F, Environmental Impacts: Policies and Procedures.

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EXECUTIVE SUMMARY

This Environmental Impact Statement (EIS) analyzes the potential environmental consequences resulting from the United States Air Force (Air Force) proposal to optimize the special use airspace (SUA) available for current and anticipated future F-16 pilot training at Holloman Air Force Base (AFB). Much of the SUA used by pilots assigned to Holloman AFB was developed for legacy aircraft more than 30 years ago. As such, it does not have the optimum volume or attributes needed to meet the training requirements of pilots flying modern aircraft. Reconfiguring existing airspace and establishing new airspace would improve the availability of suitable training airspace for pilots stationed at Holloman AFB. This EIS also addresses relinquishing unneeded training airspace back to the National Airspace System.

This EIS was prepared by the Air Force in cooperation with the Federal Aviation Administration (FAA), the National Park Service, and the Bureau of Land Management. The document has been prepared in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA, the Air Force Environmental Impact Analysis Process promulgated at 32 Code of Federal Regulations (CFR) Part 989, and FAA Order 1050.1F, Environmental Impacts: Policies and Procedures.

ES.1 Background

The F-16s at Holloman AFB have evolved from the original aircraft introduced by General Dynamics in 1974 to a fourth generation aircraft with all the technology and capabilities of an advanced weapons system. Changing threat environments since the development of the original aircraft have resulted in changes to weapons systems, communications, and sensors, requiring training time be devoted to a range of systems. The evolution and development of the F-16 expanded the pilot training and airspace requirements for the aircraft. The demand for appropriate airspace nationally to support more advanced weapons systems is part of the re-build of a combat-credible military force that is foundational to our National Security.

While the current SUA used by Holloman AFB is adequate, optimization of the existing, or creation of new optimized SUA would improve the training opportunity of F-16 pilots, increase efficiencies, and reduce disruptions to training. The need for the airspace optimization is not driven by the number of aircraft stationed at Holloman AFB, but rather the advancements and capabilities of the aircraft that have evolved over time without modifications to the airspace within which they train. The current Air Force scheduled SUA available to Holloman AFB pilots does not provide the optimal volume or attributes necessary to complete their training syllabus in an appropriate and efficient manner. This results in fewer pilots ready for the combat mission. The Air Force currently has a pilot shortage which is further affected by the disruption to training, ultimately impacting National Security.

F-16 training out of Holloman AFB currently occurs in several existing Air Force scheduled Military Operations Areas (MOAs) and restricted areas associated with White Sands Missile Range (WSMR) and McGregor Range at Fort Bliss. Due to its size, attributes, and proximity to Holloman AFB, the airspace associated with WSMR is a preferred training area for the F-16s and it currently supports approximately 5,500 F-16 sorties annually. An additional 3,400 F-16 sorties currently occur within the MOAs (specifically Talon, Beak, Pecos, Cato, and Smitty MOAs). The Proposed Action seeks to optimize the existing MOAs for which the Air Force has scheduling authority to more efficiently meet the training needs of the existing and anticipated future squadrons at Holloman AFB. The restricted areas are scheduled by the U.S. Army. While the Air Force can use this airspace, it does not have the authority to make changes to that resource

nor does their training take priority. F-16 training within WSMR airspace is only allowed when it does not conflict with the frequent research, development, test and evaluation activities that are the priority. As competing demands for testing and the use of restricted areas at WSMR increases, WSMR has less availability to support F-16 pilot training missions conducted by Holloman AFB. All of the F-16 sorties that require use of a restricted area would continue at WSMR and Fort Bliss and the Air Force would use these areas to the maximum extent possible to continue to satisfy the F-16 training needs. However, modifications to the Air Force scheduled MOAs is necessary to provide suitable airspace that can be used to efficiently complete the F-16 training syllabus.

ES.2 Purpose and Need for the Action

Holloman AFB is in southern New Mexico, six miles west of the city of Alamogordo. One of Holloman's primary missions is to train F-16 pilots, as well as provide requalification, senior officer, and instructor pilot training. The F-16 pilot training syllabus requires each pilot to fly multiple sorties (a sortie is the flight of a single aircraft consisting of a takeoff, mission, and landing). Each sortie flown is conducted to meet a specific training requirement. Each training requirement can only be accomplished in airspace that has appropriate area, altitudes, proximity to the base, and attributes (such as ability to use defensive countermeasures or munitions). Consequently, the features of available training airspace determine where a particular sortie can occur.

The syllabus requires that pilots be trained using a very specific sequence of mission types which results in limited scheduling flexibility. The required dimensions (area and altitudes) of the suitable training airspace are driven by the type of mission being flown and the number of individual aircraft to be flown simultaneously. When airspace appropriate for a specific training mission is not available at the appropriate time during the pilot's training, training is delayed, which disrupts the progress of pilots in training and potentially results in an inability to complete the entire program in a timely manner.

The purpose of the Proposed Action is to modify existing airspace and establish new airspace in order to provide readily available and adequately sized training airspace with appropriate attributes needed to conduct training missions.

The need for the Proposed Action is to support required training missions for F-16 aircrews stationed at Holloman AFB. The F-16 training mission requires low and high airspace ranging from 500 feet above ground level (AGL) up to Flight Level (FL) 510 (approximately 51,000 feet mean sea level [MSL]) with approximate dimensions of 30 by 80 nautical miles (nm) that is capable of supporting supersonic flight and use of defensive countermeasures. The Proposed Action would increase training efficiencies and provide suitable F-16 pilot training airspace.

ES.3 Proposed Action and Alternatives

The Proposed Action includes expanding existing airspace or creating new SUA within parts of the following counties: Graham and Greenlee, Arizona; and Catron, Chaves, Eddy, Grant, Hidalgo, Otero, Sierra, Lea, and Socorro, New Mexico. The Proposed Action would include aircraft training operations from 500 feet AGL up to FL510, supersonic flight above FL300 (approximately 30,000 feet MSL), and the use of chaff and flares throughout the proposed airspace. The proposed airspace modifications would result in appropriately sized and configured airspace needed to conduct modern aircraft training activities. The modified airspace would improve airspace availability and scheduling flexibility for training activities.

Under the Proposed Action, approximately 10,000 F-16 annual sorties would be dispersed throughout the proposed airspace and would occur at various altitudes with most of the training occurring above 10,000 feet AGL. As defined in FAA Order JO 7400.2M, *Procedures for Handling Airspace Matters*, Holloman AFB must make the proposed airspace available to other military units on a shared basis to ensure full optimization of the airspace. Therefore, an estimate of the potential transient use of the airspace is included in each alternative, but the F-16 training is anticipated to constitute much of the use.

The F-16 training activities would last between 30 minutes to an hour and require the pilots to operate within a large volume of airspace. A minimum of 20 by 20 nm is required for some activities, while other activities require up to 30 by 80 nm. Training within the airspace would not be continuous, but could occur at any time during the Holloman AFB operation hours from 7:00 a.m. to 10:00 p.m., Monday through Friday.

To train with the full capabilities, the F-16 aircraft, would employ supersonic flight during approximately 10 percent of the proposed sorties (approximately 1,000 sorties annually). Supersonic flight within the proposed airspace would only occur at or above FL300.

Chaff and flares are the principal defensive countermeasures dispensed by military aircraft to avoid detection or attack by enemy air defense systems and keep aircraft from being successfully targeted by weapons. Up to 15,360 chaff and 15,360 flares would be released annually during training activities. Flare use would be subject to existing fire safety restrictions; chaff and flares would not be released below 2,000 feet AGL.

The EIS evaluates three Action Alternatives and the No Action Alternative.

Aviation and Airspace Terminology

Above Ground Level (AGL): altitude expressed in feet above the ground surface. AGL is used to refer to lower altitudes (almost always below 10,000 feet), when clearance from terrain is a concern for aircraft operation.

Mean Sea Level (MSL): altitude expressed in feet measured above average (mean) sea level.

Flight Level (FL): used to describe the cruising altitudes for aircraft traveling long distances above 18,000 feet. Flight Levels are given in hundreds of feet, e.g. FL300 is 30,000 feet MSL.

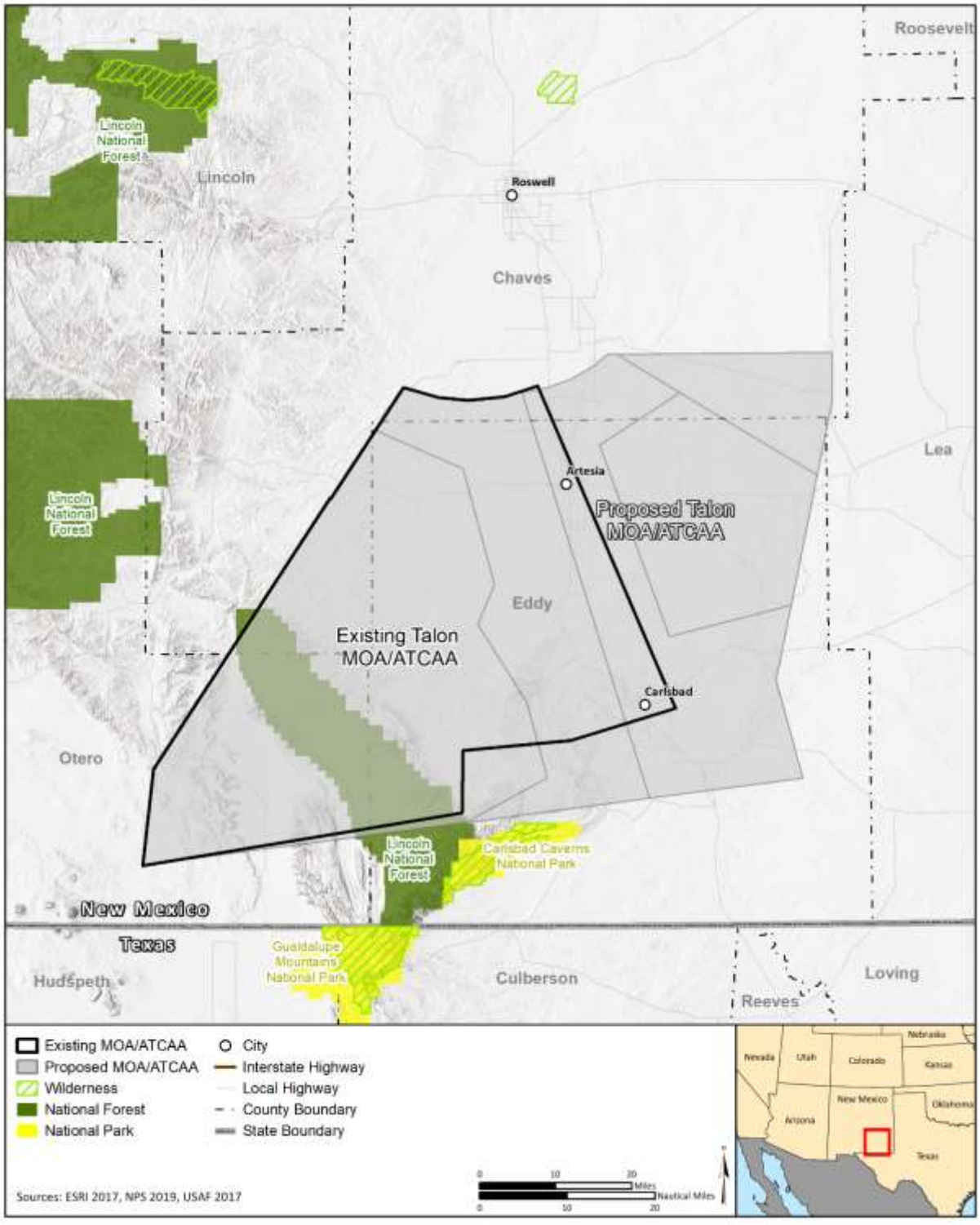
Military Operations Area (MOA): SUA designated to contain nonhazardous, military flight activities. MOAs can have designated floors as low as ground surface and ceilings up to but not including 18,000 feet MSL.

Air Traffic Control Assigned Airspace (ATCAA): airspace that has been designated in a Letter of Agreement with the FAA that can be used to extend the usable airspace of a MOA above 18,000 feet MSL.

Sortie: the flight of a single aircraft consisting of a takeoff, mission, and landing.

ES.3.1 Alternative 1 (Preferred Alternative)

Alternative 1 (Preferred Alternative) would expand the existing Talon MOA to the south and east (**Figure ES-1**).



Legend: ATCAA – Air Traffic Control Assigned Airspace; MOA-Military Operations Area.

Figure ES-1. Alternative 1: Overview of Existing and Proposed Talon MOA

The proposed Talon MOA would be divided into two low (A and B) and three high (A, B, and C) MOAs offering a combined training airspace with a floor of 500 feet AGL (raised from the existing 300 feet AGL) and a ceiling up to 18,000 feet MSL. The existing Talon Air Traffic Control Assigned Airspace (ATCAA) would also be expanded with the same lateral dimensions as the proposed Talon High MOAs.

The ATCAA would be assigned above the MOA expanding the usable airspace to FL510 (approximately 51,000 feet above MSL) when requested from the FAA and not needed for civilian use. As part of this alternative, the lower portion of the existing Talon Low MOA from 300 to 500 feet AGL, and three other MOAs (Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA) would be returned to the National Airspace System.

Table ES-1 provides a summary of the proposed airspace use. F-16 pilot training from Holloman AFB would constitute the majority of operations within the proposed Talon MOA/ATCAA; however, transient military aircraft (not based at Holloman AFB) could schedule and use the airspace as well. For analysis purposes, the number of annual transient sorties could be as many as 1,000 per year when considering historical transient activity in the area. The transient aircraft within the proposed Talon MOA could include FA-18, F-15, and other F-16s. The F-16 pilot training and potential transients would represent the maximum possible use of optimized airspace under this proposal.

Table ES-1. Alternative 1: Proposed F-16 Sorties

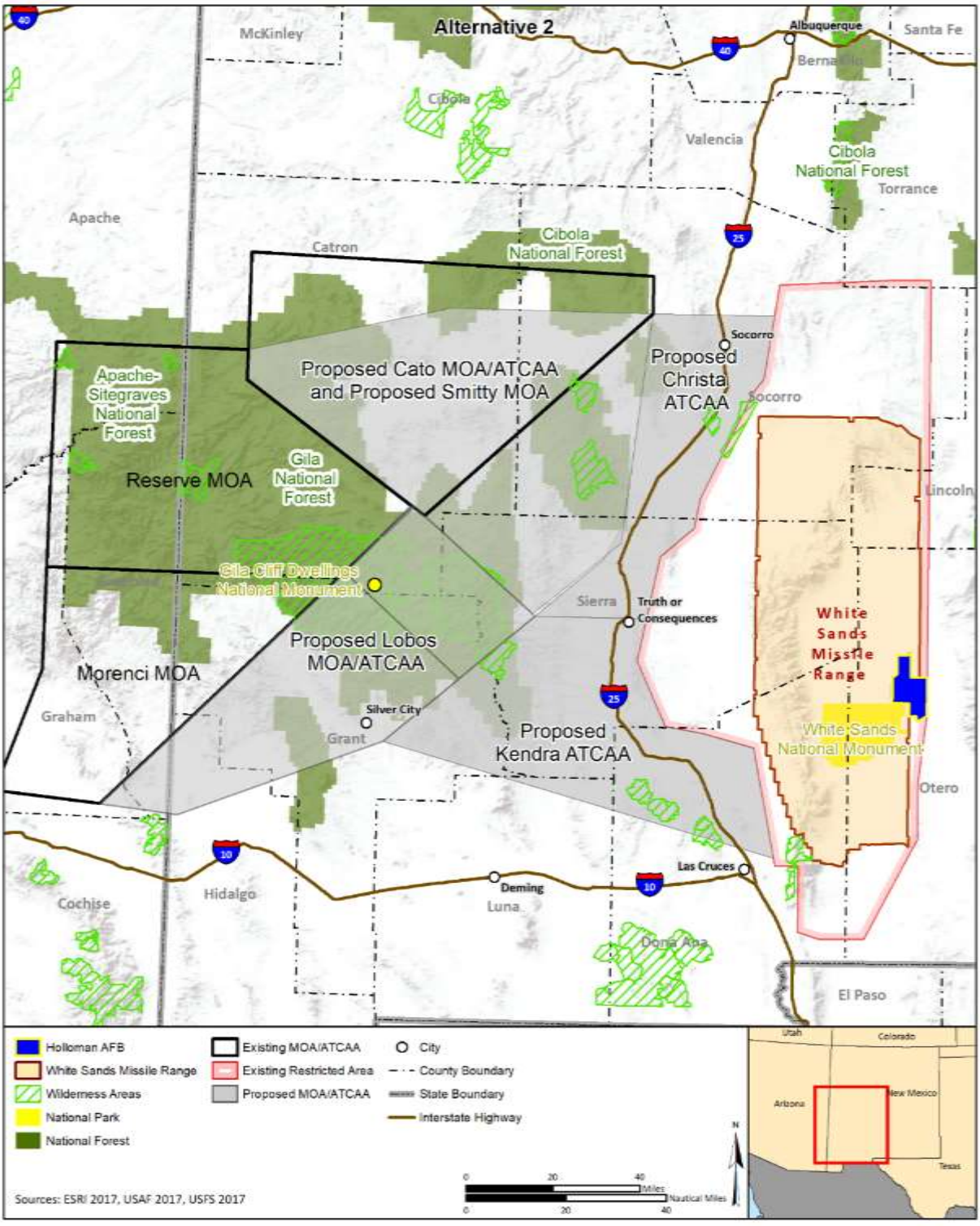
Airspace	Altitude	Day (90%)	Night (10%)	Total[1]
Talon High A and B MOA/ATCAA	12,500 feet MSL to FL510	5,400	600	6,000
Talon High C MOA/ATCAA	12,500 feet MSL to FL510	270	30	300
Talon Low A and B MOA	500 feet AGL to 12,500 feet MSL	3,330	370	3,700
Total F-16 Sorties		**9,000**	**1,000**	**10,000**
Potential Transient Aircraft				**1,000**
Total Sorties				**11,000**

Note: [1] The Talon MOA is currently used for F-16 training. The proposed total sorties under Alternative 1 includes all existing sorties plus the additional sorties that would be possible once the MOA is optimized.

Legend: % -percent; AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level.

ES.3.2 Alternative 2

Alternative 2 would reconfigure and expand the existing Cato MOA and the overlying Smitty MOA and the associated ATCAA to the southeast. The floor of these combined MOAs would remain 500 feet AGL and the ceiling would be up to 18,000 feet MSL. The overlying ATCAA would extend the training airspace to FL510 (approximately 51,000 feet above MSL). Alternative 2 also includes the creation of a new MOA, the Lobos MOA, to the south of the proposed Cato and Smitty MOAs. The proposed Lobos MOA would have a floor of 500 feet AGL and a ceiling up to 18,000 feet MSL. The proposed Lobos MOA would also have an ATCAA above the MOA to extend the training airspace to FL510 (approximately 51,000 feet above MSL). Two additional ATCAAs (Christa and Kendra) would be established to the east of the proposed Cato, Smitty, and Lobos ATCAAs to serve as a temporary bridge to and from the airspace above WSMR. The ATCAAs would have a floor of 18,000 feet MSL and a ceiling of FL510. **Figure ES-2** illustrates the airspace components associated with Alternative 2. It should be noted that Air Force use of ATCAAs must be requested from the FAA and would only be available to the Air Force when not needed for civilian use.



Legend: AFB-Air Force Base; ATCAA-Air Traffic Control Assigned Airspace; MOA-Military Operations Area.

Figure ES-2. Alternative 2: Overview of Cato, Smitty, Lobos MOAs and Christa and Kendra ATCAAs

As part of this alternative, the northern portion of the existing Cato and Smitty MOAs, and three other MOAs (Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA) would be returned to the National Airspace System.

Table ES-2 provides a summary of the proposed airspace use. F-16 pilot training from Holloman AFB would constitute the majority of operations within the proposed Cato, Smitty, and Lobos MOAs/ATCAAs; however, transient military aircraft (not based at Holloman AFB) could schedule and use the airspace as well. For analysis purposes, the anticipated transient aircraft in the proposed Cato, Smitty, and Lobos MOAs would be similar to those described for the proposed Talon MOA and would include up to 1,000 sorties per year of FA-18, F-15, and other F-16 aircraft. In addition, it is estimated that up to 300 sorties per year of F-35A aircraft could use the proposed Lobos High MOA/ATCAA. The F-35A aircraft currently uses adjacent MOAs (Outlaw, Jackal, Morenci, and Reserve MOAs); and it is anticipated they may use the proposed Lobos High MOA/ATCAA occasionally for some training activities. The F-16 pilot training and potential transients would represent the maximum possible use of optimized airspace under this proposal.

Table ES-2. Alternative 2: Proposed F-16 Sorties

	Altitude	Day (90%)	Night (10%)	Total
Cato and Lobos High MOAs/ATCAA with Christa ATCAA	13,500 feet MSL to FL510	3,600	400	4,000
Lobos High MOA/ATCAA with Kendra ATCAA	13,500 feet MSL to FL510	1,350	150	1,500
Smitty MOA	500 feet AGL to 13,500 feet MSL	2,610	290	2,900
Lobos Low MOA	500 feet AGL to 13,500 feet MSL	630	70	700
Total F-16 Sorties		**8,190**	**910**	**9,100[1]**
Potential Transient Aircraft				**1,300**
Total Sorties				**10,400**

Note: [1] The total proposed sorties for the Cato, Smitty, and Lobos MOAs/ATCAAs is less than 10,000 since the F-16 pilot training sorties currently occurring in Talon MOA (approximately 830) would continue to occur in the Talon MOA.
Legend: % - percent; AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level.

ES.3.3 Alternative 3

Alternative 3 would be a combination of Alternatives 1 and 2 with the following differences. The proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative 1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL as opposed to the 500 feet AGL proposed under Alternative 2. SUA no longer needed by the Air Force would be returned to the National Airspace System including the lower portion of the existing Talon Low MOA (300 to 500 feet AGL), the northern portion of the existing Cato and Smitty MOAs, Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA.

The proposed training would be distributed throughout all of the proposed airspace: approximately 6,800 annual sorties would occur in the proposed Talon MOA/ATCAA; and 3,200 annual sorties would occur in the proposed Cato, Smitty, and Lobos MOAs/ATCAAs and the Christa and Kendra ATCAAs. F-16 pilot training from Holloman AFB would constitute the majority of operations within the proposed airspace; however, transient military aircraft (aircraft not based at Holloman AFB) could schedule and use the airspace as well. For analysis purposes, it is estimated that transient aircraft could conduct 1,300 sorties (700 in the Talon MOA; and 600 in the Cato, Smitty and Lobos MOAs, which includes the anticipated 300

F-35A sorties in the Lobos High MOA/ATCAA described in Alternative 2) in addition to the Holloman AFB F-16 training sorties. Chaff and flare usage would be approximately 10,752 each annually in the Talon MOA/ATCAA and 4,608 each annually in Cato, Smitty, and Lobos MOAs/ATCAAs.

Table ES-3. Alternative 3: Proposed Sorties

		Day (90%)	Night (10%)	Total[1]
Talon High A and B MOA/ATCAA	12,500 feet MSL to FL510	3,780	420	4,200
Talon Low A and B MOA	500 feet AGL to 12,500 feet MSL	2,340	260	2,600
Cato and Lobos High MOAs/ATCAA with Christa ATCAA	13,500 feet MSL to FL510	1,440	160	1,600
Lobos High MOA/ATCAA with Kendra ATCAA	13,500 feet MSL to FL510	450	50	500
Smitty MOA	500 feet AGL to 13,500 feet MSL	990	110	1,100
Total F-16 Sorties		**9,000**	**1,000**	**10,000**
Potential Transient Aircraft (700 in east MOAs, 600 in west MOAs)				**1,300**
Total Sorties				**11,300**

Note: [1] Total sorties in the Talon MOA include the existing sorties plus the additional sorties that could occur once the MOA is optimized.

Legend: %-percent; AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level.

ES.3.4 No Action Alternative

Under the No Action Alternative, there would be no SUA modifications in the vicinity of Holloman AFB to support modern aircraft pilot training, particularly the F-16. F-16 aircrew training for pilots stationed at Holloman AFB would continue to take place in existing restricted areas at WMSR and Fort Bliss, and MOAs in the vicinity of Holloman AFB to the extent practicable. The boundaries of Talon, Cato, and Smitty MOAs would remain unchanged and they would continue to be used as they are currently. The Lobos MOA and the Christa and Kendra ATCAAs would not be created. There would be no SUA returned to the National Airspace System. The current inefficiencies in accomplishing F-16 pilot training would continue. The No Action Alternative is carried forward for analysis consistent with CEQ guidelines to provide a baseline against which to measure the impacts of the Proposed Action and alternatives.

ES.4 Summary of Environmental Consequences

Table ES-4 provides a summary of the environmental consequences for all alternatives.

Table ES-4. Comparison of Environmental Impacts			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Airspace Operations and Management			
• Civilian aircraft operating under VFR could transit the MOAs. • Some civilian aircraft operating under IFR below 12,500 feet MSL would be required to be re-routed around Talon Low MOAs A/B when they are active. • Some civilian aircraft operating under IFR above 12,500 feet MSL would be either routed around Talon High MOAs A/B/C when they are active, or stay below 12,500 feet MSL for a portion of their route to stay beneath the SUA. • Some civilian aircraft operating under IFR would be re-routed around the Talon ATCAAs when active. • Deviations around active MOAs would range from 1 to 9 minutes depending on origin and destination route. • There is no anticipated impact to local public or private airports beneath the proposed Talon MOA.	• Civilian aircraft operating under VFR could transit the MOAs. • Some civilian aircraft operating under IFR would be required to be re-routed around the proposed Smitty, Cato, and Lobos MOAs, and Christa and Kendra ATCAAs when they are active. Most of these deviations would be less than a minute. • The Catron County Airport, which is currently under the existing Smitty MOA, would no longer be under any SUA. • The Adobe Ranch and Chloride airstrips would lie beneath the proposed Smitty MOA boundaries. Aircraft using these airstrips would be VFR and would have to check NOTAMS to be aware of the MOA operating schedules. • The Beaverhead and Me-Own airstrips and the Whiskey Creek Airport would lie beneath the proposed Lobos Low MOA. Aircraft using these airstrips would be VFR and would have to check NOTAMS to be aware of the MOA operating schedules. • The Socorro Municipal and Truth or Consequences Municipal Airports would lie beneath the proposed Christa ATCAA. The ATCAA would begin at 18,000 feet MSL and would not impact the airports when active.	• Alternative 3 results in impacts that are less than any described in Alternatives 1 or 2, since the total operations would be spread across the east area (Talon MOAs/ATCAAs) and the west area (Cato and Smitty MOAs, Lobos MOAs/ATCAA, and the Christa/Kendra ATCAAs). • Talon High A and B MOAs would be used 30 percent less than Alternative 1, and impacts to civil aviation would be reduced proportionally. • The use of Talon Low A MOA would be reduced by 20 percent, and the use of Talon Low B MOA would be reduced by 54 percent, when compared to Alternative 1. The impacts to civil aviation and local airports would be reduced proportionally. • The use of Cato MOA would be reduced by 60 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally. • The use of Smitty MOA would be reduced by 62 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally. • The use of proposed Lobos High MOA would be reduced by 67 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally.	• Airspace operations and management would continue as they do currently. • The current airspace is not optimal for meeting the training requirements for pilots stationed at Holloman AFB. • Continued use of the suboptimal airspace would continue to result in training delays and inefficiency; ultimately reducing the number of pilots ready for the combat mission. • Existing operations in the Talon, Cato, and Smitty MOAs/ATCAAs would continue. • Civilian air traffic would continue to dominate the areas proposed for new or expanded MOAs.

Table ES-4. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Airspace Operations and Management (cont.)			
	• The Casas Adobes Airpark would lie beneath the proposed Kendra ATCAA. The ATCAA would begin at 18,000 feet MSL and would not impact the airport when active. • A small area of Grant County Airport's Class E airspace would overlap with the Lobos Low MOA. None of the published approaches or departures for the airport use this area of airspace.	• The proposed Lobos Low MOA would not exist under Alternative 3, so all impacts to civil air traffic and local airports due to the establishment of proposed Lobos Low MOA in Alternative 2 would be eliminated. • The use of proposed Christa ATCAA would be reduced by 60 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally. • The use of proposed Kendra ATCAA would be reduced by 67 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally.	
Acoustic Environment			
• There would be no adverse impacts to hearing or health, and there would be no land use restrictions related to noise beneath the proposed Talon MOA. • It would be anticipated that there would be a perceptible increase to the subsonic noise levels attributed to aircraft activity to some areas beneath the proposed Talon MOA and ATCAA.	• There would be no adverse impacts to hearing or health, and there would be no land use restrictions related to noise beneath the proposed MOAs. • It would be anticipated that there would be a perceptible increase to the subsonic noise levels attributed to aircraft activity to some areas beneath the proposed MOAs and ATCAAs. • The greatest change in DNL would be at Magdalena and Old Horse Springs, which would have values of 50 DNL. All values would be well below the 65 DNL threshold for land use restrictions. 1.66 percent of the population beneath the proposed airspace would be expected to be highly annoyed at the subsonic noise.	• There would be no adverse impacts to hearing or health, and there would be no land use restrictions related to noise beneath the proposed MOAs. • The greatest proposed increase in DNL value would occur at Loco Hills, with a projected 53 DNL. All values would be well below the 65 DNL threshold for land use restrictions. Approximately 3.31 percent of the population beneath the proposed airspace would be expected to be highly annoyed based on the highest DNL value. • Noise levels from supersonic activity at all of the POIs would be less than 42 CDNL which is the lowest CDNL with a relationship to annoyance.	• Aircraft noise in the existing MOAs would continue as it does currently. • Aircraft noise would continue along MTRs in the region.

Table ES-4. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Acoustic Environment (cont.)			
• The greatest change in DNL would occur at Loco Hills, where the estimated DNL from aircraft operations would be 56 DNL. It would be near to the 55 DNL threshold set by USEPA for which adverse noise effects would not be expected to occur. The projected DNL would also be well below the 65 DNL threshold for land use restrictions. It would be anticipated that less than 6.48 percent of the population beneath the proposed airspace would be highly annoyed • Supersonic noise levels at the POIs would be less than the 42 CDNL which is the lowest CDNL with a relationship to annoyance. The anticipated CDNL would not exceed the threshold identified by USEPA that would be harmful to public health. • Overpressures from sonic booms under the Proposed Action would not be expected to cause structural damage.	• Noise levels from supersonic activity at all of the POIs would be less than 42 CDNL which is the lowest CDNL with a relationship to annoyance. The anticipated CDNL would not exceed the threshold identified by USEPA that would be harmful to public health. • Overpressures from sonic booms under the Proposed Action would not be expected to cause structural damage.	• Overpressures from sonic booms would be similar or less than those described for Alternatives 1 or 2 and would not be expected to cause structural damage.	
Air Quality			
• The estimated criteria pollutant emissions associated with Alternative 1 would not alter the current attainment status of Chaves, Eddy, or Otero Counties. • Criteria pollutant emissions would increase though the proposed net increases for VOCs, CO, SO_2, PM, and HAPs would be less than the comparative thresholds used as a guide for assessing significance.	• The estimated criteria pollutant emissions associated with Alternative 2 would not alter the attainment status of Sierra, Catron, Socorro, or Hidalgo Counties in New Mexico or Graham County in Arizona. • Criteria pollutant emissions would increase though the proposed net increases for VOCs, CO, NO_x, PM, and HAPs would be less than the comparative thresholds used as a guide for significance.	• The estimated criteria pollutant emissions associated with Alternative 3 would not alter the attainment status of Chaves, Eddy, Otero, Hidalgo, Sierra, Catron, or Socorro Counties in New Mexico or Graham County in Arizona.	• Air emissions associated with military aircraft operations in the existing airspace in the region would continue.

Table ES-4. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Air Quality (cont.)			
	• The SO_2 net change in emissions, at 3.25 tons per year, does not exceed the 100 ton per year *de minimis* threshold under General Conformity (applies to Grant County, New Mexico and Greenlee County, Arizona).	• Criteria pollutant emissions would increase though the proposed net increases for VOCs, CO, SO_2, PM, and HAPs would be less than the comparative thresholds used as a guide for assessing significance. • The SO_2 emissions would not exceed the *de minimis* threshold (applicable to Grant County, New Mexico and Greenlee County, Arizona).	
Natural Resources			
• Based on estimated noise levels, the proposed pilot training in the proposed Talon MOA would be expected to have minor impacts to wildlife inhabiting land beneath the proposed airspace. • Based on toxicological studies on chaff and flare residual materials, impacts to biological resources are not expected. • The possibility of an animal being struck by a dud flare, undeployed clump of chaff, or residual materials would be extremely remote.	• The potential impacts to wildlife from aircraft noise and use of chaff and flares would be the same as those described for Alternative 1. • No significant impacts to special-status species expected. The potential impacts associated with the proposed training activities to special-status species would be the same as those described for wildlife. • If Alternative 2 were selected, the Air Force would informally consult with USFWS to gain their concurrence with their findings for the three mammal species that were not included in the consultation for Alternative 1.	• The potential impacts to wildlife from aircraft noise and use of chaff and flares would be the same as those described for Alternative 1. • No significant impacts to special-status species expected. The potential impacts associated with the proposed training activities to special-status species would be the same as those described for wildlife. If Alternative 3 were selected, the Air Force would informally consult with USFWS to gain their concurrence with their findings for the three mammal species that were not included in the consultation for Alternative 1.	• Natural resources beneath the existing Talon, Cato, and Smitty MOAs would continue to be exposed to aircraft operations. • Natural resource beneath the existing MTRs that transit the areas proposed as MOAs would continue to experience military aircraft noise.

Table ES-4. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Natural Resources (cont.)			
• The possibility of a wildfire from flare usage impacting wildlife habitat would be remote considering the release altitude under the Proposed Action. Flares would not be released below 2,000 feet AGL and are designed to burn completely within the first 400 feet of descent. The risk of wildfires from flare usage would be mitigated by operational constraints, including the prohibition of flares during periods of "Very High" or "Extreme" National Fire Danger Ratings. During periods of "High" fire danger, aircraft would not use flares below 18,000 feet MSL. • Domestic animal responses to low overflights vary, but typically include startling and eventually habituating to the noise. Low overflights are not expected to occur with any sort of regularity or frequency at any given location. • Horses are likely to be startled by low overflights and possibly bolt from the noise and the safety of the rider or handler would be of concern. Low overflights are not expected to occur with any sort of regularity or frequency at any given location. • No significant impacts to special-status species expected. The potential impacts associated with the proposed training activities to special-status species would be the same as those described for wildlife. • The Air Force consulted with and received concurrence from the USFWS that there would be no adverse impacts to species protected by the Endangered Species Act.			

Table ES-4. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Land Management			
• Nearly 1.6 million acres including Brantley and Avalon Reservoirs, Living Desert Zoo and Gardens, and the towns of Carlsbad, Artesia, La Huerta, Atoka, Happy Valley, and Livingston Wheeler lie beneath the existing Talon Low MOA, the floor of which would be raised from 300 to 500 feet AGL. • The configuration of Talon MOA proposed under Alternative 1 would overlie an additional 1.08 million acres, primarily non-Federal lands, including the town of Loving, and land managed by the BLM in addition to a smaller area of the Lincoln National Forest. • No areas would be exposed to a noise level in excess of 65 DNL, though some increases in noise levels from military aircraft would be experienced beneath the proposed Talon Low A and B MOAs.	• More than 2.25 million acres of land underlie the existing configuration of the Cato and Smitty MOAs. These lands are primarily non-Federal, including the town of Magdalena, or are managed by the BLM or USFS, including the Cibola, Gila, and Apache-Sitgreaves National Forests. • The proposed configuration of the Cato and Smitty MOAs would overlie an additional 297,442 acres of lands, primarily non-Federal land and larger areas of the Cibola and Gila National Forests, including the Apache Kid and Aldo Leopold Wildernesses. • Approximately 180,000 acres of the Apache-Sitgreaves National Forest that lie under the current configuration of the Cato and Smitty MOAs would not underlie the new configuration, and this airspace would be returned to the NAS. • The proposed Lobos MOA would overlie a total of nearly 1.5 million acres of federally-managed land, including nearly 1 million acres of the Gila National Forest that includes the Aldo Leopold and Gila Wildernesses, lands managed by the Las Cruces District and Safford Field Offices of the BLM, and the Gila Cliff Dwellings National Monument. Additionally more than 1.1 million acres of non-Federal land lie beneath the proposed Lobos MOA including the communities of Silver City, Santa Clara, Arenas Valley, and Tyrone	• The proposed 10,000 annual flights would be divided among the Talon MOA to the east of Holloman AFB and the Cato, Smitty, and Lobos MOAs to the west, resulting generally in dispersal over a larger area and less frequent exposure to overflight noise on lands beneath all airspace. • The configuration of Talon MOA proposed by Alternative 3 would not include Talon High C, resulting in approximately 150,000 fewer acres of BLM and non-Federal land lying beneath the configuration of Talon MOA. No areas beneath the configuration of Talon, Cato, Smitty, and Lobos MOAs and the Christa and Kendra ATCAAs proposed under Alternative 3 would be exposed to a noise level in excess of 65 DNL, though some increases in noise levels, similar to those experienced under Alternatives 1 and 2, would occur. • While these levels would be perceptible, they are well below the threshold of 65 DNL considered to be incompatible with residential and recreational land uses. Additionally, due to the size of the airspace, single event noise-related impacts in these areas associated with direct aircraft flyovers would be infrequent, temporary, and short-term.	• Land beneath airspace would continue to be managed by a variety of federal agencies and private citizens.

Table ES-4. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Land Management (cont.)			
• The communities of Loco Hills and Loving lie beneath the expanded boundaries of Talon MOA and would experience an increase in noise (56 and 42 DNL, respectively) from proposed aircraft operations within the MOA. While these levels would be perceptible, they are well below the threshold of 65 DNL considered to be incompatible with residential and recreational land uses. Additionally, due to the size of the airspace, single event noise-related impacts in these areas associated with direct aircraft flyovers would be infrequent, temporary, and short-term.	• .The proposed Christa and Kendra ATCAAs would overlie a total of more than 1.35 million acres of federally-managed land including nearly more than 230,000 acres of the USFS land that includes the Aldo Leopold Wilderness, lands managed by the Las Cruces District and Socorro Field Offices of the BLM, The Bosque del Apache National Wildlife Refuge, the BOR-managed Elephant Butte and Caballo Reservoirs, and the Jornada Experimental Station. • Approximately 387,000 acres of non-Federal land lie beneath the proposed ATCAAs, including: Hurley, Bayard, Mimbres, Hatch, Doña Ana, Radium Springs, Salem, Placitas, Las Cruces, and Truth or Consequences. • The floor of these ATCAAs would be 18,000 feet MSL, consequently underlying lands such as the towns of Truth or Consequences and Socorro and managed lands like Bosque del Apache National Wildlife Refuge and Elephant Butte and Caballo Reservoirs would not experience any perceptible increase in noise above background levels. • No areas beneath the configuration of Cato, Smitty, and Lobos MOAs or the Christa and Kendra ATCAAs proposed under Alternative 2 would be exposed to a noise level in excess of 65 DNL, though some increases in noise levels would be experienced beneath the proposed airspace.		

Table ES-4. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Land Management (cont.)			
	• While these levels would be perceptible, they would be well below the threshold of 65 DNL considered to be incompatible with residential and recreational land uses. Additionally, due to the size of the airspace, single event noise-related impacts in these areas associated with direct aircraft flyovers would be infrequent, temporary, and short-term.		
Recreation			
• The proposed airspace modifications would not alter, prohibit, or otherwise limit the public's access to recreational areas beneath the MOA. • The proposed pilot training would generate noise, which could detract from the public's enjoyment of outdoor recreational areas.	• The proposed airspace modifications would not alter, prohibit, or otherwise limit the public's access to recreational areas beneath the MOA. • The proposed pilot training would generate noise, which could detract from the public's enjoyment of outdoor recreational areas. • Recreational users of some of the lands under the airspace would experience slight noise increases, but the projected noise would not be considered incompatible with recreational land uses. • Some training activity would occur at night (approximately 10 percent of the operations); therefore, people camping on land beneath the airspace would have the potential to hear aircraft after dark.	• The impacts to recreation are similar to those described for Alternatives 1 and 2, however the potential noise impacts under Alternative 3 would be less than the potential noise impacts in Alternatives 1 and 2, and none of the projected noise levels would be considered incompatible with recreational uses.	• Recreational areas located beneath existing SUA would continue to be subject to aircraft noise.

Table ES-4. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Recreation (cont.)			
• Recreational users of some of the lands under the airspace would experience slight noise increases, but the projected noise would not be considered incompatible with recreational land uses. • Some training activity would occur at night (approximately 10 percent of the operations); therefore, people camping on land beneath the airspace would have the potential to hear aircraft after dark. • Many of the recreational areas beneath the proposed Talon MOA are under the existing Talon MOA and are currently subjected to aircraft training activity. • Sonic booms, if heard, would be a sudden and startling noise that could adversely impact the experience of recreational users.	• The Air Force is committed to avoiding Wilderness areas and national parks beneath the proposed airspace by 2,000-feet AGL in accordance with FAA Advisory Circular 91-36D. • Noise from military training may detract from visitor enjoyment but is not expected to have a significant impact on visitation to these areas.		
Socioeconomics			
Impacts Common to All Action Alternatives: • The Proposed Action would not result in an increase in personnel at Holloman AFB or within the region. Therefore, the population within the ROI would remain unchanged. • Given the low expected DNL values and the distribution of the training activity across such a large area, it would not be expected that the Proposed Action would have any quantifiable impacts to the existing housing values within the ROI. • Noise analysis indicates that the average noise resulting from the Proposed Action would not be at a level that would be considered incompatible with recreational land uses. Though studies show that noise from a number of sources, including aircraft, can affect visitor experience and enjoyment of parks and forests, it is not clear how such experience affects visitation. While it is possible that noise could reduce visitation, potentially reducing contributions to local economies, it is not possible to quantify the economic impact.			• The populations beneath existing airspace would continue to be exposed to military aircraft activity. • Agriculture; public administration; oil, gas, manufacturing; education; research; banking; and medical services would continue to be important economic industries in the eastern airspace area. • Mining; educational services, and health care and social assistance; agriculture; and public administration would continue to be important economic industries in the western airspace area.

Table ES-4. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Environmental Justice			
Impacts Common to All Action Alternatives: • No significant impacts were identified in association with any resource areas that would be anticipated to adversely impact the health or environment of minority or low-income populations living under the areas affected by any of the action alternatives. Noise levels in the airspace would remain below 65 DNL. Because there would not be significant impacts that would adversely affect minority or low-income populations, there would be no impact to environmental justice.			• Minority populations within the counties associated with existing and proposed airspace range from 21.4 percent (Catron County, New Mexico) to 64.4 percent (Socorro County, New Mexico). • Low-income populations within the counties associated with existing and proposed airspace range from 13.2 percent (Greenlee County, Arizona) to 23.7 percent (Hidalgo County, New Mexico).
Safety			
Impacts Common to All Action Alternatives: • Ground operations and maintenance procedures conducted by Holloman AFB personnel would not change from current conditions. All activities would continue to be conducted in accordance with applicable regulations, Technical Orders, and Air Force Occupational Safety and Health standards. There would be no aspects of the Proposed Action that would be expected to create new or unique ground safety issues or create additional risk. • Priority to life-flight status would not change with implementing the Proposed Action. Military training in the affected airspace would be stopped during such an event. • In the unlikely event of a crash within the proposed airspace area, local first responders would likely be first on the scene given the distance from Holloman AFB. Holloman AFB crash response would continue to follow standard procedures and plans. • Land within the proposed MOAs would continue to be managed for fire risk by local owners and agencies that manage that land. F-16 operations currently occur within airspace associated with Holloman AFB and have not presented an increased fire risk. • The type of training proposed would be the same as what is performed currently, and there would be no aspect of the Proposed Action that would increase the chances of Class A mishaps. The Air Force would make every effort to locate, document, and then clean up debris resulting from any accident. • It would be unlikely that F-16s using the proposed MOAs would generate vortices of sufficient strength or duration to reach the ground and pose a safety risk. • The safety risk to people under or immediately adjacent to the MOAs in which chaff and flares would be dispensed would be minimal. • Dud flares may be mishandled if discovered on non-DoD lands by the uninformed public; however, the probability of such an occurrence would be extremely low. • Additional fire restrictions for flare use would be implemented to reduce the risk of fires. Flares would not be used at altitudes less than 18,000 feet MSL under “High” fire conditions and flares would not be used at all under “Very High” or “Extreme” fire conditions.			• Current operations and training activities in the existing MOAs and ATCAAs do not pose a significant safety risk to the public, military personnel, or property. • Procedures in place for ground safety (crash response and fire risk management) and flight safety (bird-aircraft strike hazards and chaff and flare usage) would continue as they do currently.

Table ES-4. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Cultural Resources			
• The overall potential for bird aircraft strikes would not be anticipated to be statistically different with implementation of any of the alternatives. F-16 aircrews operating in the MOAs would be required to follow applicable procedures outlined in the Holloman AFB BASH Plan. • Vertical obstructions would be noted and avoided as they currently are in existing areas where obstructions intrude into proposed airspace. Impacts Common to All Action Alternatives: • The Proposed Action would result in flights being distributed over a vast area of airspace, most of which would occur above 10,000 feet AGL. Due to the altitude of the overflights, small size of the aircraft, and the high speeds, the aircraft are not expected to be a visual intrusion at archaeological or architectural sites. • Chaff and flares deployed from the aircraft would not pose a visual intrusion. The likelihood of residual chaff and flare material to land at archaeological or architectural sites would be very rare and would not have an adverse effect on these resources. • Sonic booms would occur during supersonic flights, however, no structural damage to NRHP-listed archaeological or architectural resources would be anticipated since the overpressures would not exceed 1 psf. The risk of damaging structures at this level of psf would be very low, one in a billion. • The Air Force consulted with and received concurrence from the New Mexico and Arizona State Historic Preservation Offices. Likewise, it was determined through government-to-government consultation that there would be no impact to traditional cultural properties.			• Cultural resources beneath existing airspace would continue to be exposed to military aircraft activity. Current activities have not resulted in impacts to existing cultural resources.
Hazardous Materials			
Impacts Common to All Action Alternatives: • There would be the potential for hazardous materials to be introduced into the environment in the case of an aircraft mishap. However, aircraft mishaps are rare, and in the event that one occurs, the Air Force has SOPs to identify potential hazardous materials and situations, protect responding personnel and the environment from immediate hazards, and to provide guidelines for the ultimate cleanup and disposal of the crash residues. • The components of chaff are not considered toxic and distribution of chaff filaments (primarily aluminum and silica) and residual materials would not affect ground or water quality. • The components and combustion materials of flares are not considered toxic. The amount of magnesium dispersed from flares is too small to result in levels that would be associated with acute exposure.			• Hazardous materials management procedures to protect the public and the environment would continue. • The use of chaff and flares would continue in all areas already approved for such use.

Legend: AFB-Air Force Base; AGL-Above Ground Level; ATCAA-Air Traffic Control Assigned Airspace; BASH-Bird Aircraft Strike Hazard; BLM-Bureau of Land Management; BOR-Bureau of Reclamation; CDNL-C-weighted Day-Night Average Sound Level; CO-Carbon Monoxide; DNL-Day-Night Average Sound Level; DoD-Department of Defense; FAA-Federal Aviation Administration; GHG-Greenhouse Gas; HAP-Hazardous Air Pollutant; IFR-Instrument Flight Rules; MOA-Military Operations Area; MSL-Mean Sea Level; MTR-Military Training Route; NOTAM-Notice to Airmen; NO_x-Nitrogen Oxides; NRHP-National Register of Historic Places; PM-Particulate Matter; POI-Point of Interest; psf-Pounds per Square Foot; ROI-region of influence; SO_2-Sulfur Dioxide; SOP-Standard Operating Procedure; USFS-U.S. Forest Service; USFWS-U.S. Fish and Wildlife Service; VOC-Volatile Organic Compound; VFR-Visual Flight Rules.

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ACRONYMS AND ABBREVIATIONS

ACC	Air Combat Command
AFB	Air Force Base
AFI	Air Force Instruction
AFSEC	Air Force Safety Center
AGL	above ground level
Albuquerque Center	Albuquerque Air Route Traffic Control Center
ANG	Air National Guard
ATCAA	Air Traffic Control Assigned Airspace
ATS	Air Traffic Service
AZGFD	Arizona Game and Fish Department
BASH	Bird/Wildlife-Aircraft Strike Hazard
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
CAA	Clean Air Act
CDNL	C-weighted Day-Night Average Sound Level
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulation
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
dB	decibel
dBA	A-weighted decibel
dBC	C-weighted decibel
DNL	Day-Night Average Sound Level
DoD	Department of Defense
DoDD	Department of Defense Directive
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMNRD	Energy, Minerals, and Natural Resources Department
EO	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FL	Flight Level
FONSI	Finding of No Significant Impact
Fort Worth Center	Fort Worth Air Route Traffic Control Center
FTU	Formal Training Unit
FY	fiscal year
GHG	greenhouse gases
HAPs	hazardous air pollutants
Hz	hertz
IFR	Instrument Flight Rules
JTTOC	Joint Test and Training Operations Center
kHz	kilohertz
L_{dnmr}	Onset Rate Adjusted Day-Night Average Sound Level
L_{max}	Maximum Sound Level
MARSA	Military Authority Assumes Responsibility of Separation of Aircraft
MBTA	Migratory Bird Treaty Act
MEA	minimum en-route altitude
MOA	Military Operations Area
MSL	mean sea level
MTR	Military Training Routes
NA	not applicable
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAS	National Airspace System
NAVAIDs	Navigational Aids
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIPTS	Noise Induced Permanent Threshold Shift
nm	nautical miles
NMDGF	New Mexico Department of

	Game and Fish
NO_2	nitrogen dioxide
NOI	Notice of Intent
NOTAM	Notice to Airmen
NO_x	nitrogen oxides
NPS	National Park Service
NRHP	National Register of Historic Places
O_3	ozone
OSS	Operational Support Squadron
Pb	lead
PDARS	Performance Data Analysis and Reporting System
$PM_{2.5}$	particulate matter less than or equal to 2.5 micrometers
PM_{10}	particulate matter less than or equal to 10 micrometers
POI	Points of Interest
PSD	Prevention of Significant Deterioration
psf	pound per square foot
RDT&E	research, development, test and evaluation
RMP	Resource Management Plans
ROAA	Record of Air Analysis
ROD	Record of Decision
ROI	Region of Influence
SEL	Sound Exposure Level
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Officer
SM	Statute Mile
SO_2	sulfur dioxide
SOP	Standard Operating Procedure
SUA	Special Use Airspace
TPY	Tons per year
U.S.	United States
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VFR	Visual Flight Rules
VOC	volatile organic compound
WSMR	White Sands Missile Range

1.0 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The United States (U.S.) Air Force proposes to optimize the special use airspace (SUA) available for current and anticipated future pilot training at Holloman Air Force Base (AFB). Much of the SUA used by pilots assigned to Holloman AFB was developed for legacy aircraft more than 30 years ago. As such, it does not have the optimum volume or attributes needed to meet the training requirements of pilots flying modern aircraft. Reconfiguring existing airspace and establishing new airspace would improve the availability of suitable training airspace for pilots stationed at Holloman AFB.

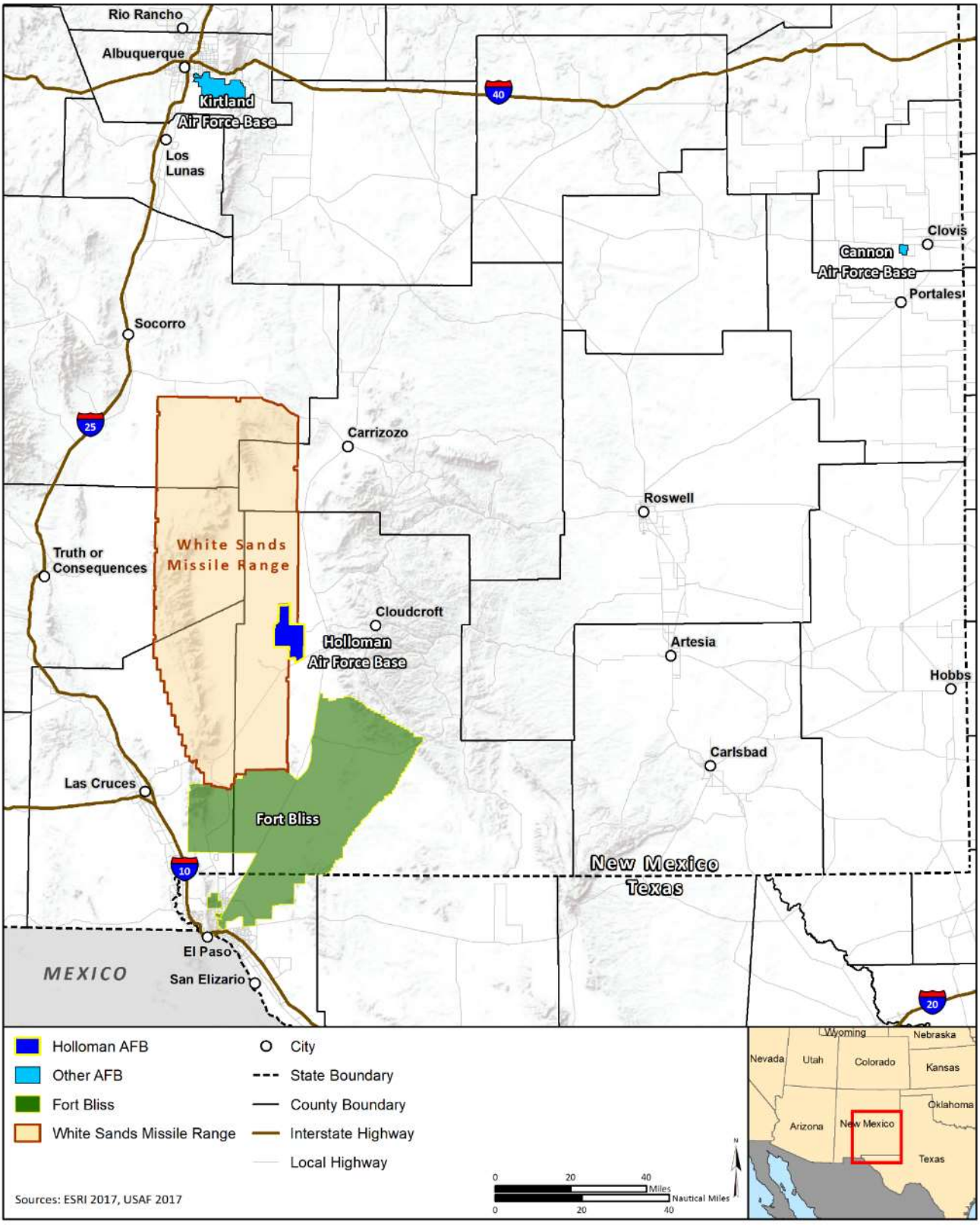
The airspace associated with the Proposed Action and alternatives lies within the jurisdiction of the Federal Aviation Administration (FAA) Albuquerque Air Route Traffic Control Center (Albuquerque Center); therefore, the Air Force is working in cooperation with the FAA for this proposal. The National Park Service (NPS) and the Bureau of Land Management (BLM) are also cooperating agencies for this proposal.

This Environmental Impact Statement (EIS) was prepared to evaluate the potential environmental impacts of this Proposed Action in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code [USC] 4331 et seq.), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA procedures (40 Code of Federal Regulations [CFR] 1500-1508), the Air Force Environmental Impact Analysis Process promulgated at 32 CFR 989, and FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*. This EIS was completed through the Air Force Civil Engineer Center NEPA Division in coordination with the Headquarters U.S. Air Force Operations, Plans, and Requirements, Air Combat Command (ACC), Air Education and Training Command, National Guard Bureau, and Holloman AFB.

1.2 BACKGROUND

Holloman AFB is located in southern New Mexico, six miles west of the city of Alamogordo (**Figure 1.2-1**). Holloman AFB's mission has changed several times over the past few years. In 2006, the decision to retire the F-117 aircraft and replace them with F-22 aircraft resulted in numerous upgrades to the Holloman AFB infrastructure and assets. In 2010, the Air Force announced plans to consolidate the F-22 fleet, resulting in transfer of the F-22s from Holloman AFB to other locations hosting F-22 squadrons. To effectively use the extensive infrastructure and assets vacated by the F-22 mission, the Air Force established a Formal Training Unit (FTU) that included the relocation of two squadrons of F-16 Fighting Falcons from Luke AFB, Arizona. The potential environmental effects of this action were analyzed in the *Recapitalization of the 49th Wing Combat Capabilities and Capacities Environmental Assessment*, dated July 29, 2011 (Air Force 2011) that resulted in a Finding of No Significant Impact (FONSI). The aircraft relocation was completed in 2015. In May 2017, the Air Force signed a FONSI to temporarily relocate two squadrons of F-16 aircraft to Holloman AFB from Hill AFB (Air Force 2017).

The F-16s at Holloman AFB have evolved from the original aircraft introduced by General Dynamics in 1974 to a fourth generation aircraft with all the technology and capabilities of an advanced weapons system. Most of the SUA utilized by Holloman AFB was developed in the 1970s for airframes no longer in the Air Force inventory.



Legend: AFB-Air Force Base.

Figure 1.2-1. Location of Holloman AFB

Since development of the original aircraft, changes in the threat environment and the corresponding changes to tactics, techniques and procedures, F-16 capabilities of weapons, communications, and sensors (such as the soon to be fielded onboard AN/APG-83 radar) require training time be devoted to a range of systems. The evolution and development of the F-16 expanded the pilot training and airspace requirements for the aircraft.

While the current SUA used by Holloman AFB is adequate, optimization of the existing, or creation of new optimized SUA would improve the training opportunity of F-16 pilots, increase efficiencies, and reduce disruptions to training. The need for the airspace optimization is not driven by the number of aircraft stationed at Holloman AFB, but rather the advancements and capabilities of the aircraft that have evolved over time without modifications to the airspace within which they train. The current SUA available to Holloman AFB pilots does not provide the optimal volume or attributes necessary to complete their training syllabus in an appropriate and efficient manner. This results in fewer pilots ready for the combat mission. The Air Force currently has a pilot shortage which is further affected by the disruption to training, ultimately impacting National Security.

1.2.1 Training Airspace

SUA consists of defined dimensions of airspace wherein activities must be confined because of their nature, or wherein limitations are imposed upon non-participating aircraft operations, or both. The vertical limits of SUA are defined by designated altitude floors (the lowest altitude) and ceilings (the highest altitude)[1]. SUA is depicted on aeronautical charts by name with the altitudes, times of scheduled use, the controlling agency[2] and the using agency[3]. Avoidance areas and other restrictions are depicted in graphical format on each chart. Additional information, including the airspace boundaries are found in FAA Order JO 7400.10A, *SUA*[4]. Training airspace used by the F-16 includes restricted areas, Military Operations Areas (MOAs), and Air Traffic Control Assigned Airspace (ATCAA), which are discussed below.

A **restricted area** is SUA within which flight by non-participating aircraft is subject to restriction but is not wholly prohibited. Restricted areas can be designated as low as ground surface and up to but not including 60,000 feet mean sea level (MSL) (commonly designated as Flight Level [FL] 600). Restricted areas are established when it is necessary to confine or segregate activities considered hazardous to non-participating aircraft. They can be established as "joint use" by assigning an air traffic control facility as

[1] Altitudes are presented in multiple ways with respect to airspace management and aircraft operation. Definitions of these terms are as follows:
Above Ground Level (AGL): AGL references are usually used at lower altitudes (almost always below 10,000 feet), when clearance from terrain is more of a concern for aircraft operation.
Mean Sea Level (MSL): MSL altitudes are used most commonly across aviation when operating at or below 18,000 feet when clearance from terrain is less of a concern for aircraft operation.
Flight Level (FL): FL is used to describe the cruising altitudes for aircraft traveling long distances above 18,000 feet. Flight Levels are given in hundreds of feet, e.g. FL300 is 30,000 feet. In this EIS, FL will be used for altitudes above 18,000 feet.
[2] The *controlling agency* is the FAA Air Traffic Control facility that exercises control of the airspace when the SUA area is not activated, a military Air Traffic Control facility may be assigned as the controlling agency.
[3] The *using agency* is the military unit or other organization whose activity established the requirement for the SUA. The using agency is responsible for ensuring that: (1) the airspace is only used for its designated purpose; (2) proper scheduling procedures are established and utilized; (3) the controlling agency is kept informed of changes in scheduled activity, to include the completion of activities for the day; and (4) a point of contact is made available to enable the controlling agency to verify schedules, and coordinate access for emergencies, weather diversions, etc.
[4] Order updated after release of the Draft EIS, current version of this order is 7400.10B, effective February 14, 2020.

the controlling agency, and by executing a joint use letter of procedure between the controlling agency and using agency. Flight within the restricted area is controlled by the using agency except when the area has been released to the controlling agency. Release by the using agency to the controlling agency provides for the operation of non-participating aircraft through this airspace when it is not in use or when appropriate separation can be provided (FAA Order JO 7400.2M).

A **MOA** is a type of SUA designated to contain nonhazardous, military flight activities such as air combat maneuvers, air intercepts, low altitude tactics, etc. MOAs can have defined floors as low as ground surface level and ceilings up to but not including 18,000 feet above MSL[5]. MOAs also have defined horizontal boundaries as well as times when the airspace is available for military training. Specific activities allowed in MOAs, such as use of defensive countermeasures to include chaff and flare, or supersonic flight, are considered attributes and can vary for different MOAs. As with restricted areas described above, MOAs can be designated as joint use and released by the using agency to the controlling agency which provides for the operation of non-participating aircraft through this airspace when it is not in use.

An **ATCAA** is not classified as SUA, but rather is an area that has been designated in a Letter of Agreement with the FAA that can be used to extend the usable airspace above the ceiling of a MOA. ATCAAs can support aerial refueling and high speed or combat maneuvering training similar to that occurring in MOAs. An ATCAA typically has the same horizontal dimensions of the underlying MOA and an agreed upon ceiling. When requested, ATCAA is released by the FAA for military use when not required for other air traffic control purposes (notably, commercial air traffic). It can be recalled by the FAA at any time. Each of these types of training airspace are illustrated in **Figure 1.2-2**.

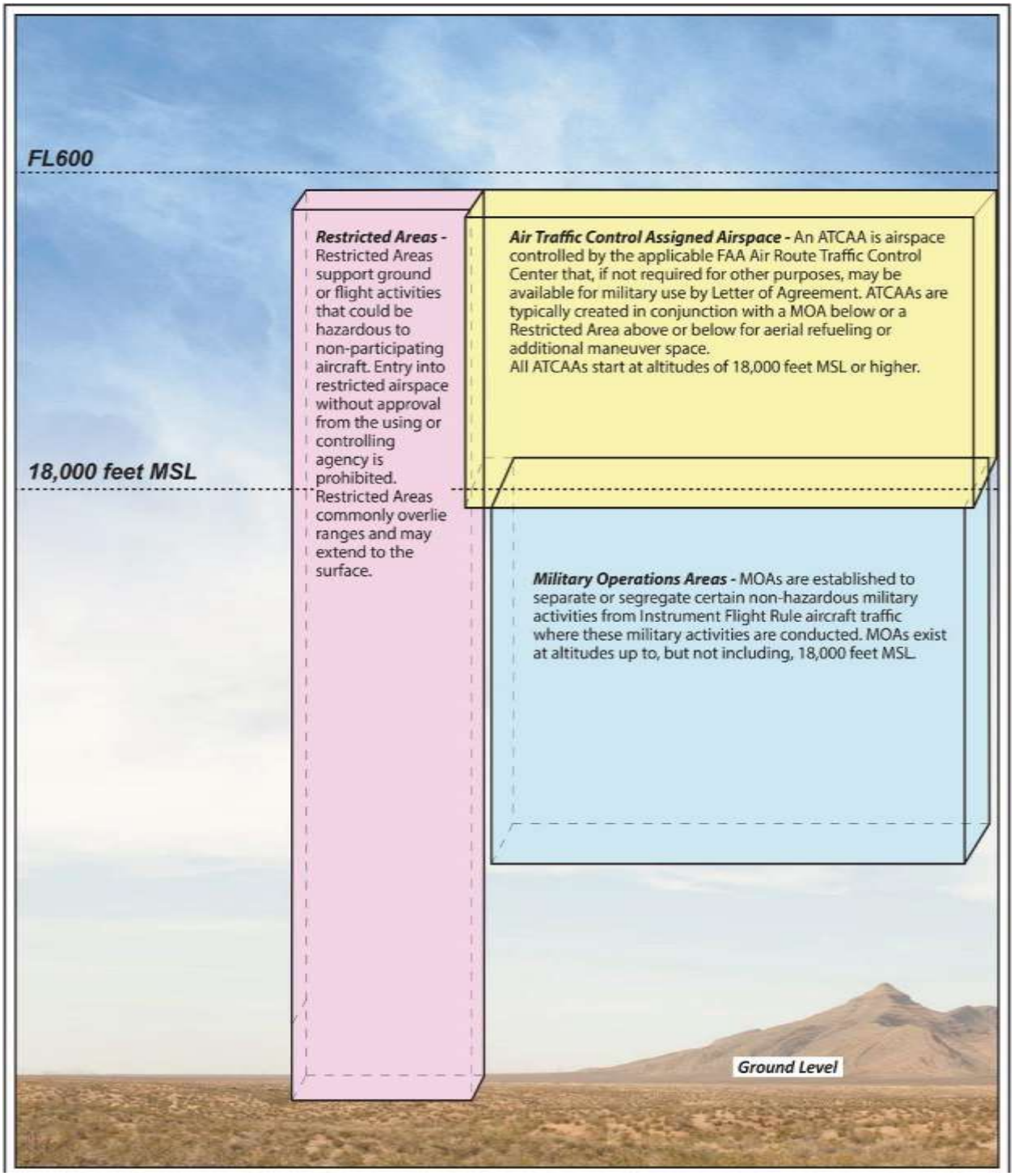
1.2.2 F-16 Pilot Training

F-16 pilot training is outlined in Air Force Instruction (AFI) 11-2F-16, Volume 1, *Flying Operations F-16 Pilot Training,* and includes: Initial Qualification Training for new F-16 pilots and senior officers; Mission Qualification Training that trains pilots for their specific unit mission; Continuation Training that contains advanced courses; Weapons Employment Qualification that trains pilots in the employment of air-to-surface and air-to-air weapons; and other specialized training. The FTU at Holloman AFB supports all F-16 pilot training, but Initial Qualification Training constitutes the majority. The F-16 pilot training syllabus requires each pilot to fly multiple sorties (a sortie is the flight of a single aircraft consisting of a takeoff, mission, and landing). Each sortie flown is conducted to meet a specific training requirement. The particular training requirement can only be accomplished in airspace that has appropriate area, altitudes, proximity to the base, and attributes (such as ability to use defensive countermeasures or munitions). Consequently, the features of available airspace determine where a particular training sortie can occur.

Air-to-air training activities normally take place in a MOA with an overlying ATCAA requested as needed to expand the MOA's altitude. Air-to-ground training activities that include the release of live ordnance are considered hazardous to non-participating aircraft and must be performed in a restricted area associated with a military training range. Some training activities require a combination of MOA and restricted areas. A range of restricted areas and MOAs in the vicinity of Holloman AFB are currently available for F-16

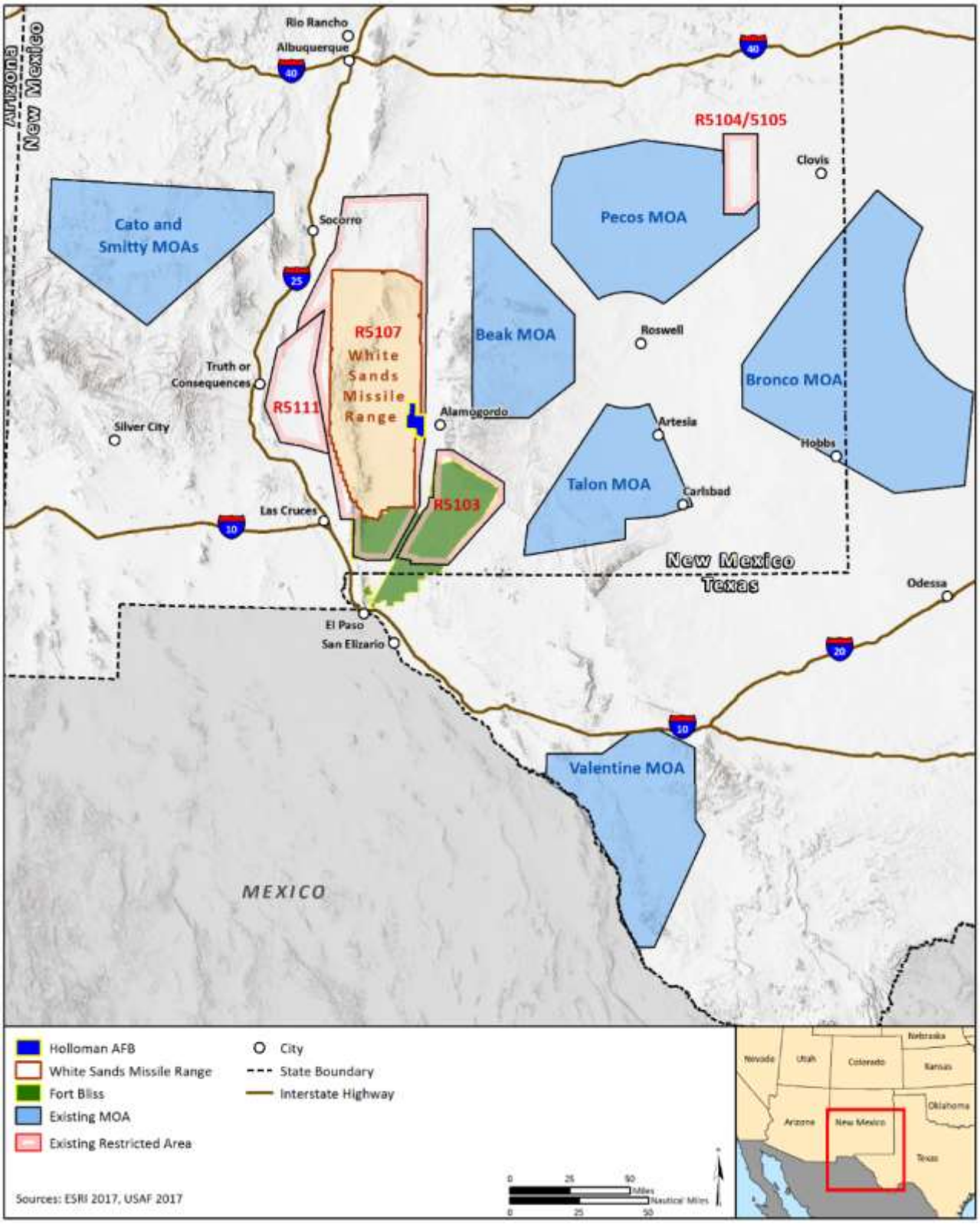
[5] The ceilings of MOAs can be designated "up to but not including 18,000 feet MSL". For simplicity, this EIS will use "18,000 feet MSL" when referring to the ceilings of MOAs. Unless stated otherwise, this implies "up to but not including 18,000 feet MSL".

pilot training (**Figure 1.2-3** and **Table 1.2-1**). The available MOAs are scheduled by Holloman, Cannon, and Kirtland AFBs.



Note: Figure not to scale.
Legend: ATCAA-Air Traffic Control Assigned Airspace; FAA-Federal Aviation Administration; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level.

Figure 1.2-2. Types of Training Airspace Used for F-16 Pilot Training



Legend: AFB-Air Force Base; MOA-Military Operations Area.

Figure 1.2-3. Airspace Available for F-16 Pilot Training

The available restricted areas are associated with U.S. Army ranges scheduled by White Sands Missile Range (WSMR) and Fort Bliss (discussed in **Sections 1.2.3** [White Sands Missile Range] **and 1.2.4** [Fort Bliss McGregor Range]).

Table 1.2-1. Airspace Currently Available for F-16 Pilot Training

Airspace	Scheduled By	Annual F-16 Sorties[1]
Restricted Areas		
R5107 and R5111	WSMR	4,962
R5103	Fort Bliss	611
R5107	Fort Bliss	0
MOAs (with associated ATCAAs)		
Beak	Holloman AFB	2,569
Bronco	Cannon AFB	0
Pecos	Cannon AFB	26
Valentine	Holloman AFB	0
Talon	Holloman AFB	831
Cato	Kirtland AFB	1
Smitty	Kirtland AFB	15

Note: [1] The number of annual sorties were derived from airspace utilization data for a representative year (June 2017 to June 2018). The actual sorties vary from year to year depending on the training mission and the airspace available.
Legend: AFB-Air Force Base; ATCAA-Air Traffic Control Assigned Airspace; MOA-Military Operations Area; WSMR-White Sands Missile Range.

The training syllabus requires that pilots be trained using a very specific sequence of mission types. This results in limited scheduling flexibility. The required dimensions (area and altitudes) of the SUA are driven by the type of mission being flown and the number of individual aircraft to be flown simultaneously. When airspace appropriate for a specific training mission is not available at the appropriate time during the pilot's training, training is delayed, which disrupts the progress of pilots in training and potentially results in an inability to complete the entire program in a timely manner. In addition to increased training expenses for repeating or delaying a training program, incomplete training causes reductions in the number of qualified pilots ready to conduct combat operations and degrades mission readiness, both of which affect National Security.

1.2.3 White Sands Missile Range

WSMR is a U.S. Army military testing range located adjacent to Holloman AFB (see **Figure 1.2-1**), and due to this proximity, is a preferred training location for Holloman AFB. As the largest military installation in the U.S., WSMR provides national priority research, development, test and evaluation (RDT&E) programs for the Army, Navy, Air Force, and other customers. Training within WSMR is only allowed when it does not conflict with the frequent RDT&E activities. Above WSMR are designated restricted areas that support air-to-ground testing and training activities that would be hazardous to non-participating aircraft (i.e., live ordnance use).

Holloman AFB currently uses WSMR for air-to-ground training that must be conducted in restricted areas. Holloman AFB also uses WSMR for air-to-air missions. All Holloman training on WSMR occurs only when not scheduled for higher priority missions or testing activities. The Air Force and the Army have established a Joint Test and Training Operations Center (JTTOC) to maximize usage of WSMR.

With the standup of the JTTOC, there is a real time capability to adjust the schedule to increase access opportunities when there are last minute test or training mission changes.

1.2.4 Fort Bliss McGregor Range

Fort Bliss's primary mission is to support the U.S. Army's Air Defense Artillery training. McGregor Range is part of the Fort Bliss Training Complex and is located to the southeast of Holloman AFB (see **Figure 1.2-1**). The primary usage of McGregor Range is to maintain the operational readiness of active duty, reserve, and Army National Guard units through various live-fire training events, maneuver operations, and field exercises. The range contains 26 air defense missile firing sites. Airspace use at the range includes helicopters, fixed-wing aircraft, and remote piloted aircraft (also referred to as unmanned aerial vehicles or systems).

Restricted areas above McGregor Range are currently used by Holloman AFB aircraft, including F-16s and remote piloted aircraft. Remote piloted aircraft operations are generally performed in restricted areas.

1.3 PURPOSE AND NEED FOR PROPOSED ACTION

Some of the training airspaces used by aircraft assigned to Holloman AFB were developed for legacy aircraft more than 30 years ago and do not have the optimum volume, proximity, times, or attributes to support F-16 pilot training missions at Holloman AFB. The purpose of the Proposed Action is to modify existing airspace and establish new airspace in order to provide readily available and adequately sized training airspace with appropriate attributes needed to conduct F-16 pilot training missions.

The need for the Proposed Action is to support required training missions for aircrews stationed at Holloman AFB. The F-16 pilot training mission requires airspace from 500 feet AGL up to FL510 with approximate dimensions of 30 by 80 nautical miles (nm) that is capable of supporting supersonic flight and use of defensive countermeasures. The Proposed Action would increase training efficiencies and provide more scheduling flexibility to compensate for limited availability of existing suitable training airspace.

1.4 INTERAGENCY AND INTERGOVERNMENTAL COORDINATION

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. The Air Force initiated interagency and intergovernmental coordination and consultation during the scoping phase of the EIS in accordance with the requirements of NEPA (40 CFR 1501.7(a)(1)). Interagency Coordination letters were provided to Federal and state regulatory and land management agencies; Congressional, state, and county elected officials; and interested stakeholders to solicit comments on the proposal during the scoping phase (**Appendix B1)** and the Draft EIS phase (**Appendix B2)**.

The Air Force consulted with U.S. Fish and Wildlife Service (USFWS) on the Proposed Action and received their concurrence on the effects determinations for threatened and endangered species beneath the proposed airspace. **Appendix H** provides copies of USFWS correspondence.

The Air Force consulted with and received concurrence from the State Historic Preservation Officers (SHPOs) for Arizona and New Mexico and the Bureau of Indian Affairs concerning cultural resource impacts from the Proposed Action. Likewise, government-to-government consultation with the Tribes and

Pueblos determined the Proposed Action would not affect traditional cultural properties. **Appendix J** provides copies of correspondence with SHPOs, Bureau of Indian Affairs, Tribes, and Pueblos.

1.5 COOPERATING AGENCIES

The Air Force is the proponent for this EIS and the FAA, the NPS, and the BLM are cooperating agencies as defined in 40 CFR 1508.5.

1.5.1 Federal Aviation Administration

Congress has charged the FAA with administering all navigable airspace in the public interest as necessary to ensure the safety of aircraft and the efficient use of such airspace. As the agency with jurisdiction by law and special expertise in the establishment and configuration of SUA, the FAA is participating as a cooperating agency. As a cooperating agency, the FAA has participated in public scoping and has provided critical input in the development of the Proposed Action and alternatives, and preparation of the Draft and Final EIS.

The Air Force's decision on the proposed SUA modifications and activities in the MOA and ATCAA will be documented in an Air Force Record of Decision (ROD). The FAA will review the airspace proposal submitted by the Air Force in accordance with its policies and procedures, including FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, and FAA Order JO 7400.2M, *Procedures for Handling Airspace Matters*, and issue their own ROD. This EIS fulfills the NEPA requirements of the Air Force and the FAA.

1.5.2 National Park Service

National Park units in the vicinity of Holloman AFB and the proposed airspace modifications include Carlsbad Caverns National Park, Gila Cliff Dwellings National Monument, Guadalupe Mountains National Park, and White Sands National Monument. As such, the Air Force requested that the NPS be a cooperating agency. The NPS has provided subject matter expertise during the development of the EIS. Unlike the FAA, the NPS does not have a NEPA requirement or a decision to make on this proposal and will not issue a ROD.

1.5.3 Bureau of Land Management

The BLM is a major Federal land manager beneath the airspace. There are over three million acres of BLM land within the region of influence (ROI) for the proposed airspace modifications. As such, the Air Force requested that the BLM be a cooperating agency. Unlike FAA, the BLM does not have a NEPA requirement or a decision to make on this proposal and will not issue a ROD.

1.6 PUBLIC INVOLVEMENT

The Air Force Environmental Impact Analysis Process (32 CFR 989), FAA Order 1050.1F, and CEQ regulations require an early and open process for identifying significant issues related to a Proposed Action and obtaining input from the public prior to making a decision that could potentially affect the environment. These regulations specify public involvement at various junctures in the development of an EIS, including public scoping prior to the preparation of a Draft EIS and public review of the Draft EIS prior to finalizing the document. The FAA has participated in the public involvement activities for this EIS to satisfy their

public involvement requirement per FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*. Public involvement activities completed to date are summarized in the following sections.

1.6.1 Scoping Review Period

1.6.1.1 Notification

A Notice of Intent (NOI) to prepare an EIS was published in the *Federal Register* on August 25, 2017 (*Federal Register* Volume 82, No. 164, page 40572-40573) (**Appendix A**). The NOI provided a summary of the Proposed Action and the alternatives and invited all interested stakeholders to attend any of the public scoping meetings being held to provide additional information about this proposal. The NOI also listed an Air Force Public Affairs representative for questions or additional information and provided the address for the project website.

A Press Release was issued on September 8, 2017 and separate notices were also run in local newspapers to invite the public and stakeholders to a scoping meeting (**Appendix A**). The notice ran in the following newspapers:

- Alamogordo Daily News: September 1 and 2, 2017
- Current-Argus: September 1 and 2, 2017
- Las Cruces Sun-News: September 1 and 2, 2017
- Silver City Sun-News: September 6 and 8, 2017

Concurrent with the NOI publication, coordination letters with an invitation to the public scoping meetings as well as a general project area map were mailed to elected officials (Congressional, state, and local); Federal, state, and local regulatory agencies; civilian airports; and non-governmental organizations located within the ROI or potentially interested in this proposal. **Appendix B1** (Scoping Coordination Letters) contains copies of the scoping coordination letters.

1.6.1.2 Public Scoping Meetings

Open House style public scoping meetings were held at the locations, dates, and times provided in **Table 1.6-1**. These locations were considered central areas that would potentially be affected by the proposed airspace expansion. Several poster displays were staffed by Air Force representatives at each of these scoping meetings to provide information on the Proposed Action and alternatives and to answer questions. A handout was also provided to meeting participants that explained the NEPA process and how the public could be involved. For convenience, a blank comment form was available for meeting participants to provide written comments.

Table 1.6-1. Public Scoping Meeting Locations		
Date	**Time**	**Location**
September 12, 2017	6:00 pm - 8:00 pm	Carlsbad Public Library 101 S. Halagueno Street Carlsbad, New Mexico 88220
September 13, 2017	6:00 pm - 8:00 pm	Ralph Edwards Auditorium Civic Center 400 W. 4th Avenue Truth or Consequences, New Mexico 87901
September 14, 2017	6:00 pm - 8:00 pm	Hilton Garden Inn Las Cruces 2550 S Don Roser Drive Las Cruces, New Mexico 88011

1.6.1.3 Stakeholder Meetings

In addition to the formal scoping meetings hosted by the Air Force (see **Section 1.6.1.2,** Public Scoping Meetings), Air Force representatives also attended several city council, County Commissioner, and stakeholder meetings to discuss the Proposed Action and alternatives (**Table 1.6-2**). These meetings were well attended by the public and stakeholders who were able to engage with Air Force representatives in a similar manner to the formal scoping meetings. The information presented at the formal scoping meetings was presented or available at these additional stakeholder meetings, and participants were encouraged to provide written comments through the project website or mail.

Table 1.6-2. External Stakeholder Meetings	
Date	**Stakeholder**
October 12, 2017	Otero County Commission Meeting
October 30, 2017	Office of Senator Udall
November 13, 2017	Office of Senator Heinrich, New Mexico State Fish and Wildlife Director and other state agencies (teleconference)
November 15, 2017	Grant County Commissioner Meeting
November 17, 2017	New Mexico Airport Managers Association Briefing
November 21, 2017	New Mexico Military Affairs and Veterans Briefing
December 11, 2017	New Mexico Aviation Division
December 11, 2017	Albuquerque Center
December 12, 2017	Socorro County Commissioners
December 12, 2017	Main Gate United and Cattleman's Group
December 13, 2017	Roswell International Air Center
December 13, 2017	New Mexico State Representative Yvette Herrell; Roswell, Artesia, Carlsbad Airports
December 14, 2017	Catron County Commission Meeting
December 14, 2017	Very Large Array Radio Telescope Facility
January 31 & February 1, 2018	Albuquerque Center
March 7, 2018	Airport Managers for Carlsbad, Artesia, and Roswell
March 8, 2018	John Sanchez, Lt. Governor meeting in Silver City
April 5, 2018	New Mexico Aviation Conference
April 11, 2018	Eddy County Civic and Aviation Leaders
April 12, 2018	Chavez County Commissioner, Mayor of Roswell, and Roswell City Council
June 8, 2018	Col (Ret.) Susan Beck

Legend: Albuquerque Center-Albuquerque Air Route Traffic Control Center.

1.6.1.4 Scoping Comments

The 30-day scoping comment period began on August 25, 2017 and officially ended on September 25, 2017. Comments and stakeholder input received within the designated scoping comment period were considered during the development of the alternatives and the analysis presented in the Draft EIS. Many comments were received after the official closing of the scoping period and were also considered in determining the range of actions, alternatives, and environmental analysis of significant issues in the Draft EIS, to the maximum extent practicable, prior to its publication.

Since a large number of substantive scoping comments were submitted, the Air Force elected to summarize the substantive scoping comments received and provide Air Force responses in this section.

Substantive scoping comments generally include, but are not limited to, comments that identify potential environmental impacts for analysis, identify reasonable alternatives for analysis, identify feasible mitigations for consideration, or otherwise recommend relevant information that should be considered in the development of the Draft EIS. Non-substantive scoping comments generally include, but are not limited to, comments that express a conclusion, an opinion, or a vote for or against the proposal itself, or some aspect of it; that state a position for or against a particular alternative; or that otherwise state a personal preference or opinion. All comments received on this proposal are included in the Administrative Record regardless of when they were received and, regardless of their substantive or non-substantive nature. **Table 1.6-3** provides a summary of the substantive comments or issues received during scoping and how the Air Force addressed those comments in this EIS. This table is meant to provide a summary of the substantive comments and not individual comments verbatim. Some comments were provided by multiple commenters. The substantive comments in the table have been organized into the following broad categories:

- Length of scoping period, meeting locations, advertisements
- Purpose and need, screening criteria, decision-making
- Cumulative actions, effects
- Noise, sonic booms
- Impacts to civil aviation
- Communication
- Use of chaff and flares
- Air quality concerns
- Aircraft mishaps
- Impacts to biological resources from overflights

Table 1.6-3 Summary of Scoping Comments and Air Force Responses		
Comment	**Addressed in EIS**	**If Yes, Location in EIS, If No, Rationale**
Length of Scoping Period, Meeting Locations, Advertisements		
Some commenters requested that the comment period be extended because the website was not functioning.	No	The project website was monitored daily during the scoping process and was always found to be functioning. Further investigation of these comments determined these comments were likely concerning the Holloman AFB Public Affairs website and not the project website.
Several comments stated that no elected officials in their county (of specific note was Grant County) were made aware of the scoping meetings or the plan to prepare an EIS.	Yes	See **Section 1.6.1.1 and Appendix B**.
Commenters requested that a public meeting be held in Otero County since Holloman AFB is located in Otero County. Several comments requested that a public meeting be held in Silver City, New Mexico.	Yes	An official scoping meeting was not held in Silver City, New Mexico or Otero County, however, Air Force representatives attended several City Council meetings in both locations in which the public attended and was able to ask questions and receive information on the project. See **Section 1.6.1.3**. In response to these comments, the Air Force expanded the number and locations planned for the Public Hearings that will be held during the Draft EIS comment period. See **Sections 1.6.1.5 and 1.6.2.2**.
A comment noted that the Silver City Daily Press should be used for advertisements in the area, not the Sun News.	Yes	The newspaper notification for the scoping meetings was advertised in the Silver City Sun News. For the Draft EIS and the Public Hearing notification, the Air Force changed the publication to the Silver City Daily Press. See **Section 1.6.2.1**.
Purpose and Need, Screening Criteria, Decision-making		
Several comments questioned the need for additional airspace when so much airspace already exists within New Mexico. Many comments indicated that use of WSMR needed to be evaluated. In addition, it was noted that much of the airspace (specifically White Sands Missile Range) is not utilized on weekends and, therefore, the analysis should focus on more efficient use of existing airspace instead of creating new airspace.	Yes	See **Sections 1.2.1, 1.2.3, 2.3.1, and 2.6.2**.
Additional comments stated that additional alternatives should include WSMR, Beak MOA, Bronco MOA, and Valentine MOA.	Yes	See **Sections 1.2.1, 1.2.3, 2.4.1, 2.4.4, and 2.6.2**.

Table 1.6-3 Summary of Scoping Comments and Air Force Responses (cont.)		
Comment	**Addressed in EIS**	**If Yes, Location in EIS, If No, Rationale**
Purpose and Need, Screening Criteria, Decision-making (cont.)		
Comments stated that the decision-making process should be provided to the public. The full set of criteria used for making a decision should be published.	Yes	A proposed action is developed based on a defined purpose and need. From that purpose and need, the Air Force identifies selection standards that aids the team in developing reasonable alternatives. These alternatives are then coordinated with our internal and external stakeholders through reviews, scoping, and public hearings. Through the analyses, mitigations as necessary are identified that aid in minimizing the potential impacts of the Proposed Action and alternatives. Once the EIS process has been completed, Air Force leadership weighs the needs of the mission against the potential environmental impacts and publishes a ROD. See **Sections 1.3, 2.3, 2.4, 2.5, 2.6, and 2.7**.
The scoping period for this EIS occurred concurrently with the comment period for another proposed action lead by Holloman AFB concerning F-16 training within R-5111 C/D at WSMR. The area of potential impact for Alternative 2 of this EIS and the R-5111 project are in close proximity. In addition, both actions concern F-16 operations out of Holloman AFB. Most of the public and stakeholders that attended the Truth or Consequences, New Mexico meeting and/or submitted comments confused the two projects. Multiple comments stated that the Optimization EIS and the R-5111 EA should be considered together in one document.	Yes	See **Section 5.1.**
Comments concerned the cumulative effect of expanding airspace (specifically the proposed Lobos MOA and Cato and Smitty MOAs) in an area with contiguous MOAs – Morenci, Reserve, Outlaw, and Jackal. The proposed expansion would create a large contiguous block of airspace in Arizona and New Mexico.	Yes	See **Section 5.2.1.**
Comment concerned Alternative 2 and cumulative impacts associated with Taiwanese Air Force F-16 Relocation and Adversary Air to "what is widely considered the wildest area in New Mexico (Datil-Mogollon Section of New Mexico and the Mogollon Rim of Arizona)".	Yes	See **Section 5.1**.
Several comments stated the Air Force must analyze other cumulative actions regardless of the action proponent and some of these comments provided a list(s) of specific projects.	Yes	See **Section 5.0**.

Table 1.6-3 Summary of Scoping Comments and Air Force Responses (cont.)		
Comment	**Addressed in EIS**	**If Yes, Location in EIS, If No, Rationale**
Noise, Sonic Booms		
Many comments raised concerns about the potential noise impacts, particularly sonic booms, from F-16 operations, and requested specific analysis and calculations on the noise impacts for overflights and sonic booms.	Yes	See **Sections 4.3, 4.5** and **Appendix F.**
Many commenters were concerned about the impacts to local structures, such as the Caballo Lake Dam at Elephant Butte Lake and the Carlsbad Caverns, and impacts to species such as bats, migratory birds, and waterfowl, as well as domestic animals (including specific impacts to ranching operations and horseback riding).	Yes	See **Sections 4.5 and 4.11.**
Several comments indicated that the area economy (specifically, Truth or Consequences and Silver City) is based on tourism from recreational areas (i.e. Elephant Butte, National Forests, National Parks) that could be severely impacted by an increase in noise.	Yes	See **Sections 3.7, 3.8, 4.7, and 4.8**.
Another area of concern was the health impact to residents from the increased noise, specifically veterans in nursing homes, children, and other residents with health concerns.	Yes	See **Sections 3.3.1.2, 3.3.1.3, 4.3.**
It was requested that a vibration study be performed for noise/sonic booms as part of this project to determine the impacts to structures and public health.	No	The results of the Noise Analysis presented in this EIS, specifically for supersonic noise from sonic booms, do not indicate the need for a vibration study. The anticipated sound pressure from this noise would not be at a level expected to damage structures.
Comments noted the inadequacy of cumulative noise metrics (depicted as DNL), Land Use Compatibility Guidelines, and Noise Dose-Response Relationships for land uses under the proposed Lobos MOA. Comments suggest the 10-dB penalty commonly used for nighttime operations should be applied to all training activity in sensitive areas such as Wilderness Areas. Comments noted DNL does not provide information on what someone actually hears during an overflight.	No	DNL is the U.S. Government standard for modeling the cumulative noise exposure and assessing community noise impacts. This EIS uses the best available noise modeling programs that have been accepted by the U.S. Government, MR_NMAP and BOOMAP 96, to calculate the potential noise exposure from the Proposed Action. Since the cumulative metric does not describe the "noise" that an observer may experience from an individual overflight, this EIS also presents the single event metrics for representative overflights. See **Sections 3.3 and 4.3**.
Many comments were concerned with noise impacts to sensitive areas such as Wilderness Areas, Carlsbad Caverns, recreation areas, cultural resources, and Native American ruins (specifically the Gila Cliff Dwellings).	Yes	See **Sections 3.6, 3.7, 3.11, 4.3, 4.6, 4.7, and 4.11**.

Table 1.6-3 Summary of Scoping Comments and Air Force Responses (cont.)		
Comment	**Addressed in EIS**	**If Yes, Location in EIS, If No, Rationale**
Impacts to Civil Aviation		
Comments concerned the impact to local airports that would be beneath proposed airspace, specifically those associated with the proposed Lobos MOA. Comments noted the EIS must consider the impact on those specific airports, particularly their access limitations for IFR aircraft. Aircraft flying under VFR can also be discouraged to fly to airports under SUA.	Yes	See **Sections 3.2, 4.2, Appendix D1, Appendix D2, and Appendix D3**.
Comment requested altitude stratification in proposed MOAs, specifically recommended mitigation of having a floor of 12,500 feet MSL in the proposed Lobos MOA to limit impact to civil aviation in this area.	Yes	Alternative 3 was developed after the scoping period in response to concerns and comments regarding the proposed Lobos Low MOA. Alternative 3 would not include the Lobos Low MOA; therefore, the floor of the MOA in this area would be 13,500 feet MSL. See **Section 2.8.3**.
Air Force should release SUA no longer needed back to the National Airspace System. Air Force should consider the long-term needs and utilization of surrounding regional SUA as it may indicate additional MOAs are not needed.	Yes	See **Sections 2.8.1.1, 2.8.2.1, and 2.8.3.1**.
Comment concerned the need for the Air Force to address the economic impact of general aviation in New Mexico. General aviation is vital to many aviation and non-aviation businesses in New Mexico, which use aircraft to move personnel, equipment, and products.	No	Limited or minimal impacts to civil aviation is of significant importance to this proposed action. One of the defined selection standards for determining the reasonable alternatives to include in this EIS was "Standard 4: Limit Impacts to Civil Aviation". The EIS provides an in-depth analysis for the potential impacts to civil aviation. The results of that analysis did not indicate a significant impact to civil aviation that warranted further detailed analysis on the secondary economic impacts to the aviation industry in New Mexico. This SUA proposal has been coordinated in detail with the FAA as a cooperating agency. See **Sections 2.3.4, 2.4, 3.2, 4.2, and Appendix D1, Appendix D3**.
There was a request to raise the floor of the proposed Talon Low MOAs to 700 feet AGL (as opposed to 500 feet AGL) to increase the distance between Air Force flights and pipeline patrol aircraft. General concern for the patrol of the oilfields in southeast New Mexico.	Yes	The proposed floor of the Talon Low MOA is based on the F-16 training syllabus. The discussion of this need and the potential impacts to civil aviation are addressed in the EIS. See **Sections 2.2.2, 4.2.1.1, and Appendix D3**.
Specific concerns were provided about the approach procedures to the Carlsbad and Artesia airports.	Yes	See **Sections 3.2.2.1, 4.2.1, Appendix D1, and Appendix D3**.

Table 1.6-3 Summary of Scoping Comments and Air Force Responses (cont.)		
Comment	**Addressed in EIS**	**If Yes, Location in EIS, If No, Rationale**
Impacts to Civil Aviation (cont.)		
Concerns about the impact of proposed Talon Low MOAs to fuel and distance to routes into Carlsbad airport and initial approach fixes for arrivals.	Yes	See **Sections 4.2.1 and Appendix D3**.
Comment requested that the Air Force install an airport surveillance radar in the Artesia/Hobbs corridor to fill the existing low-level radar gap in the proposed Talon Low MOA areas.	Yes	The Air Force has worked with FAA as their cooperating agency to develop measures that would reduce or minimize the potential impact to civil aviation, to include the purchase of FAA communications equipment needed to support air traffic control radio coverage of the Talon Low MOA area. See **Section 7.2**.
Comments included concerns about impacts to air ambulance aircraft that currently pass through the proposed low MOAs.	Yes	See **Sections 2.2.**1 **and 4.2.**
Concern that the proposed Talon High C MOA would make direct flights from Roswell to Midland, San Angelo, San Antonio, Austin and Houston, Texas difficult. Specifically if Bronco 3 and 4 MOAs were in use.	Yes	A mitigation measure has been included with Alternative 1 in which the Talon High C MOA and the Bronco 3 MOA would not be activated at the same time. In addition, Alternative 3 was created in response to scoping comments that does not include Talon High C. See **Sections 2.8.1.1, 2.8.3.1, and 7.2.**
Concern about commercial flights from Roswell, New Mexico to Dallas, Texas that cross Bronco 3 if traveling direct. If Bronco 2 was abandoned this would help by allowing a slight deviation to the north and better use of V14 and J166. Also consider abandoning Bronco 1 to allow direct flights from Roswell, New Mexico to Oklahoma City, Oklahoma.	Yes	See **Sections 2.8.1.1, 2.8.2.1, and 2.8.3.1.**
Communication		
Commenters mentioned frustration over where to submit noise and other overflight-related complaints in the future since there are many Air Force users in the area – Holloman AFB, Luke AFB, Arizona ANG at Tucson International Airport, Davis-Monthan AFB, Kirtland AFB, or other installations – and lack of responsiveness to some of their concerns involving F-16 overflights since scoping for the proposed action began..	Yes	See **Section 7.2.**

Table 1.6-3 Summary of Scoping Comments and Air Force Responses (cont.)		
Comment	**Addressed in EIS**	**If Yes, Location in EIS, If No, Rationale**
Use of Chaff and Flares		
Commenters raised the issue of chaff drift and the potential for chaff to be dispersed beyond MOA boundaries depending upon the altitude of release and the wind.	Yes	See **Sections 2.2.4 and 3.1.3**.
Comments also pointed out chaff clouds occasionally show up on weather radar and that once power was disrupted in San Diego when chaff drifted into utility lines.	Yes	The interaction of chaff and radar is discussed in the EIS. See **Sections 2.2.4.1, 3.10.2.3, and 4.10.1.3.** The disruption of power from chaff was documented in 1985 in San Diego. A newspaper article in the Los Angeles Times (January 16, 1985) indicated this was the result of a mechanical malfunction from a Navy aircraft right after takeoff at Miramar Naval Air Station that released several packages of chaff adjacent to a nearby power substation. This occurrence was a very isolated situation and not part of normal training activities. However, the Air Force avoids using chaff in populated areas to reduce the potential for situations such as this. Based on the amount of chaff proposed in this EIS and the rural environment of the area, normal chaff use as proposed is not expected to result in power disruptions.
A comment citing to three major reports or documents on chaff use in the late 1990s stated that the gaps in information and outstanding questions make it difficult to determine chaff's impacts on waters and species. The comment points out that a 1997 Air Force study, *Environmental Effects of Self-Protection Chaff and Flares*, mentioned the following scenarios as calling for site-specific information or analysis: 1) very small confined bodies of freshwater that support sensitive aquatic species; 2) water bodies that support significant waterfowl, are used by migrating waterfowl, or provide habitat for threatened or endangered aquatic species; and 3) visible debris impacts to potentially sensitive areas such as Wilderness Areas, Wild and Scenic Rivers, parks, and outstanding visual resource areas.	Yes	A Supplement to the referenced 1997 document, entitled *Supplemental Report; Environmental Effects of Training with Defensive Countermeasures,* was developed in 2011. The results of that study address these concerns and are used throughout the Draft EIS. See **Sections 2.2.4, 3.1.3, 3.12.2.2, 4.5.1.2, and 4.12.1.2**.
At least one comment brought up the issue, raised but unanswered in a 1999 panel report commissioned by DoD, whether chaff upon discharge gets fragmented into inhalable particles (PM10 or smaller) or whether once such particles have settled on the ground it is possible for them to be re-suspended in the air again.	Yes	See **Section 4.4.**

Table 1.6-3 Summary of Scoping Comments and Air Force Responses (cont.)		
Comment	**Addressed in EIS**	**If Yes, Location in EIS, If No, Rationale**
Use of Chaff and Flares (cont.)		
Several commenters raised concerns about the Air Force use of defensive counter-measure flares due to the potential of wildfire risk under existing MOAs and, more specifically, as a result of the proposed establishment of the Lobos MOA (Alternative 2) over the Gila National Forest and Wilderness Areas.	Yes	See **Sections 2.2.4.2, 3.10.2.3, 4.5.1.2, and 4.10.1.3**.
Commenters raised concerns about the potential for injury from dud flares resulting from failed ignition of a flare and creating falling debris, and accidental detonation of a "dud" flare inadvertently found on the ground – all of which pose safety risks under existing and proposed MOAs.	Yes	See **Sections 2.2.4.2 and 4.10.1.3**.
Dud flares and flares that have not been fully consumed are potentially explosive when mixed with water. This raises questions of potential hazards and chemical effects from flares falling into water bodies, as well as resulting impacts on biota. If a dud flare lands on the ground, it may react with latent moisture or it may remain intact, raising issues of chemical effects on soil and potential indirect impacts on groundwater and vegetation	Yes	See **Sections 3.12.2.2 and 4.12.1.2**.
Wildlife issues include whether light from flares might affect the vision of nocturnal animals.	No	Proposed nighttime operations are expected to be minimal (10 percent of proposed operations). Use of flares after dark would also be minimal. Flares burn for approximately 3 to 5 seconds and would be released at a relatively high altitude (no less than 2,000 feet AGL). Based on the short time the flare would be ignited and the altitude release, it is not expected that this would affect the vision of nocturnal animals.
Dud flares and flare debris may accumulate in areas underlying training airspace and result in land use and visual impacts.	Yes	See **Tables 3.1-2 and 3.1-3 in Section 3.1.3** for estimated dispersion/distribution of chaff and flare residual materials.
Concerning wildfires ignited by flares, comment requested protocol be identified for and measures to be taken to address wildfires started by chaff and flares, including reimbursement to the land management agency that responds to the fire.	Yes	See **Sections 3.10 and 4.10**.

Table 1.6-3 Summary of Scoping Comments and Air Force Responses (cont.)		
Comment	**Addressed in EIS**	**If Yes, Location in EIS, If No, Rationale**
Air Quality Concerns		
Another area of major concern was the impact to local air quality from the increased training operations. Some commenters raised concern about condensation trails (commonly referred to as "contrails") from military jet overflights and expressed their perception that they involve the release of harmful chemicals (variously referred to as chemical trails or "chemtrails"). At least one commenter reasoned why these contrails (referred to as "vapor trails") should not be concerning.	Yes	See **Sections 3.4 and 4.4**.
Comments stated the EIS must address: emissions in nonattainment areas and develop mitigation measures for those; visibility concerns in mandatory Class I areas; and greenhouse gases.	Yes	See **Sections 3.4, 4.4 and Appendix G**.
Aircraft Mishaps		
Comments stated that EIS should identify aircraft crash clean up and reclamation procedures, including agency coordination activities since the airspace occurs over public land. Procedures should emphasize use of existing roads rather than creation of new roads or routes. Of particular concern would be crashes in Wilderness Study Areas, Wilderness Areas, or National Monuments.	Yes	See **Section 4.10.1.1**.
Comments stated that in instances of fuel spills associated with a crash, clean up procedures could include soil testing and removal, fencing, re-contouring, soil stabilization, seeding, and posting signs.	Yes	See **Section 4.12.1.1**.
Analysis should include current number of crashes, the number of those crashes that occurred on public lands, and acres of disturbance for each crash. Analysis should present a predicted number of crashes and discuss implications of potential increase in crashes from increased sorties.	Yes	See **Section 4.10.1.1**.
Comments recommended the Air Force provide special training to first responders, specifically for dealing with hydrazine and composite materials.	No	The potential for an aircraft mishap or crash would be minimal, but if one were to occur, the procedures for ensuring protection of life and property would be site-specific and refined on a case by case basis. Crash response procedures are discussed in **Sections 3.10.2.1 and 4.10.1.1.** Hydrazine and composite materials are discussed in **Sections 3.12.2.1 and 4.12.1.1**.

Table 1.6-3 Summary of Scoping Comments and Air Force Responses (cont.)		
Comment	**Addressed in EIS**	**If Yes, Location in EIS, If No, Rationale**
Impacts to Biological Resources from Overflights		
Many comments concerned the impact to wildlife from aircraft overflights. Of specific concern were bats if flights would occur at predawn or dusk and migratory birds. Other notable concerns were for Mexican gray wolves, bighorn sheep, Mexican Spotted Owls, and birds of prey.	Yes	See **Sections 3.5 and 4.5.**
Some comments concerned range management concerns, specifically, noise impacts to lambs and ewes. Comments noted that noise can cause animals to abandon their young and even mortality for the lamb or ewe.	Yes	See **Section 4.5.1.2**

Legend: AFB-Air Force Base; AGL-above ground level; ANG-Air National Guard; dB-decibel; DNL-Day-Night Average Sound Level; DoD-Department of Defense; EA-Environmental Assessment; EIS – Environmental Impact Statement; FAA-Federal Aviation Administration; GHG-greenhouse gas; IFR-Instrument Flight Rules; MOA-Military Operations Area; MSL-mean sea level; PM_{10}-particulate matter less than or equal to 10 micrometers; ROD-Record of Decision; SUA-Special Use Airspace; U.S.-United States; VFR-Visual Flight Rules; WSMR-White Sands Missile Range.

1.6.1.5 Project Changes as a Result of Scoping

Based on the scoping comments, meetings with elected officials and other local representatives in New Mexico, and discussions with regulators and other stakeholders, the Air Force made several changes to the project. These changes affected the Proposed Action and alternatives and the planned public involvement activities for the Draft EIS phase.

Changes to Proposed Action and Alternatives in the Draft EIS

At the time of scoping, the exact location and dimensions of the proposed airspace modifications considered in Alternative 2 were not known. The Air Force presented the general area under consideration and solicited feedback during the scoping process. The Air Force took into consideration the comments received during the scoping process and feedback provided during stakeholder meetings when developing the specific dimensions and location for the proposed airspace modifications in this area. See **Section 2.8.2 (**Alternative 2: Cato, Smitty, and Lobos MOAs) for details.

The Air Force has included a new alternative in the Draft EIS that was not presented during the scoping meetings (see **Section 2.8.3**, Alternative 3: Talon, Cato, Smitty, and Lobos MOAs). The third alternative would result in fewer training operations in any one airspace area as well as establishing a higher floor for some of the new airspace in response to comments received during the scoping process concerning low-level overflights over noise sensitive areas and populated places.

Changes to Public Involvement Activities

During the scoping period, there were several comments concerning the geographic coverage of the formal scoping meetings hosted by the Air Force. In response, the Air Force expanded the range for the public hearings planned to take place after publication of the Draft EIS. These hearings will take place in eight locations throughout southern New Mexico (see **Section 1.6.2.2,** Public Hearings). Newspaper notifications for the public hearings were expanded to cover a wider geographic range.

1.6.2 Draft EIS Public Review Period

1.6.2.1 Notification

A Notice of Availability of the Draft EIS was published in the Federal Register on November 1, 2019 and also in the local newspapers identified in **Table 1.6-4** (**Appendix A**). The Draft EIS was posted on the project website for public review. In addition, paper copies of the Draft EIS were provided to the local libraries listed in **Table 1.6-5**. All stakeholders and interested persons that requested a copy of the Draft EIS during the scoping period were provided a copy.

Table 1.6-4. Newspaper Notifications for Draft EIS

Name	General Distribution Area	Date of Publication
Artesia Daily News	Artesia, New Mexico	November 7, 2019 November 14, 2019
Silver City Daily Press	Silver City, New Mexico	November 1, 2019 November 2, 2019
Las Cruces Sun News	Las Cruces and Southern New Mexico	November 1, 2019 November 2, 2019
Carlsbad Current-Argus	Carlsbad, Artesia, Loving and all of Eddy County	November 1, 2019 November 2, 2019
Roswell Daily Record	Pecos Valley	November 1, 2019 November 2, 2019
El Defensor Chieftan	Socorro County, New Mexico	November 7, 2019 November 14, 2019
Sierra County Sentinel	Truth or Consequences, New Mexico	November 1, 2019 November 8, 2019
Hobbs New Sun	Lea County and Southeast New Mexico	November 1, 2019 November 2, 2019
Albuquerque Journal	New Mexico Statewide	November 1, 2019 November 2, 2019

Legend: EIS-Environmental Impact Statement.

Table 1.6-5. Libraries Provided Draft EIS

Organization Name	Address	City
Hobbs Public Library	509 North Shipp Street	Hobbs, NM 88240
Alamogordo Public Library	920 Oregon Avenue	Alamogordo, NM 88310
Main Library	325 Library Lane	Truth or Consequences, NM 87901
Carlsbad Public Library	101 S. Halagueno Street	Carlsbad, NM 88220
Thomas Branigan Memorial Library	200 E Picacho Avenue	Las Cruces, NM 88001
Silver City Public Library	515 W College Avenue	Silver City, NM 88061
City of Roswell Public Library	301 N Pennsylvania Avenue	Roswell, NM 88201
Socorro Public Library	401 Park Street	Socorro, NM 87801
Ahrens Memorial Library	596 W 4th Street	Holloman AFB, NM 88330
Artesia Public Library	205 W. Quay Avenue	Artesia, NM 88210
Ruidoso Public Library	107 Kansas City Rd.	Ruidoso, NM 88245
Lordsburg Hidalgo Library	208 E. 3rd St.	Lordsburg, NM 88045
Marshall Memorial Library	110 S Diamond Street	Deming, NM 88030

Legend: AFB-Air Force Base; EIS-Environmental Impact Statement.

1.6.2.2 Public Hearings

Public Hearings were held at the date, time, and locations listed in **Table 1.6-6**. The public hearings began with a 30-minute open house session with poster displays staffed by Air Force representatives. After the

open house session, the formal public hearing began with a presentation by the Air Force on the Proposed Action and alternatives and the findings provided in the Draft EIS. After the presentation, the Hearing Officer facilitated a verbal comment period, which was recorded by a court reporter. All verbal comments, and those provided in writing during the defined comment period, were reviewed and considered during the development of this Final EIS.

Table 1.6-6. Public Hearing Locations

Date	Time	Location
November 18, 2019	5:30 pm - 8:30 pm	Hilton Garden Inn Hobbs 4620 Lovington Highway Hobbs, New Mexico 88240
November 19, 2019	5:30 pm - 8:30 pm	Roswell Convention and Civic Center 912 N. Main Street Roswell, New Mexico 88201
November 20, 2019	5:30 pm - 8:30 pm	Artesia Public Library 205 West Quay Avenue Artesia, NM 88210
November 21, 2019	5:30 pm - 8:30 pm	New Mexico State University Gymnasium, Room 103 1500 University Drive Carlsbad, New Mexico 88220
December 2, 2019	5:30 pm - 8:30 pm	Macey Center 801 Leroy Place Socorro, New Mexico 87801
December 3, 2019	5:30 pm - 8:30 pm	Commission Chambers 405 W. Third Street Truth or Consequences, NM 87901
December 4, 2019	5:30 pm - 8:30 pm	Grant County Chamber of Commerce 3031 Highway 180 East Silver City, NM 88061
December 5, 2019	5:30 pm - 8:30 pm	Ramada by Wyndham Las Cruces Hotel and Conference Center 201 East Avenue Las Cruces, NM 88005

1.6.2.3 Draft EIS and Hearing Comments

The public comment period for the Draft EIS began on November 1, 2019 with publication of the Notice of Availability in the Federal Register (**Appendix A**). The Air Force received a request from the New Mexico Congressional Delegates to extend the public comment period. Based on this request the Air Force extended the public comment period for the Draft EIS until January 31, 2020 (for a total of 91 days). A Federal Register notice announced the public comment period extension (**Appendix A**). Comments were received via the website, U.S. Postal Service, hand-written in person at public hearings, or via the transcript from the public hearings. All comments and stakeholder input received during this designated timeframe were considered in the development of the Final EIS.

While a substantial number of comments were received, the vast majority of these constituted several form letters or variations of those letters and were not unique substantive comments. Generally, substantive comments are regarded as those specific comments that challenge the analysis, methodologies, or information in the Draft EIS as being factually inaccurate or analytically inadequate; that identify impacts not analyzed or developed and evaluate reasonable alternatives or feasible mitigations not considered by

the Air Force; or that offer specific information that may have a bearing on the decision, such as differences in interpretations of significance, scientific, or technical conclusions, or cause changes or revisions in the proposal. Non-substantive comments, which do not require a specific Air Force response, are generally considered to be those comments that are non-specific; express a conclusion, an opinion, agree, or disagree with the proposals; vote for or against the proposal itself, or some aspect of it; that state a position for or against a particular alternative; or that otherwise state a personal preference or opinion.

Appendix C provides detailed summaries of substantive comments and the Air Force's responses to those comments. None of the comments resulted in substantial changes to the text of the EIS; the analysis methodologies or conclusions; or the alternatives analyzed in the EIS, but some of the comments did result in updated information in the Final EIS. The following were the most prevalent comments received from the public on the Draft EIS (this is not an all-inclusive list, please see **Appendix C** for detailed summaries):

- Public involvement and the lack of scoping meetings in Silver City.
- Expand reasonable alternatives to include use of simulators and use of WSMR airspace.
- Overall need for the Proposed Action since the Draft EIS states the current airspace is "adequate".
- Request to clarify the need for the additional 10,000 sorties in the proposed airspace and clarification on sortie numbers used throughout the EIS.
- Transient use of the proposed MOAs.
- Questions about which alternative was the Preferred Alternative.
- Concern that the airspace is being created to train foreign military and that once airspace is created it would lead to expanded training operations not defined in the EIS.
- Concern about noise from aircraft (health, hearing, and non-auditory impacts), sonic booms and possible damage to structures, inadequacy of the metrics used and request for better data/clarification on ambient noise conditions in the wilderness and rural areas.
- Incompatibility of military training activities with the purposes of Wilderness Areas.
- Concern about impacts to wildlife, domestic animals, and migratory birds.
- Concern about the economic impacts to recreation and tourism industries, housing values, and aviation industry in the west.
- Concern about civil air traffic throughout the proposed airspace, and approach procedures at local airports.
- Concern about chaff and flare usage, impacts to public health, air and water pollution, and fire risks.
- Safety concerns from aircraft mishaps.
- Cumulative impacts from creating contiguous block of airspace in southern NM.
- Questions about the enforcement of restrictions.
- Lack of analysis of overflight areas between the base and the MOAs.

1.6.3 FAA Aeronautical Proposal Circularization

The FAA processes requests for the establishment of SUA in accordance with FAA Order JO 7400.2M, *Procedures for Handling Airspace Matters*. As part of the process, the FAA publicly circularized the proposed airspace to solicit information to assist in determining what effect it would have to navigable airspace. No comments were received during the circularization that required consideration in the Final EIS. Only one comment was received; the comment requested a better graphic of the aeronautical proposal and this was provided directly to the commenter.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 INTRODUCTION

This chapter describes the Proposed Action, alternatives considered to meet the purpose of and need for the Proposed Action, and the selection standards used to select viable alternatives.

2.2 PROPOSED ACTION

Under the Proposed Action, the Air Force would modify the dimensions and altitudes of training airspace in the vicinity of Holloman AFB. The proposed airspace modifications would result in appropriately sized and configured training airspace needed to conduct F-16 pilot training activities. The modified airspace would improve airspace availability and scheduling flexibility for training activities.

2.2.1 Training Airspace

Congress has charged the FAA with administering all navigable airspace in the public interest as necessary to ensure the safety of all users of the airspace and the efficient use of such airspace. As a cooperating agency, the FAA provided consultation to the Air Force in the development of the Proposed Action and alternatives to ensure compliance with airspace regulations. FAA regulations are defined in 14 CFR Chapter 1, Subchapter E, Parts 71-77, *Federal Aviation Administration, Department of Transportation*. The Proposed Action includes the modification or creation of ATCAAs and MOAs.

ATCAAs are not published on aeronautical charts and exist only when made available for military use by the FAA and can be authorized above 18,000 feet MSL. By definition, ATCAAs can be activated when not needed for other purposes. Furthermore, civilian and commercial traffic may transit an active ATCAA under FAA air traffic control guidance and procedures. The dimensions (horizontal and vertical) of the proposed ATCAAs and procedures for aircraft operation within the ATCAAs would be defined in a Letter of Agreement between the FAA and the Air Force. Once established, the Air Force could request use of the ATCAA for training purposes at specific times in accordance with the Letter of Agreement.

MOAs, situated below 18,000 feet MSL, comprise SUA designated by the FAA to identify areas where the military conducts nonhazardous operations and to separate these flight activities from non-participating air traffic. Non-participating civil and military aircraft flying under visual flight rules (VFR)[6] may transit an active MOA by employing see and avoid procedures. When operating under instrument flight rules (IFR)[7], non-participating aircraft must receive air traffic control clearance to enter an active MOA. Rules defining aircraft right-of-way are defined in 14 CFR 91.113:

> *"When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft. When the rule of this section [Section 91.113] gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear."*

[6] Visual Flight Rules (VFR) are the regulations that specify the cloud and visibility limitations for aircraft operating with visual reference. The basic premise of VFR is that the pilot would be able to navigate and manipulate the aircraft with external cues only.

[7] Instrument Flight Rules (IFR) are a set of regulations that dictate how aircraft are to be operated when the pilot is unable to navigate using visual references under VFR.

An aircraft in distress has the right-of-way over any other air traffic. Similar to an aircraft in distress, Life Flights are given higher priority and airspace access as necessary.

When multiple military aircraft are operating in a MOA, they often have to operate in close proximity and with close coordination. In these situations, it may be impractical for air traffic controllers to ensure safe separation of the aircraft. Military Authority Assumes Responsibility of Separation of Aircraft (MARSA) are procedures used when military aircraft must operate under these conditions. MARSA procedures delegate the separation authority temporarily to the military authority operating the training flights. Once these operations have concluded, the military relinquishes the authority back to air traffic control (FAA Order JO 7110.65X, *Air Traffic Control*[8]).

Low altitude avoidance and noise sensitive areas for the proposed airspace would be charted and published by the FAA and/or identified in the local flight instructions for pilots. Pilots would be instructed to avoid these locations by horizontal and vertical distances to enhance flight safety, noise abatement, and environmental sensitivity. In accordance with FAA minimum safe altitudes (14 CFR 91.119), aircraft must avoid congested areas of a city, town, or settlement or any open-air assembly of people by 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. Outside congested areas, aircraft must avoid persons, vessels, vehicles, or structures by 500 feet.

As defined in the FAA Aeronautical Information Manual (paragraph 7-4-6), pilots are requested to maintain a minimum altitude of 2,000 feet above the surface of the following: National Parks, Monuments, Seashores, Lakeshores, Recreation Areas, and Scenic Riverways administered by the NPS; National Wildlife Refuges, Big Game Refuges, Game Ranges, and Wildlife Ranges administered by the USFWS; and Wilderness and Primitive areas administered by the U.S. Forest Service (USFS).

2.2.2 Training Operations

2.2.2.1 Proposed Sorties

The proposed sorties for each alternative remains unchanged from those presented and analyzed in the Draft EIS; this section (Section 2.2.2.1, *Proposed Sorties*) was added to the Final EIS to provide clarification on the proposed sortie numbers based on comments received during the Draft EIS public comment period (see also Appendix C1: Draft EIS Comment Summary and Responses).

To determine the maximum possible use of optimized airspace under this Proposed Action, Holloman AFB took into consideration the sorties occurring within SUA currently and the potential sorties attributable to potential future growth. There are two F-16 squadrons currently at Holloman AFB that currently perform a total of approximately 9,000 sorties distributed throughout the existing MOAs and restricted areas (see **Table 1.2-1**). To produce more pilots to meet the shortage and address the lack of suitable airspace, the training sorties have been reduced to satisfy only the basic requirements of Initial Qualification Training before the pilots are placed with their operational squadrons at other installations where they complete their training. It was assumed the ideal sortie count would be closer to 10,000 under normal operations. An additional two squadrons may be relocated to Holloman AFB at some point in the future (Air Force 2017), although there is no projected date or timeline. With the existing squadrons and the anticipated possible future squadrons, the total sortie count is estimated to be 20,000 annually (rounded). Approximately half of those sorties could be supported in existing MOAs and restricted areas (see **Table 1.2-1**). Therefore,

[8] Current order is 7110.65Y, effective June 20, 2019.

using a conservative estimate, the proposed optimized airspace would be expected to support approximately 10,000 F-16 sorties (plus non-Holloman based transients); the total operations within optimized airspace would not exceed this estimate (10,000 F-16 sorties plus transients). For the short-term future, sorties within proposed optimized airspace would likely be much less because there are only two squadrons at Holloman AFB.

As defined in FAA Order JO 7400.2M, *Procedures for Handling Airspace Matters*, Chapter 21, Paragraph 21-1-7 "to ensure optimum use of the airspace, the using agencies must, where mission requirements permit, make their assigned SUA available to the activities of other military units on a shared basis." Therefore, Holloman AFB must account for potential transient aircraft use of the proposed airspace to ensure that the full potential effects are represented in the analysis. The specifics on the potential transient use are unknown (exact number of sorties, type of aircraft, etc.), therefore, a reasonable estimate of transient use has been included and is described in more detail in each alternative later in this chapter.

2.2.2.2 Type of Training

All F-16 activities requiring the use of a restricted area would continue to occur in the restricted areas currently available at WSMR and Fort Bliss (R-5107, R-5103, and R-5111). It should be noted that training that includes the use of live ordnance is considered a hazardous activity that must be performed in an approved restricted area. The Proposed Action does not include training that involves the use of live ordnance.

Training activities to be conducted in the proposed airspace are detailed in **Table 2.2-1.** It should be noted that this table does not represent the full F-16 pilot training syllabus, but rather those activities that can occur outside of a restricted area in MOAs. Training would be dispersed throughout the proposed airspace and occur at various altitudes with most of the training occurring above 10,000 feet AGL. **Table 2.2-2** presents the typical altitude use for F-16 pilot training, these percentages may vary slightly with the Proposed Action. The training activities last between 30 minutes to an hour and require the pilots to operate within a large amount of airspace. A minimum of 20 by 20 nm is required for some activities, while other activities require up to 30 by 80 nm (see **Table 2.2-1**). Airspace activity would not be continuous, but could occur at any time during the existing Holloman AFB operation hours from 7:00 a.m. to 10:00 p.m., Monday through Friday.

Some operations must be conducted after dark so that pilots can meet nighttime training requirements. Approximately 10 percent of the proposed sorties would occur at night. For purposes of training, night operations consist of those performed any time after sunset. Due to penalties assigned to noise levels, "environmental night" extends from 10:00 p.m. to 7:00 a.m. Aircraft operating from Hollman AFB try to fulfill the annual night flying requirements without flying during environmental night, but some of the night flying could occur at least partially during environmental night, particularly during the summer months when the sun sets much later. Use of the proposed airspace outside of normal operating hours would occur through the Notice to Airmen (NOTAM) process[9] as is the current practice.

[9] A Notice to Airmen (NOTAM) is a notice to alert aircraft pilots of potential hazards along a flight route or a location that could affect the safety of a flight.

Table 2.2-1. F-16 Pilot Training Activities to Occur in Proposed Airspace

Activity	Required Airspace			Time in Airspace
	Dimensions (nm)	Floor	Ceiling	
Transition	20 by 20	10,000 feet AGL	FL300	0.5 to 1.0 hour
Basic Fighter Maneuvers and Advanced Handling Characteristics	30 by 30	5,000 feet AGL and ≤ 11,000 feet MSL	FL300	0.5 to 1.0 hour
Air Combat Maneuvers	40 by 30	5,000 feet AGL and ≤ 11,000 feet MSL	FL300	0.5 to 1.0 hour
Tactical Intercepts 1 v 1*	25 by 40	15,000 feet MSL	FL400	0.5 to 1.0 hour
Tactical Intercepts 2 v 2*	30 by 60	15,000 feet MSL	FL400	0.5 to 1.0 hour
Tactical Intercepts 4 v X*	30 by 80	15,000 feet MSL	FL400	0.5 to 1.0 hour
Air Combat Tactics	35 by 85	500 feet AGL	FL500	0.5 to 1.0 hour
Surface Attack Tactics 2 aircraft	20 by 40	500 feet AGL	FL400	0.5 to 1.0 hour
Surface Attack Tactics 4 aircraft	30 by 60	500 feet AGL	FL400	0.5 to 1.0 hour
Opposed Surface Attack Tactics 4 v X*	30 by 80	500 feet AGL	FL500	0.5 to 1.0 hour
Close Air Support	30 by 30	500 feet AGL	FL250	0.5 to 1.0 hour
Low altitude Stepdown Training	35 by 45	500 feet AGL	FL300	0.5 to 1.0 hour

Notes: * 1 v 1, 2 v 2, and 4 v X refer to the number of aircraft used in the training exercise. For example, 1 v 1 means there are two aircraft, one flying as the aggressor and the other as the interceptor.
Legend: ≤-Less than or equal to; AGL-above ground level; FL-Flight Level; MSL-mean sea level; nm-nautical mile.

Table 2.2-2. Typical Altitude Use for F-16 Pilot Training

Altitude	Percent of Flight Hours
FL300 and higher	10
FL180 to FL300	33
10,000 feet AGL to 18,000 feet MSL	35
5,000 to 10,000 feet AGL	6
2,000 to 5,000 feet AGL	5
500 to 2,000 feet AGL	11

Legend: AGL-above ground level; FL-Flight Level; MSL-mean sea level.

2.2.3 Supersonic Flight

Supersonic flights exceed the speed of sound. To train with the full capabilities, F-16 aircraft would employ supersonic flight during approximately 10 percent of the proposed sorties (approximately 1,000 sorties annually). A portion of the supersonic flights would also occur at night. Supersonic flight within the proposed airspace would only occur at or above FL300 (within the ATCAA). The size of the proposed airspace limits the maneuverability during supersonic flights (i.e., aircraft would generally travel straight flight paths while going supersonic speeds). The fuel demand when flying supersonic also limits the amount of time the aircraft could travel supersonic before having to return to the base to refuel. In general, an aircraft would only travel supersonic for approximately 30 seconds.

2.2.4 Chaff and Flares

Chaff and flares are the principal defensive countermeasures dispensed by military aircraft to avoid detection or attack by enemy air defense systems and keep aircraft from being successfully targeted by weapons. When pilots detect threats from these weapons, they must respond instantly and instinctively using appropriate countermeasures. Pilots must become proficient at using these countermeasures through training to establish these critical response patterns.

2.2.4.1 Chaff

Chaff Characteristics

A bundle of chaff consists of approximately 5 to 5.6 million aluminum-coated silica fibers. When dispensed from aircraft, the fibers form an electronic "cloud" that breaks the radar signal and temporarily hides the maneuvering aircraft from radar detection. Chaff is designed to remain in the air long enough to confuse enemy radar. Chaff that would be used would be RR188 (training chaff) that does not interfere with FAA radar. The chaff bundle is packed inside a 1-inch by 1-inch by 8-inch rectangular tube or cartridge. The cartridge remains in the aircraft after the chaff bundle is deployed. Each chaff bundle has a 1-inch by 1-inch felt spacer that falls to the ground along with two 1-inch square by 0.125-inch thick plastic end caps (**Figure 2.2-1**). **Table 2.2-3** provides the components of chaff. The combined weight of chaff material is 3.35 ounces (Air Force 1997). The chaff components and their toxicity are further discussed in **Section 3.12.2.2**, *Chaff and Flares*.

Chaff Reliability and Dispersion

Chaff is ejected from an aircraft by a small pyrotechnic charge (chaff itself is not explosive) and three to five chaff bundles may be ejected in rapid succession. Quality standards for chaff cartridges require that they demonstrate ejection of 98 percent of the chaff in undamaged condition, with a reliability rate of 95 percent at a 95 percent confidence level. However, to achieve the performance standards and not have an entire lot of chaff rejected, manufacturers typically set a mandatory standard of 99 percent reliability. The chaff must also be able to withstand a variety of environmental conditions that might be encountered during storage, shipment, and operation (such as high and low temperatures, vibration, altitude changes, humidity, etc.) (Air Force 2011).

Once deployed, the "bundles" break apart and the light chaff continues to disperse and drift with prevailing winds. The chaff fibers can drift as far as 100 miles depending on the altitude of chaff release and local wind conditions (Arfsten et.al. 2002). The chaff fibers eventually settle to the surface. Individual chaff fibers are approximately half the thickness of a very fine human hair and range in length from 0.3 to 1-inch or more. To put one strand of chaff in perspective, if a 1-inch long strand of chaff were laid on this page, most readers would not be able to see the strand. Clumps of non-deployed chaff have been found on the ground at training ranges and on public or private property under airspace where chaff is used for training. Assuming a 99 percent reliability rate and the large area covered by training airspace, encountering a clump of non-deployed chaff would be rare. As an example, 20,000 chaff bundles deployed annually over a 2,000 square mile area would have an estimate of one clump of non-deployed chaff per 20 square miles per year (Air Force 2011).

Table 2.2-3. Components of RR188 Chaff	
Component	**Percent by weight**
Silica Core	
Silicon dioxide	52-56
Alumina	12-16
Calcium Oxide and Magnesium Oxide	16-25
Boron Oxide	8-13
Sodium Oxide and Potassium Oxide	1-4
Iron Oxide	1 or less
Aluminum Coating	
Aluminum	99.45 minimum
Silicon and Iron	0.55 maximum
Copper	0.05 maximum
Manganese	0.05 maximum
Magnesium	0.05 maximum
Zinc	0.05 maximum
Vanadium	0.05 maximum
Titanium	0.03 maximum
Others	0.03 maximum

Source: Air Force 2011.

Note: The 8-inch cartridge (top of photo) remains on the aircraft when the chaff bundle is deployed. The chaff fibers (silver material in the center of the photo) disperse in the airstream and the individual fibers eventually settle on the ground surface. The white plastic end caps and the black felt spacer fall to the ground as residual material.

Figure 2.2-1. RR188 Chaff

2.2.4.2 Flares

Flare Characteristics

Flares ejected from aircraft provide high-temperature heat sources that mislead heat-sensitive or heat seeking targeting systems. Flares are primarily mixtures of magnesium and Teflon (polytetrafluoroethylene) molded into rectangular shapes (approximately 1-inch by 1-inch by 8 inches

long). An individual flare weighs approximately 6.9 ounces. Typically, flares are wrapped with an aluminum-coated mylar or filament-reinforced tape (similar to duct tape) and inserted into an aluminum (0.03 inches thick) case that is closed with a felt spacer and a small plastic end cap (**Figure 2.2-2**). The aluminum case remains inside the aircraft once the flare is deployed. The flare proposed for use in this EIS is the M206 flare and the discussion of flares throughout this EIS is specific to the M206.

Flares burn at a temperature in excess of 2,000 degrees Fahrenheit to simulate jet exhaust. A flare is designed to burn out within 500 feet from the time of release (generally 3 to 5 seconds) (Air Force 2011). The burning magnesium flare pellet is completely consumed and several small pieces of residual material fall to the ground to include a piston (typically made of plastic), end cap, one or two felt spacers, and a piece of the mylar wrapping that could be from 1-inch by 1-inch to 2-inches by 13-inches depending on the extent to which the burning flare consumed the wrapper.

Source: Air Force 2011.

Figure 2.2-2. M206 Flare

Flare Ejection and Reliability

When a flare is deployed, an electrical charge ignites the impulse cartridge. The impulse cartridge produces hot gases that push the piston, the flare pellet, felt spacers, and the end cap out of the aircraft into the airstream. All of this happens in less than one second. There are three types of ignition mechanisms for flares: non-parasitic, parasitic, and semi-parasitic. The non-parasitic flare is discharged from the aircraft before ignition. The parasitic flare ignites inside the tube within the aircraft and is discharged already burning. The semi-parasitic flare is thrust out of the case by a firing mechanism and the Safe and Initiation device permits the hot gases to ignite the flare pellet. The M206 flare has a parasitic ignition mechanism meaning the flare ignites inside the case within the aircraft and is discharged already burning (Air Force 2011). The M206 flare does not have a Safe and Initiation device.

Flare reliability is critical since a flare failure could have a catastrophic effect on a targeted aircraft and create a significant safety concern for the pilot. Reliability is determined by testing the flares after manufacture. The reliability test examines the success of ignition and burn, pellet breakup, and indication of dispenser damage (Air Force 2011). The flare procurement specifications require that a flare-manufactured lot of several thousand flares pass the ignition and ejection test where a random sample of 80

flares is drawn from the manufactured lot. The 80 flares are tested, and failure of 3 flares out of the 80 would result in the entire lot of several thousand flares being rejected (Air Force 1997). Therefore, flares are designed and manufactured to a reliability rate of 99 percent with a 95 percent confidence level. Improper flare functioning could occur in approximately one percent of the flares. Improper functioning would be defined in one of four ways:

1. A flare is electrically triggered but does not release and does not burn. Such a flare would be treated as Unexploded Ordnance when the aircraft returns to the base and does not pose a safety or environmental concern.
2. A flare burned, but did not release from the aircraft. This would be a significant safety concern for the pilot and the aircraft. There is only one recorded case of this occurring in 1980 (Air Force 2011). Reliability of flare ignition has been substantially improved since that time.
3. A flare released at too low an altitude or that did not burn correctly. If a burning flare struck the ground, it could result in a fire. The design, manufacturing, and testing process makes it extremely unlikely that a flare would burn for a period of time substantially longer than its design (3 to 5 seconds). It is possible for a pilot to accidentally release a flare lower than the approved altitude. A flare released lower than 500 feet AGL could still be burning when it struck the ground and result in a fire.
4. A dud flare would be one that was released but did not burn, either in whole or in part, and landed on the ground. If an unburned flare struck the ground, it would not burn unless subject to temperatures or friction generating temperatures in the one to two thousand degree range.

Dud Flares

A dud flare on public or private land could be a safety concern. In an effort to determine the possibility of a dud flare, surveys were performed beneath active military ranges (Goldwater Range in Arizona and Utah Test and Training Range) on approximately 95 to 99 percent of the range area. In areas where approximately 200,000 flares had been deployed, an estimated 18 duds were found on the ground. This calculates to a ratio of approximately 1 in 10,000 (Air Force 2011). Any dud flare found should be treated as Unexploded Ordnance. There is no instance of a dud flare or any flare striking an individual on the ground and the probability of such occurring would be extremely rare (Air Force 2011). A dud flare would probably not ignite even in a campfire unless it was on a very hot bed of coals. If a dud flare were shot with a bullet or cut with a power saw, the friction could cause it to ignite.

Fire Risk

Defensive countermeasures deployment in authorized airspace is governed by a series of regulations based on safety, environmental considerations, and defensive countermeasures limitations (see **Section 3.10.2.3**, *Chaff and Fares* for additional discussion of safety regulations). These regulations establish procedures governing the use of flares over ranges and non-government owned areas. Flares are only used in approved airspace at altitudes designated for the airspace. The fire risk is directly associated to the release altitude; therefore, the risk of fire can be greatly reduced through establishing minimum altitudes for deployment of flares (Air Force 2011).

Under this Proposed Action, prior to flare use, the local fire ratings for the specific training area would be reviewed (as is the current practice at Holloman AFB) and existing fire safety restrictions would be employed (**Table 2.2-4**). Existing fire safety restrictions prohibit the use of flares during periods of "Very High" or "Extreme" National Fire Danger Ratings. During periods of "High" fire danger, aircraft would

not use flares below 18,000 feet MSL. If fire danger is less than "High" the minimum altitude for flare release would be 2,000 feet AGL. Flares would never be released below 2,000 feet AGL. The standard minimum altitude release of 2,000 feet AGL provides sufficient time for a flare to burn completely at least 1,500 feet above the ground. The minimum altitude and fire safety restrictions make the potential to ignite a fire from flares extremely remote.

Table 2.2-4. Fire Restrictions for Flare Use

National Fire Danger Rating*	Allowable Altitude for Flare Usage
Low	2,000 feet AGL and above
Moderate	2,000 feet AGL and above
High	18,000 feet MSL and above
Very High	Not Allowed
Extreme	Not Allowed

Note: * National Fire Danger Ratings are determined by the USFS to estimate today's or tomorrow's fire danger for a given area.
Legend: AGL-above ground level; MSL-mean sea level.

2.3 SELECTION STANDARDS

NEPA and CEQ regulations mandate the consideration of reasonable alternatives before undertaking any Proposed Action. "Reasonable alternatives" are those that could meet the purpose of and need for the Proposed Action. Per the requirements of 32 CFR 989, the Air Force Environmental Impact Analysis Process regulations, selection standards are used to identify alternatives that meet the purpose of and need for the Proposed Action.

The Air Force has developed a set of selection standards for screening the possible alternatives for the optimization of SUA within the vicinity of Holloman AFB. The following standards were used to identify and evaluate alternatives that meet the purpose and need of the Proposed Action.

2.3.1 Standard 1: Use Air Force Scheduled Airspace

Airspace is a valuable and finite national resource that is scheduled by the using agency as necessary to meet their needs. Air Force scheduled airspace is required to eliminate conflicts that have historically reduced the efficiency of F-16 pilot training. To ensure benefits to all users of the National Airspace System (NAS), the FAA encourages the use of existing SUA by the military. The Proposed Action would use existing SUA airspace, to the extent possible, to support the F-16 pilot training.

2.3.2 Standard 2: Maximize Training Time and Minimize Transit Time

Holloman AFB has a finite number of flying hours that can be used to train F-16 pilots. Therefore, in defining a search area for suitable airspace, the Air Force recognized the need to maximize training time and minimize low-value transit time. Flying long distances to remote training airspace and returning to Holloman AFB would substantially limit valuable training time. F-16 aircraft need to fly to the training airspace, conduct training operations for a minimum of 30 minutes, and return to base with adequate fuel reserves for safety. Average training sorties without refueling last approximately 1 hour. Evaluation of the flying range (fuel capacity) of the F-16s reveals that utilizing training airspace within 120 nm travel distance from the base would optimize F-16 pilot training missions. While airspace outside of 120 nm travel distance can be used for some training missions and will continue to be used, this distance is too far to meet the

requirements of the majority of F-16 pilot training operations. Therefore, 120 nm travel distance was established for this standard.

2.3.3 Standard 3: Required Airspace Size and Configuration

F-16 training needs airspace adequately sized and configured to permit the full spectrum of F-16 Tactics, Techniques, and Procedures (Air Force 1996). The required airspace dimension and vertical extent (floor and ceiling) of the airspace must provide the size and configuration to support up to three, four-ship engagements on simultaneous aerial combat training missions; permit long range, high speed aircraft combat; and allow the F-16s to operate at a broad range of altitudes consistent with combat tactics. As such, the airspace needs to offer (1) horizontal dimensions of 30 by 80 nm, and (2) a vertical span from approximately 500 feet AGL up to FL510 or could be feasibly modified or supplemented with new airspace to achieve the necessary dimensions. Based on the extent of vertical requirements, both MOA and ATCAA airspace are required.

2.3.4 Standard 4: Limit Impacts to Civil Aviation

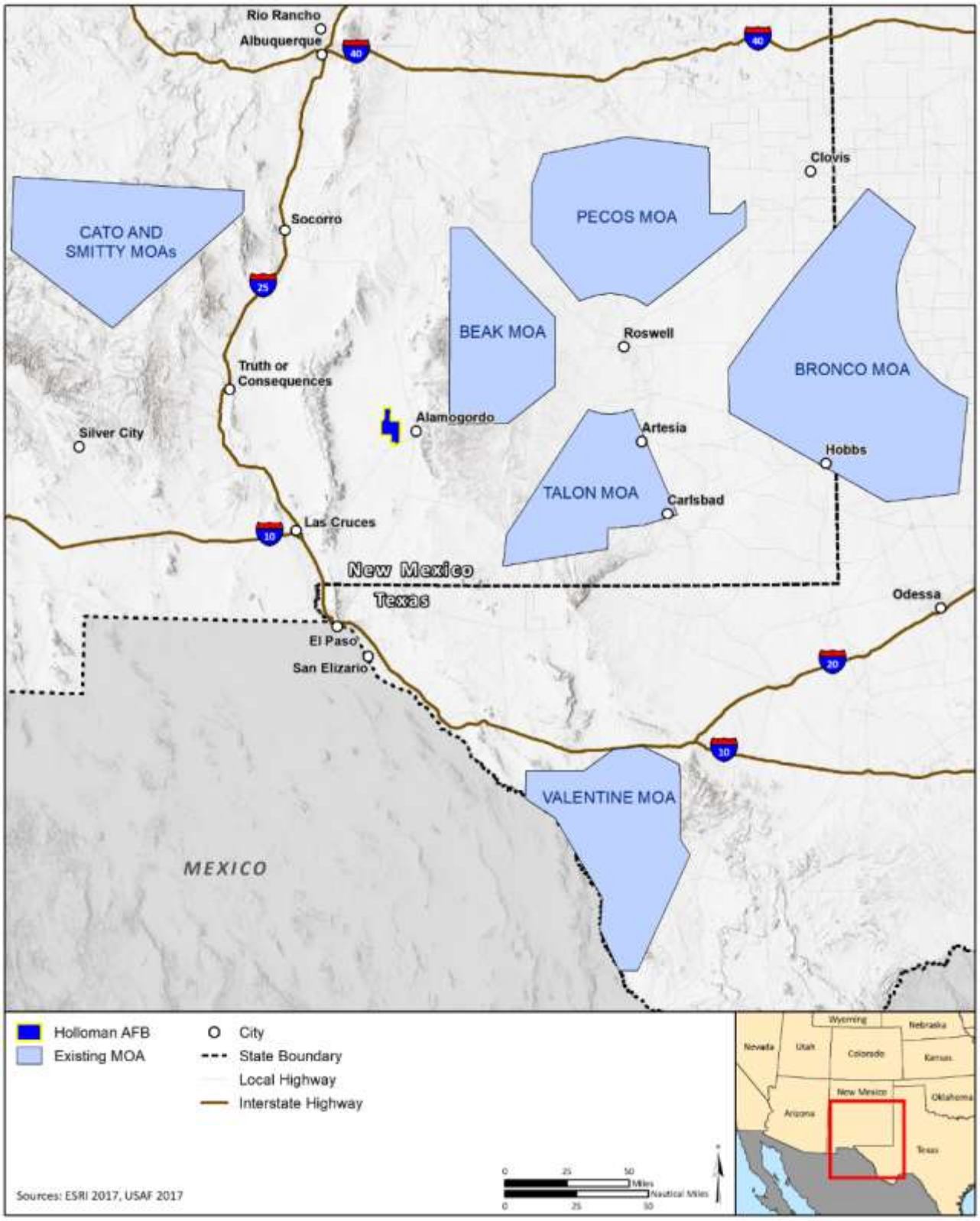
The FAA plans, manages, and controls the structure and use of airspace to provide the safest, most efficient airspace possible for all users of the airspace (military, commercial, and private). The Air Force, in working with the FAA, recognized that proposed airspace modifications should limit or reduce the potential for conflicts with the structure and use of the current airspace system by civil aviation. Avoidance or minimization of potential conflicts with airports, Air Traffic Service (ATS) routes, and other airspace users represents a priority for identifying a reasonable alternative.

2.4 SCREENING OF ALTERNATIVES

Air Force scheduled MOAs in the vicinity of Holloman AFB that are available for F-16 pilot training were evaluated to determine whether airspace modifications could be implemented to meet the selection standards described in **Section 2.3** (Selection Standards), thereby making the airspace optimal for training F-16 pilots out of Holloman AFB. Seven existing MOAs were evaluated: Valentine, Bronco, Talon, Cato, Smitty, Beak, and Pecos MOAs (**Figure 2.4-1**).

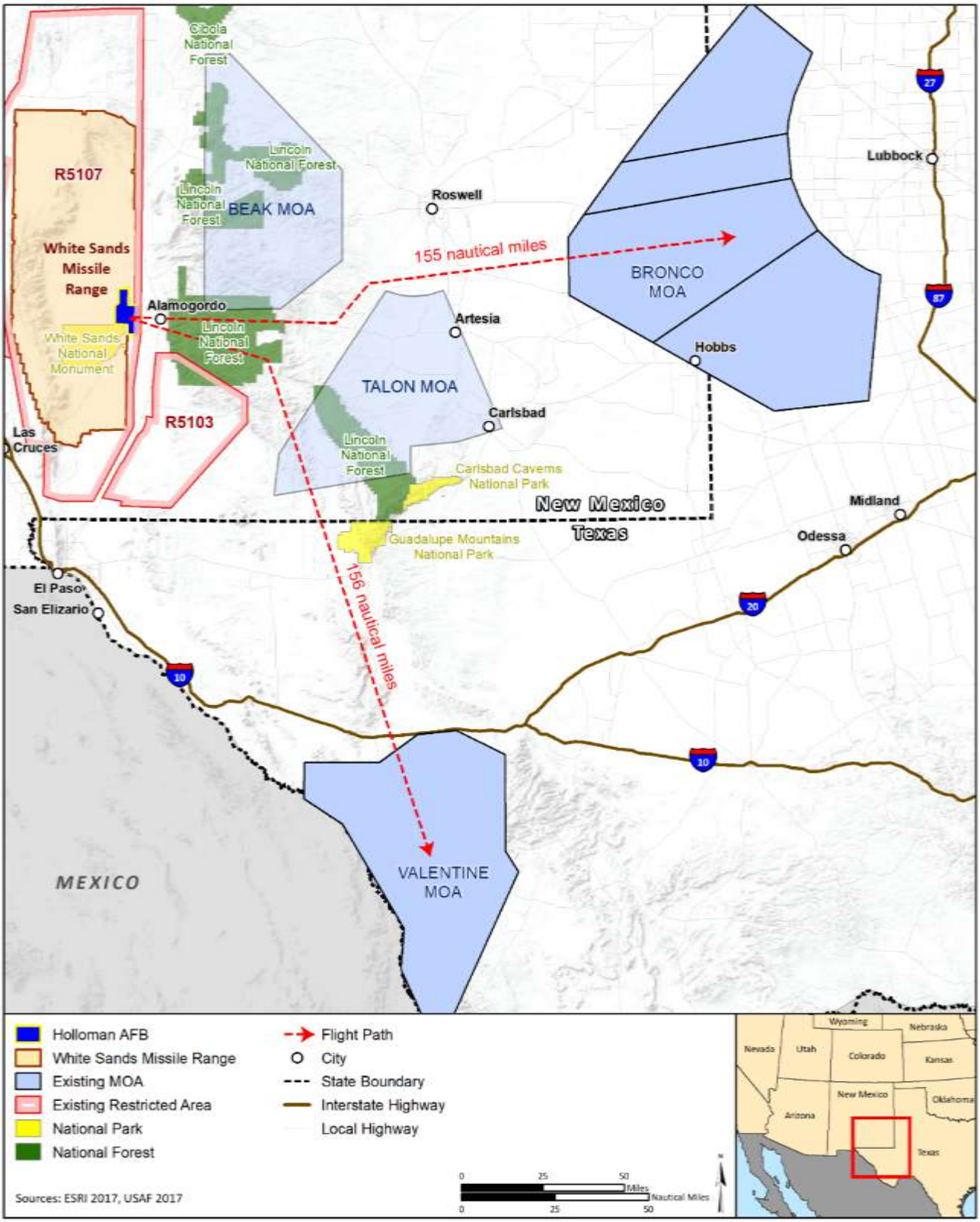
2.4.1 Valentine and Bronco MOAs

Valentine and Bronco MOAs are illustrated on **Figure 2.4-2**. Valentine MOA is located south of Holloman AFB in Texas and covers approximately 2,432 square nm. Holloman AFB schedules the use of Valentine MOA. The floor of this MOA is 15,000 feet MSL and extends up to 18,000 feet MSL. The associated ATCAA extends the training airspace to FL450. The travel distance from Holloman AFB to the center of Valentine MOA is 156 nm.



Legend: AFB-Air Force Base; MOA-Military Operations Area.

Figure 2.4-1. Training Airspace Evaluated



Legend: AFB-Air Force Base; MOA-Military Operations Area.

Figure 2.4-2. Valentine and Bronco MOAs

The Bronco MOA is located east of Holloman AFB and covers approximately 5,115 square nm. Cannon AFB schedules use of Bronco MOA. The MOA is divided into four segments with designated floors of 8,000 to 10,000 feet MSL and a ceiling that extends up to 18,000 feet MSL. With the associated ATCAA, the airspace extends to FL510. The travel distance from Holloman AFB to the center of the Bronco MOA is 155 nm.

The travel distance to Valentine and Bronco MOAs exceeds the 120 nm travel distance standard for optimizing F-16 pilot training sorties. These MOAs are available, but are not practicable for F-16 pilot training given their distance; therefore, these MOAs were not assessed for the remaining selection standards.

2.4.2 Talon MOA

Talon MOA is located to the east of Holloman AFB and covers approximately 2,661 square nm (**Figure 2.4-3**). Travel distance to the center of Talon MOA from Holloman AFB is 70 nm. Talon MOA is charted for use sunrise to sunset, Monday through Friday with activation at other times through the NOTAM process. The MOA is divided into three segments: Talon High East, Talon High West, and Talon Low. Talon Low MOA extends from 300 feet AGL to 12,499 feet MSL. Talon High West and East MOAs partially overlie Talon Low MOA and extend from 12,500 feet MSL up to 18,000 feet MSL. The ATCAA overlies the high MOAs and can be requested from the Albuquerque Center to extend the high airspace to FL500. The horizontal limits of the MOA are approximately 42 nm by 44 nm.

The Talon MOA is scheduled by Holloman AFB and is currently used for F-16 pilot training missions that can be performed within the airspace dimensions (approximately 830 annual sorties). The German Air Force conducted approximately 300 sorties per year in the Talon MOA through 2017 while they were stationed at Holloman AFB.

There is an ATS route beneath Talon East High MOA permitting IFR traffic to flow through this area. There are also ATS routes to the north and west of the MOA. Expansion of this MOA to the south and east may be possible to establish the required dimension and configuration to support additional F-16 pilot training missions beyond those that are currently conducted there. Analysis of the screening standards for Talon MOA is provided in **Table 2.4-1**.

Table 2.4-1. Talon MOA Selection Standard Evaluation

Standard	Evaluation	Meets standard or could be modified to meet?
1. Air Force Scheduled Airspace	Scheduled by Holloman AFB	Yes
2. Minimize Travel Time	Travel distance is 70 nm	Yes
3. Required Size and Configuration	Floor - 300 feet AGL Ceiling - FL500	Yes
	Operational dimension: 42 nm by 44 nm	Yes
4. Limit Impacts to Civil Aviation	• Low altitude ATS routes beneath Talon East High MOA • Low altitude ATS routes to the north and west • Expansion possible to the south and east	Yes

Legend: AFB-Air Force Base; AGL-above ground level; ATS-Air Traffic Service; FL-Flight Level; MOA-Military Operations Area; nm-nautical mile.

2.4.3 Cato and Smitty MOAs

Cato and Smitty MOAs cover approximately 2,656 square nm (**Figure 2.4-4**). The Cato and Smitty MOAs are located west of Holloman AFB and on the western side of WSMR. Holloman AFB pilots scheduling use of these MOAs need to obtain permission from WSMR to fly through R-5107 (making the travel distance to the center of the MOAs approximately 117 nm), or they must fly around the northern boundary making the travel distance 200 nm or greater.

Both the Cato and Smitty MOAs are charted for use from 8:00 a.m. to 10:00 p.m., Monday through Saturday with activation at other times through the NOTAM process. Smitty MOA is charted for use from 500 feet AGL up to 13,499 feet MSL. Cato MOA overlies Smitty MOA and is charted from 13,500 feet MSL up to 18,000 feet MSL. The ATCAA can be requested from the Albuquerque Center to extend the vertical limits of the Cato MOA to FL510. When activated together, the MOAs and ATCAA provide training airspace from 500 feet AGL to FL510.

The Cato and Smitty MOAs are currently scheduled for use through the New Mexico Air National Guard (ANG) at Kirtland AFB. The MOAs formerly supported training for F-16 pilots assigned to the New Mexico ANG, but currently have limited training activity.

There are multiple ATS routes on the northern boundary of the MOAs. An increase in demand for commercial travel between Albuquerque, New Mexico and Phoenix, Arizona and other western destinations has resulted in a substantial increase in the FAA's requirement to use ATS routes that lie to the north of the MOAs. This has effectively reduced the horizontal limits of the ATCAA to 30 nm by 67 nm (official dimensions are 40 nm by 67 nm). Expansion of these MOAs to the southeast would establish the required dimension and configuration for F-16 pilot training. Analysis of the screening standards for the Cato and Smitty MOAs is provided in **Table 2.4-2**.

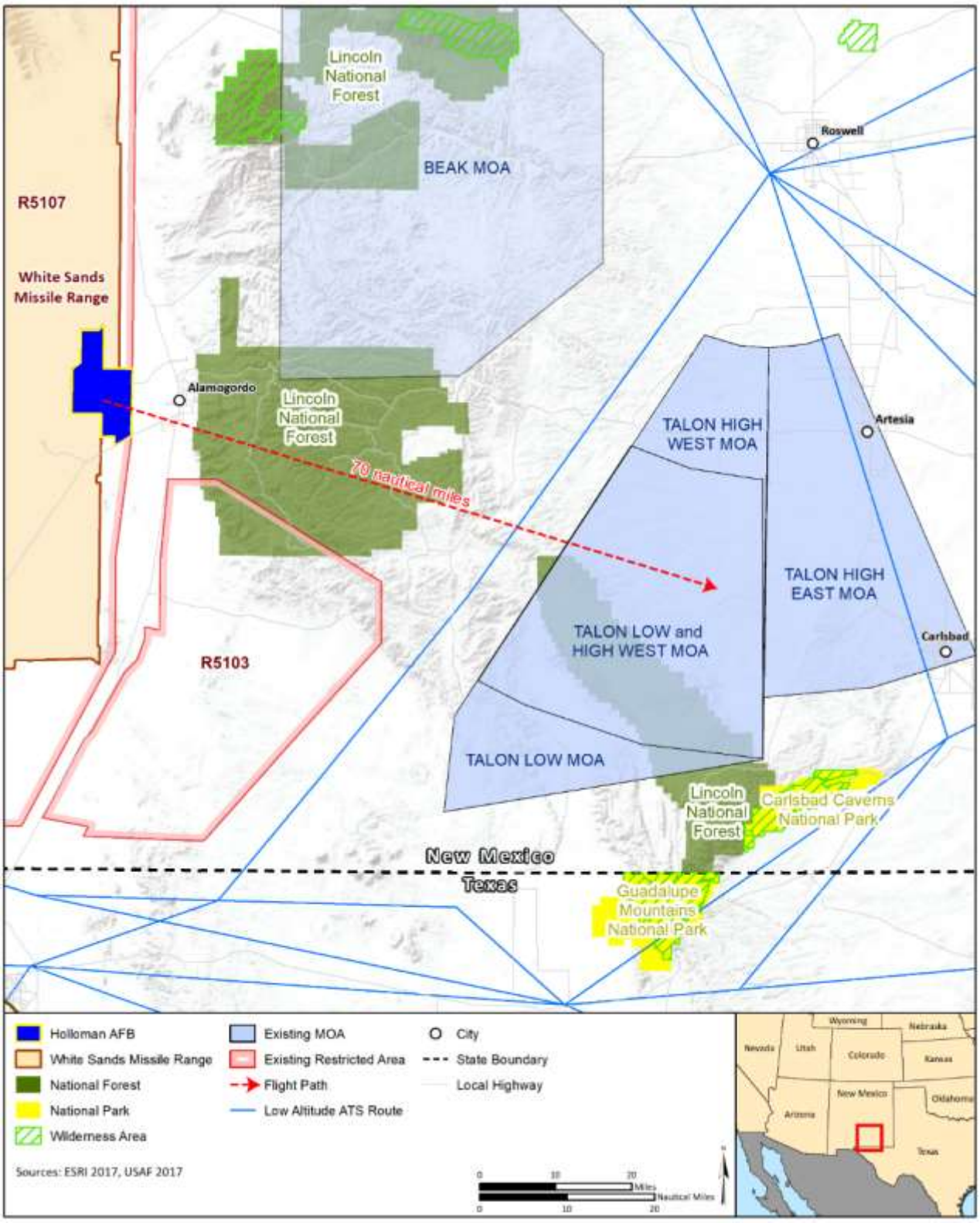
Table 2.4-2. Cato and Smitty MOAs Selection Standard Evaluation

Standard	Evaluation	Meets standard or could be modified to meet?
1. Air Force Scheduled Airspace	Scheduled by New Mexico ANG	Yes
2. Minimize Travel Time	117 nm (traveling across WSMR)	Yes
3. Required Size and Configuration	Floor - 500 feet AGL Ceiling - FL510	Yes
	30 nm by 67 nm (reduced dimensions)	Yes
4. Limit Impacts to Civil Aviation	• Low altitude ATS routes to the north • Expansion possible to the southeast	Yes

Legend: AGL-above ground level; ANG-Air National Guard; ATS-Air Traffic Service; FL-Flight Level; MOA-Military Operations Area; nm-nautical mile; WSMR-White Sands Missile Range.

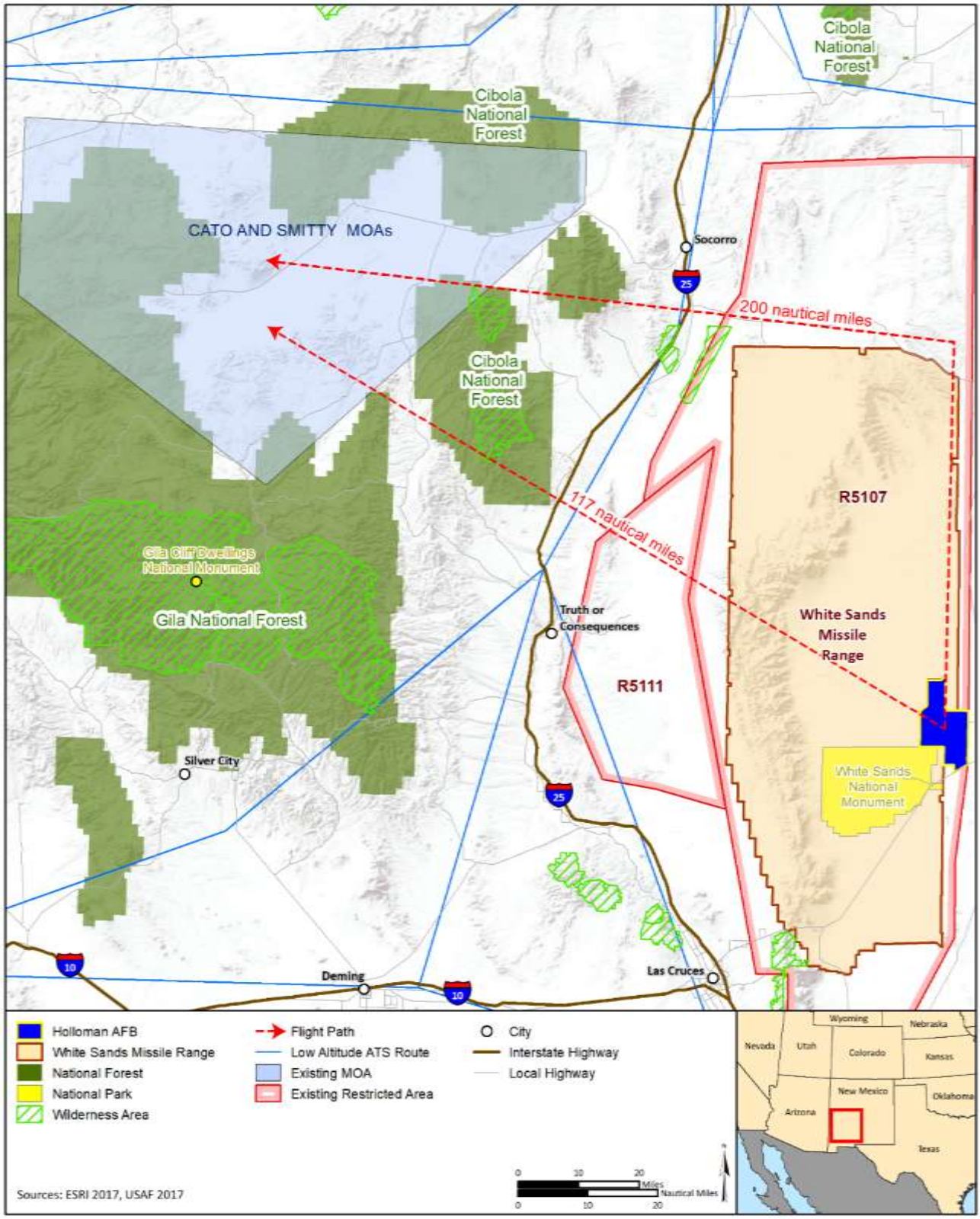
2.4.4 Beak MOA

The Beak MOA is located east of Holloman AFB and covers approximately 1,938 square nm (**Figure 2.4-5**). The travel distance from Holloman AFB to the center of the Beak MOA is 47 nm. The Beak MOA is charted for use from 6:00 a.m. to 6:00 p.m., Monday through Friday with activation at other times through the NOTAM process. The Beak MOA is divided into three segments, Beak A, Beak B, and Beak C, each with altitudes from 12,500 feet MSL up to 18,000 feet MSL. The ATCAA can be requested from the Albuquerque Center to extend the vertical limits of the Beak MOA up to FL500. When activated together, the combined MOA and ATCAA complex provides training airspace from 12,500 feet MSL to FL500. The horizontal limits of the Beak MOA are approximately 34 nm by 57 nm.



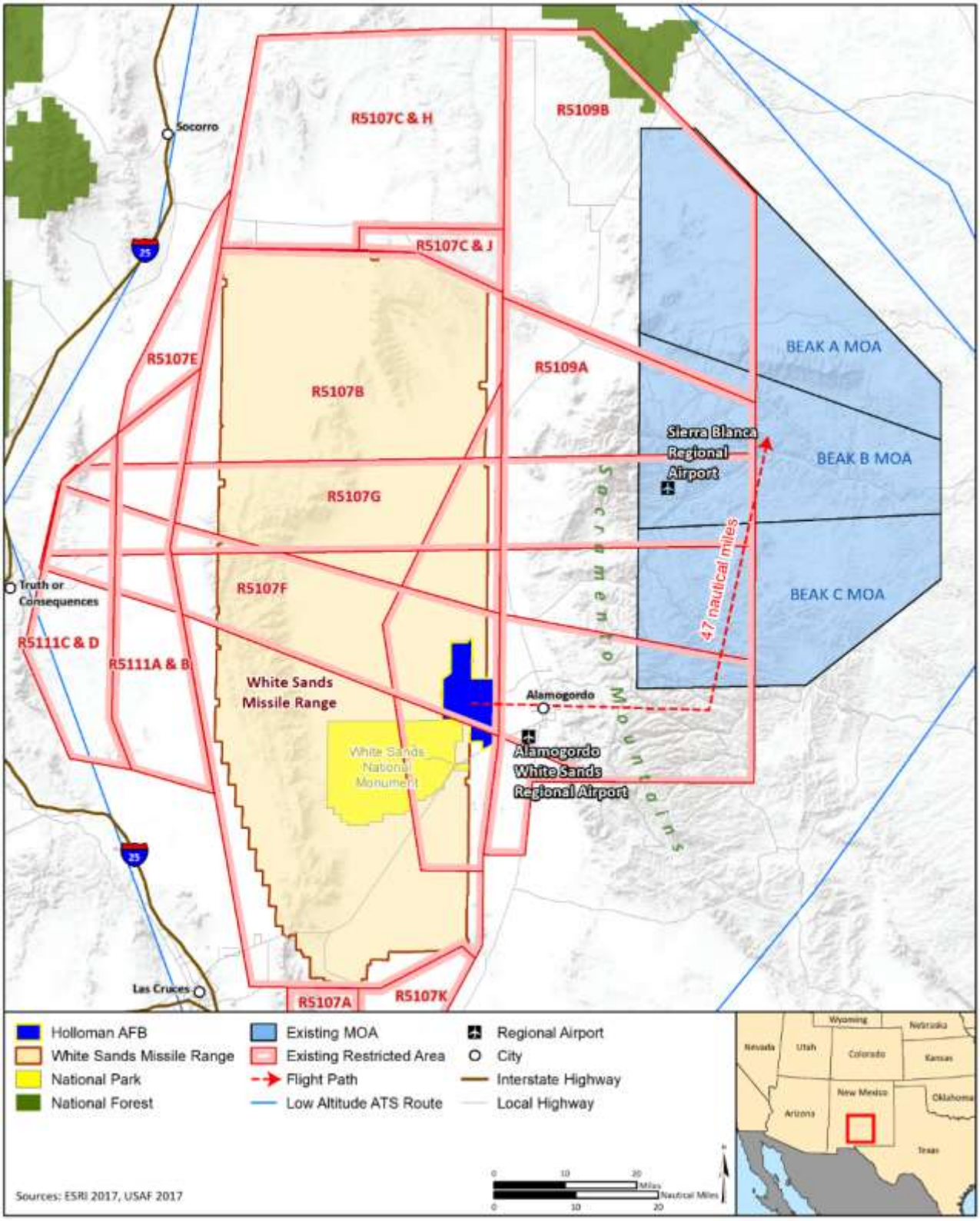
Legend: AFB-Air Force Base; ATS-Air Traffic Service; MOA-Military Operations Area.

Figure 2.4-3. Talon MOA



Legend: AFB-Air Force Base; ATS-Air Traffic Service; MOA-Military Operations Area.

Figure 2.4-4. Cato and Smitty MOAs



Legend: AFB-Air Force Base; ATS-Air Traffic Service; MOA-Military Operations Area.

Figure 2.4-5. Beak MOA

Holloman AFB schedules use of the Beak MOA. The Beak MOA is currently used in conjunction with WSMR for F-16 pilot training exercises when WSMR alone cannot provide the volume or capacity required for multiple simultaneous training sorties. The Beak MOA is currently heavily used to support F-16 pilot training missions that do not require low altitude airspace (approximately 2,500 annual sorties). The Beak MOA also serves as a staging area for large-force exercises (Air Force 2007).

The Beak MOA has low altitude ATS routes to the northeast and southeast. The Alamogordo-White Sands Regional Airport is located to the southwest. The Sierra Blanca Regional Airport is located beneath Beak B in Ruidoso, New Mexico. Several blocks of restricted areas scheduled by WSMR (R-5107G, R-5107F, R-5109A, and R-5109B) overlie the MOA as well and are activated when WSMR is being used for testing which affects the availability of Beak MOA for F-16 pilot training.

The Sacramento Mountain range lies beneath the Beak MOA. The topography in this area quickly elevates from the valley to the mountain peak. The mountain range presents a significant obstacle, similar to a wall, in the potential flight path of an F-16 traveling under VFR procedures at low altitudes. Therefore, lowering the floor of this MOA to allow for low-level training would not be safe or practicable.

Expansions to this MOA would likely impact civil and other military users within this area; therefore, no further modifications are feasible to increase the usability of the MOA for F-16 pilot training. The MOA is already used for F-16 pilot training to the extent possible. Analysis of the screening standards for the Beak MOA is provided in **Table 2.4-3**.

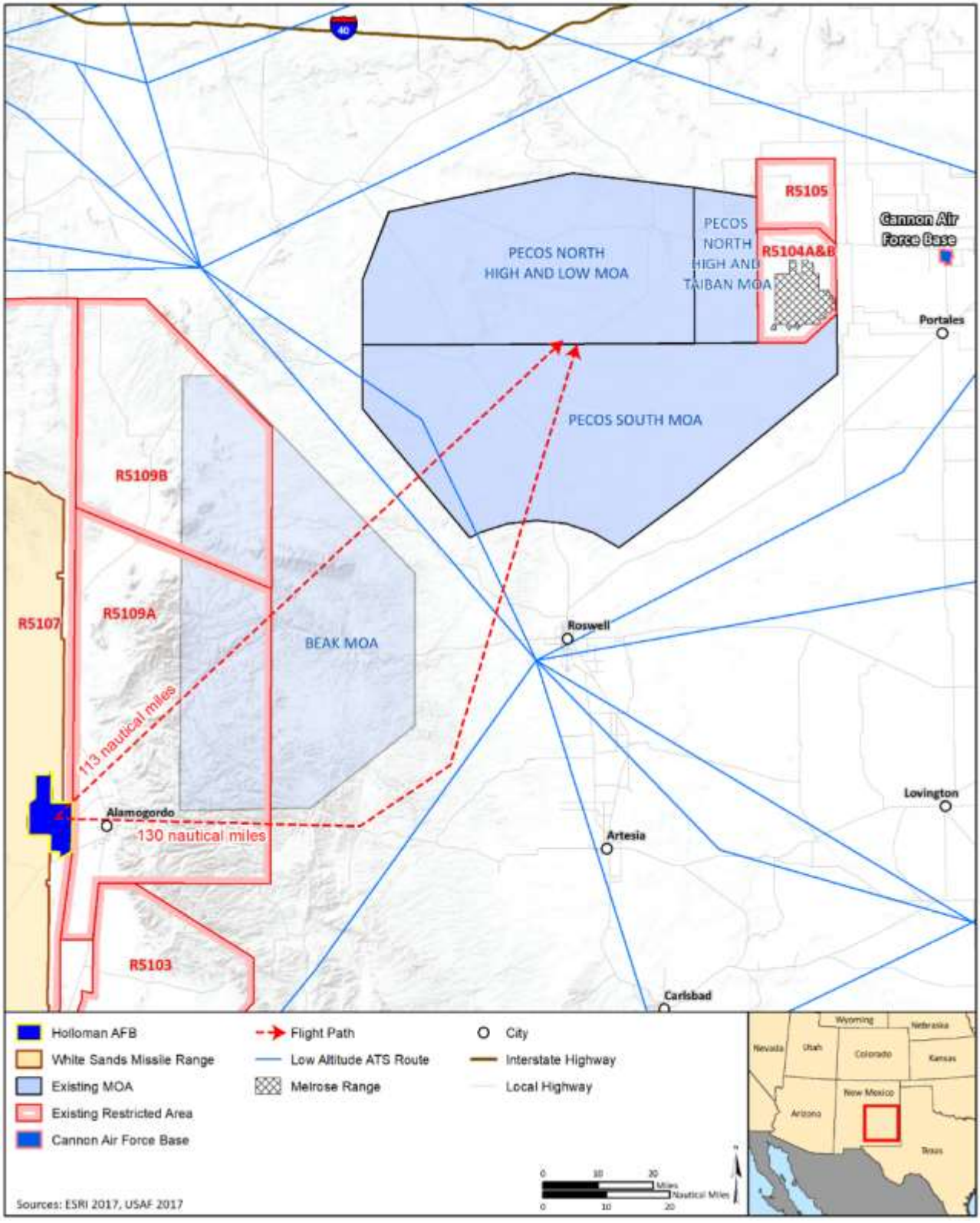
Table 2.4-3. Beak MOA Selection Standard Evaluation

Standard	Evaluation	Meets standard or could be modified to meet?
1. Air Force Scheduled Airspace	Scheduled by Holloman AFB	Yes
2. Minimize Travel Time	47 nm	Yes
3. Required Size and Configuration	Floor - 12,500 feet AGL Ceiling - FL500	No
	34 nm by 57 nm	No
4. Limits Impact to Civil Aviation	• Surrounded by low altitude ATS routes • Regional airports under and adjacent to MOA	No

Legend: AFB-Air Force Base; AGL-above ground level; ATS-Air Traffic Service; FL-Flight Level; MOA-Military Operations Area; nm-nautical mile.

2.4.5 Pecos MOA

The Pecos MOA is located northeast of Holloman AFB and covers approximately 3,300 square nm (**Figure 2.4-6**). Travel distance to the center of Pecos MOA is 113 nm if the aircraft travels through the Beak MOA. If the aircraft travels around the Beak MOA, the travel distance increases to 130 nm. The Pecos MOA is charted for use from 9:00 a.m. to 9:00 p.m., Monday through Friday with activation at other times through the NOTAM process. The Pecos MOA is divided into a north and south segment both having a low and high component with defined altitudes of 500 feet AGL up to 18,000 feet MSL. The ATCAA can be requested from the Albuquerque Center to extend the vertical limits of the Pecos MOA up to FL500. When activated together, the combined MOA and ATCAA provides training airspace from 500 feet AGL to FL500. The Pecos MOA has horizontal limits of 50 nm by 75 nm.



Legend: AFB-Air Force Base; ATS-Air Traffic Service; MOA-Military Operations Area.

Figure 2.4-6. Pecos MOA

Cannon AFB schedules the use of Pecos MOA and the priorities of use are adjusted as needed to support the highest priority mission. Pecos MOA is seldom used by Holloman AFB aircraft due to the distance and scheduling conflicts with other missions. The MOA is available to Holloman AFB for F-16 pilot training missions and is used to the extent possible. The Pecos MOA and ATCAA is used by the 27th Special Operations Wing (Cannon AFB) and the New Mexico ANG for conducting a range of training activities. Pecos MOA is also used in conjunction with Melrose Range, decreasing its availability.

There are low altitude ATS routes located to the north, west, and south of the MOA. Melrose Range, scheduled by Cannon AFB, is located to the east of the MOA and contains restricted areas R-5104 and R-5105. There are no opportunities for expansion without impacting civilian air traffic or other military users. Analysis of the screening standards for the Pecos MOA is provided in **Table 2.4-4**.

Table 2.4-4. Pecos MOA Selection Standard Evaluation

Standard	Evaluation	Meets standard or could be modified to meet?
1. Air Force Scheduled Airspace	Scheduled by Cannon AFB	Yes
2. Minimize Travel Time	113 nm (130 nm to go around Beak MOAs)	Yes
3. Required Size and Configuration	Floor - 500 feet AGL Ceiling - FL500	Yes
	50 nm by 75 nm	No
4. Limits Impact to Civil Aviation	• Surrounded by low altitude ATS routes	No

Legend: AFB-Air Force Base; AGL-above ground level; ATS-Air Traffic Service; FL-Flight Level; MOA-Military Operations Area; nm-nautical mile.

2.5 SUMMARY OF ALTERNATIVES SCREENING ANALYSIS

A summary of the alternatives screening analysis is provided in **Table 2.5-1**. Of the seven MOAs evaluated, only three could support airspace modifications needed to optimize the airspace required to support F-16 pilot training (it should be noted that the Cato and Smitty MOAs are charted as two distinct MOAs; however, they have the same horizontal limits and are operationally treated as one MOA).

Table 2.5-1. Summary of Alternatives Screening Analysis

Standard	Valentine MOA[1]	Bronco MOA[1]	Talon MOA	Cato and Smitty MOAs	Beak MOA	Pecos MOA
1. Air Force scheduled airspace?	Yes	Yes	Yes	Yes	Yes	Yes
2. Maximizes training time and minimizes travel time?	No	No	Yes	Yes	Yes	Yes
3a. Required size and configuration - meets vertical limits or could be expanded to meet?	Not evaluated	Not evaluated	Yes	Yes	No	Yes
3b. Required size and configuration - meets horizontal limits or could be expanded to meet?	Not evaluated	Not evaluated	Yes	Yes	No	No
4. Expansion would have limited impacts to civil aviation?	Not evaluated	Not evaluated	Yes	Yes	No	No
Carry Forward?	**No**	**No**	**Yes**	**Yes**	**No**	**No**

Legend: MOA-Military Operations Area.

Notes: [1] Since the travel distance to Valentine and Bronco MOAs is too far to optimize F-16 pilot training, the vertical and horizontal limits of the MOAs are irrelevant. Therefore, they were not evaluated for the remainder of the selection criteria.

2.6 ALTERNATIVES ELIMINATED

2.6.1 Air Force Scheduled Airspace

Valentine and Bronco MOAs were eliminated from further consideration based on the travel distance standard used during the selection process. The travel distance to these MOAs significantly limits the amount of training time for F-16 pilots. There are no airspace modifications that could optimize these MOAs for F-16 pilot training. These MOAs have had limited to no activity in recent years and could be returned in part or in whole to the NAS.

Beak MOA is within the standard travel distance; however, the size and configuration does not meet the horizontal selection standard. A westward lateral and vertical expansion would close off flights flying under IFR en-route to and from Alamogordo-White Sands Regional Airport and Holloman AFB. An expansion to the northeast or southeast would impact flights traveling on ATS routes providing service to and from Roswell International Airport. In addition, several blocks of restricted areas that are not scheduled by the Air Force overlie the MOA reducing its availability for F-16 pilot training. The underlying terrain does not allow for safe low-level training missions. Beak MOA is already used to the extent possible for F-16 pilot training and would continue to be used. No further airspace modifications are feasible to further optimize the MOA. Therefore, this MOA was eliminated as an alternative.

Pecos MOA is within the standard travel distance; however, the size and configuration of Pecos MOA is not suitable for all F-16 pilot training sorties. Pecos MOA is available to support F-16 pilot training to the extent practical. The surrounding ATS routes and Melrose Range do not permit expanding the airspace dimensions to meet the horizontal requirements to support F-16 pilot training. Expansion would impact civilian aviation; therefore, this MOA was eliminated as an alternative.

2.6.2 Non-Air Force Scheduled Airspace

In addition to screening Air Force scheduled airspace in the vicinity of Holloman AFB (detailed in **Section 2.4,** Screening of Alternatives), the Air Force also considered non-Air Force scheduled airspace for optimizing F-16 pilot training. The following non-Air Force scheduled areas were considered, but eliminated from further evaluation in this EIS.

White Sands Missile Range

WSMR is a U.S. Army military testing range located adjacent to Holloman AFB (see **Section 1.2.3**, White Sands Missile Range). The restricted areas at WSMR are prioritized for RDT&E, but are available for F-16 pilot training when not used for testing activities. The restricted areas are in close proximity to Holloman AFB, have the necessary attributes for F-16 pilot training, and are currently heavily used for F-16 pilot training. To facilitate the scheduling between Holloman AFB and WSMR, the two organizations entered into a Memorandum of Agreement in September 2014. While the Agreement outlines the process to schedule needed airspace, scheduling at WSMR is governed by the Department of Defense Directive (DoDD) 3200.11, *Major Range and Test Facility Base.* As competing demands for testing and the use of restricted areas at WSMR increases, WSMR has less availability to support F-16 pilot training missions conducted by Holloman AFB.

Holloman AFB currently uses WSMR for approximately 5,000 training sorties annually. Use of WSMR for training that needs to occur in a restricted area would continue under the Proposed Action. Training that does not have to be done in a restricted area currently occurs at WSMR to the extent possible due to airspace

availability and would also continue. Since the WSMR airspace is prioritized for RDT&E, the availability of the airspace for F-16 pilot training is unpredictable. The F-16 pilot training syllabus requires pilots to train in a specific series of missions which drives the need for readily available suitable airspace. Holloman AFB would continue to use WSMR for F-16 pilot training to the extent possible, but there are no feasible modifications that would increase the availability of the airspace for Holloman AFB aircraft. The Air Force also does not have the authority to modify the restricted airspace at WSMR. Therefore, WSMR is fully optimized to the extent possible for F-16 pilot training and was eliminated as an alternative.

McGregor Range (Fort Bliss)

McGregor Range (within Fort Bliss) is a U.S. Army military training range located to the south of WSMR and Holloman AFB (see **Section 1.2.4**, Fort Bliss McGregor Range). Restricted areas (R5103 and R5107) support a wide variety of activities, but the primary purposes of these areas are to protect non-participating aircraft from range activities occurring on the ground; promote realistic training; and to segregate non-participating aircraft from unmanned aerial system flight operations. The restricted areas at McGregor Range are often used in conjunction with the restricted areas at WSMR for testing activities. Holloman AFB currently uses McGregor Range for remote piloted aircraft activities and some F-16 pilot training sorties (approximately 600 sorties per year). This use would continue, however, there are no airspace modifications that could further optimize this airspace because this airspace is already used to the maximum extent due to U.S. Army use of this airspace. Therefore, McGregor Range was eliminated as an alternative.

2.7 ALTERNATIVES CARRIED FORWARD

None of the MOAs evaluated currently provide the required dimensions to optimize F-16 pilot training. Thus, the MOAs were also evaluated for their ability to be expanded or reconfigured to meet the required dimensions with limited or no impacts to civilian air traffic or other military users. Three MOAs were determined reasonable for reconfiguration and expansion and have been carried forward for analysis in the EIS.

Talon MOA has been carried forward as a reasonable alternative. While this MOA does not currently meet the horizontal limits associated with the selection standards, it may be expanded with limited impacts to commercial and private traffic. Talon MOA meets all other selection standards.

Cato and Smitty MOAs have been carried forward as a reasonable alternative. Similar to Talon, these MOAs do not currently meet the horizontal limits associated with the selection standards. However, the MOAs may be expanded with limited impacts to commercial and private traffic. Cato and Smitty MOAs meet all other selection standards.

2.8 DETAILED DESCRIPTION OF ALTERNATIVES CARRIED FORWARD FOR ANALYSIS

2.8.1 Alternative 1: Talon MOA

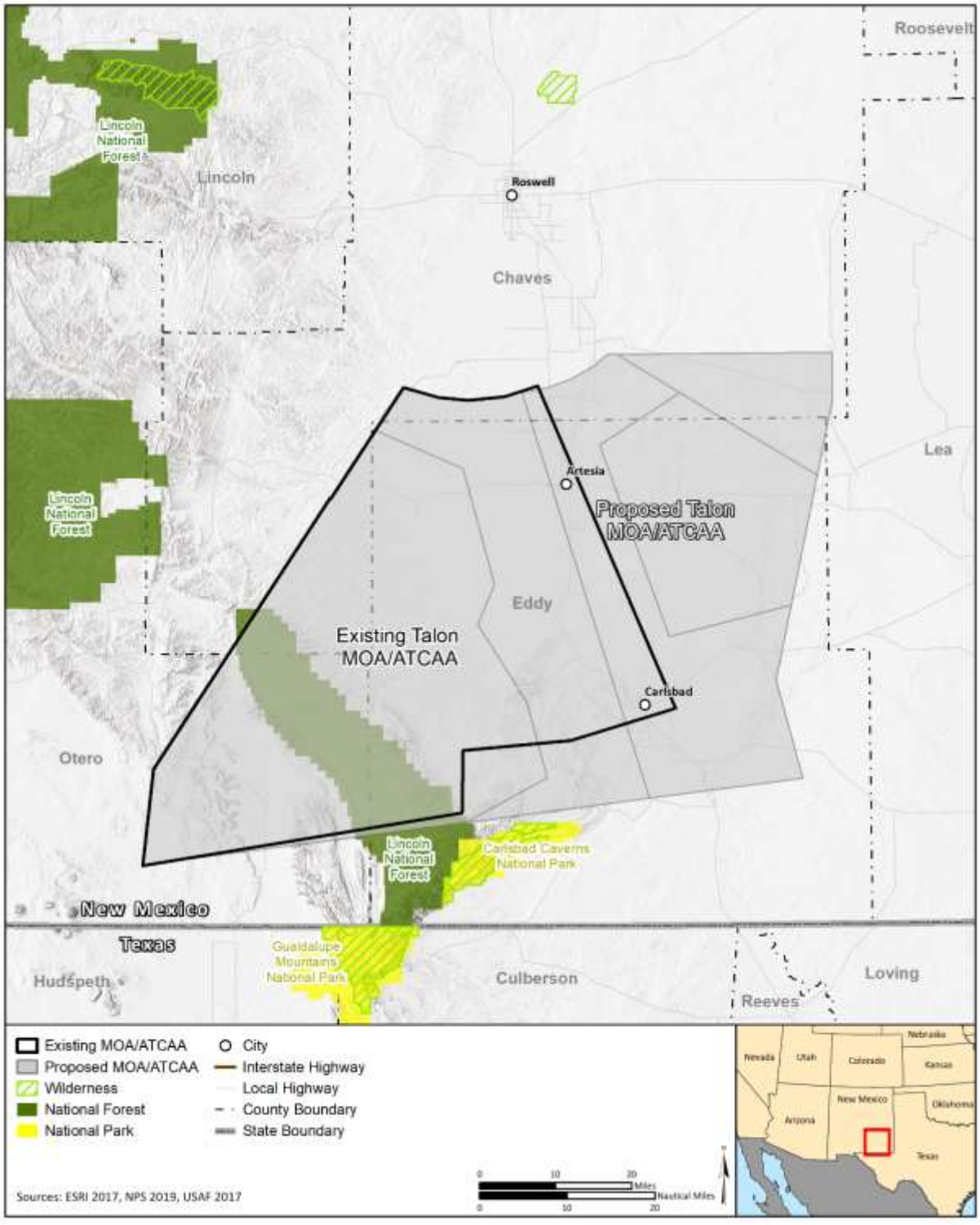
Under Alternative 1, the Talon MOA would be reconfigured and expanded. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace. Details of Alternative 1 are provided in the following sections.

2.8.1.1 Proposed Airspace Modifications

Reconfigure and Expand Talon MOA

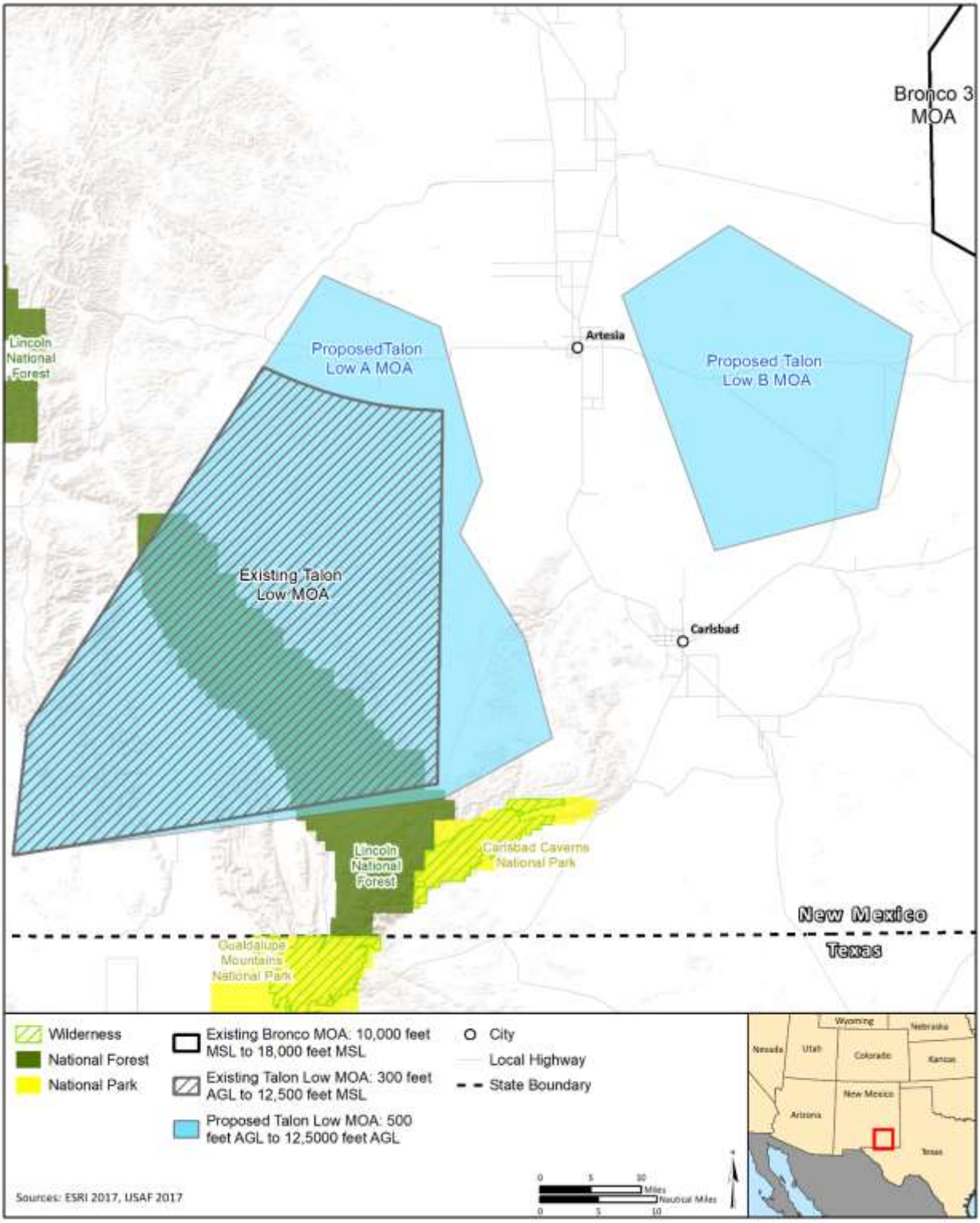
The Talon MOA would be reconfigured and expanded to the south and east as shown in **Figure 2.8-1**. The proposed MOA would be subdivided into two low MOAs (Low A and B) (**Figure 2.8-2**) and three high MOAs (High A, B, and C) (**Figure 2.8-3**). The combined low and high airspace would have a floor of 500 feet AGL and a ceiling up to 18,000 feet MSL. An ATCAA would be assigned above the high MOAs expanding the usable airspace to FL510 when requested and available (**Figure 2.8-4**). The ATCAA would have the same A, B, and C subdivisions as the high MOAs. The eastern edge of the proposed Talon High C MOA would align with the western edge of the existing Bronco 3 MOA. In order to maintain one of the existing approach corridors to Roswell International Airport, Talon High C and Bronco 3 would not be activated at the same time. That is, if Talon High C were activated, Bronco 3 would be deactivated so that the approach to Roswell Internal Airport could be available with minor re-routing.

The reconfigured and expanded MOA would accommodate F-16 pilot training that requires larger blocks of airspace. These new airspace segments and how they differ from the existing Talon MOA are shown in **Table 2.8-1**. The reconfigured and expanded Talon MOA would provide an approximate horizontal dimension of 98 by 50 nm, which would allow for a 30 by 80 nm corridor. In accordance with FAA minimum safe altitude rules (14 CFR 91.119), aircraft must avoid: congested areas of a city, town, or settlement or any open-air assembly of people by 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft; and outside congested areas, aircraft must avoid persons, vessels, vehicles, or structures by 500 feet.



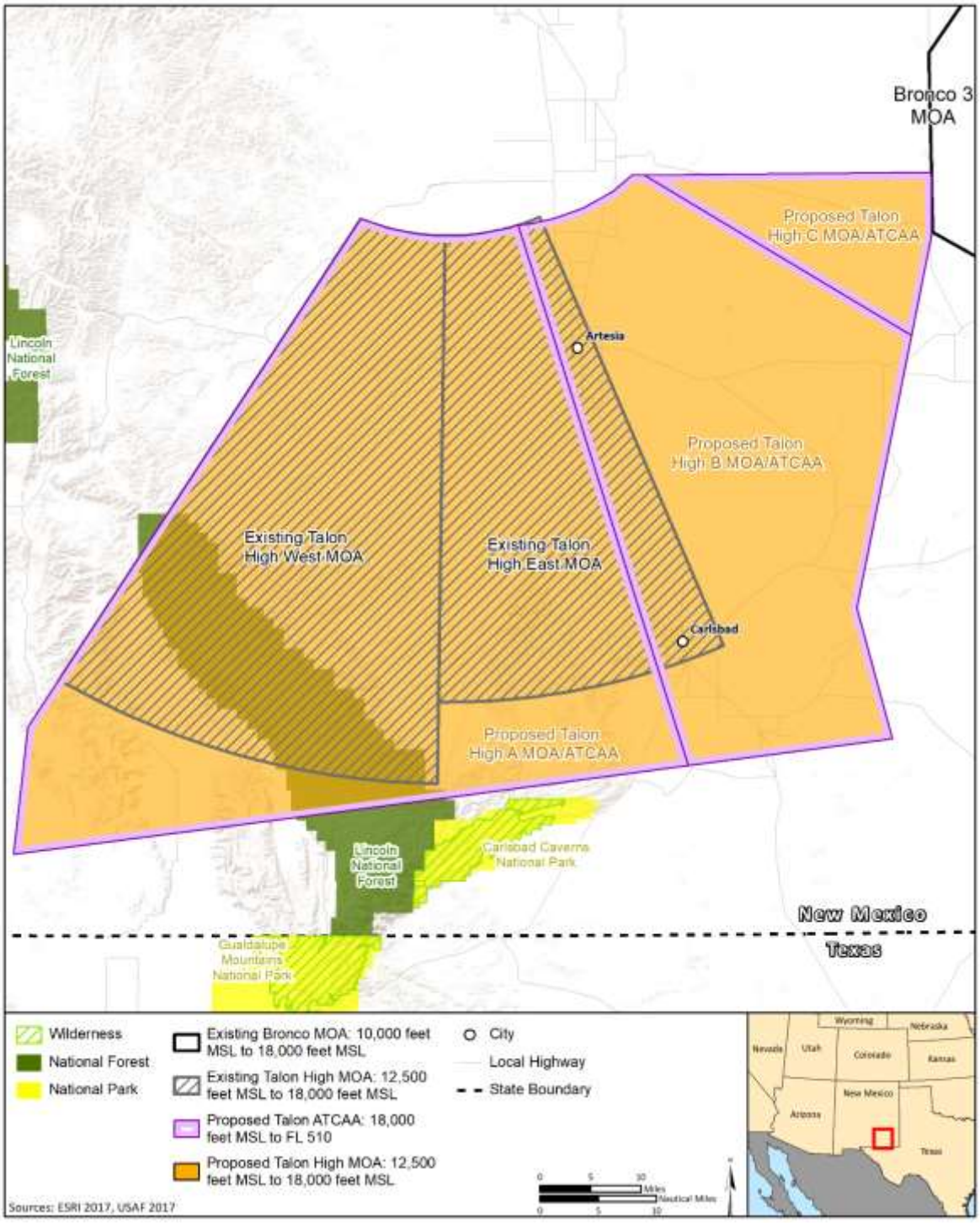
Legend: ATCAA – Air Traffic Control Assigned Airspace; MOA-Military Operations Area.

Figure 2.8-1. Alternative 1: Overview of Existing and Proposed Talon MOA



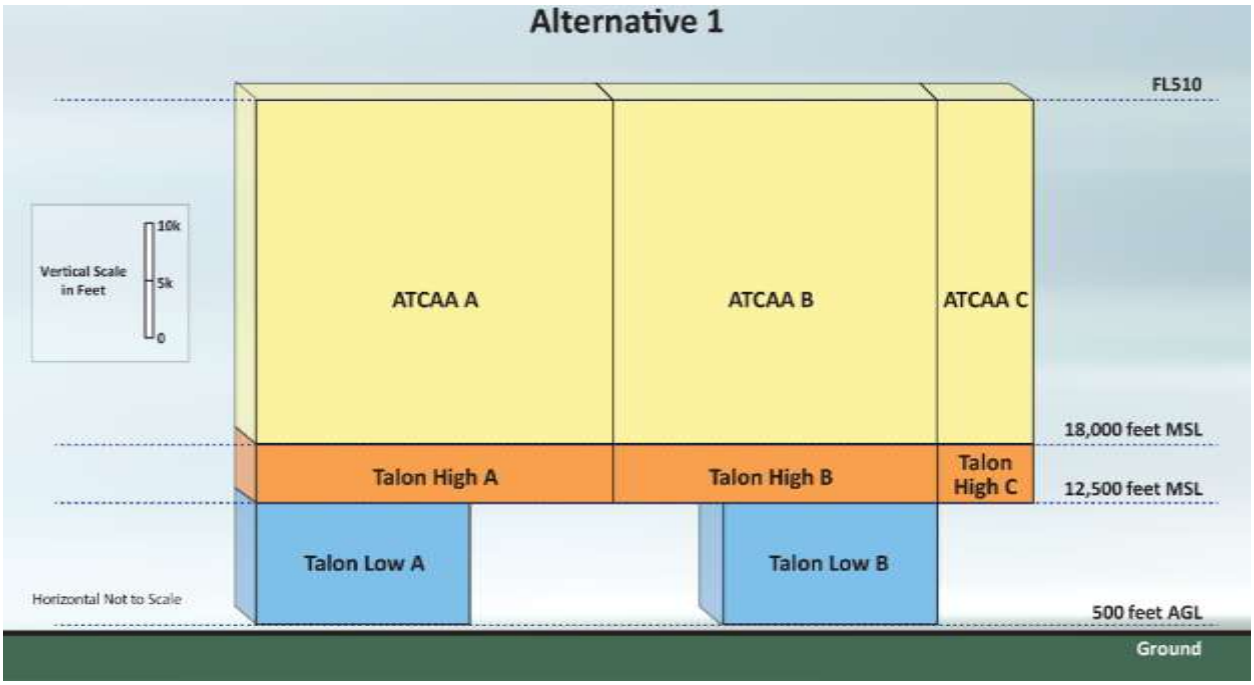
Legend: AGL-above ground level; MOA-Military Operations Area; MSL-mean sea level.

Figure 2.8-2. Alternative 1: Proposed Talon Low MOA



Legend: ATCAA – Air Traffic Control Assigned Airspace; FL – Flight Level; MOA-Military Operations Area; MSL-mean sea level.

Figure 2.8-3. Alternative 1: Proposed Talon High MOA and ATCAA

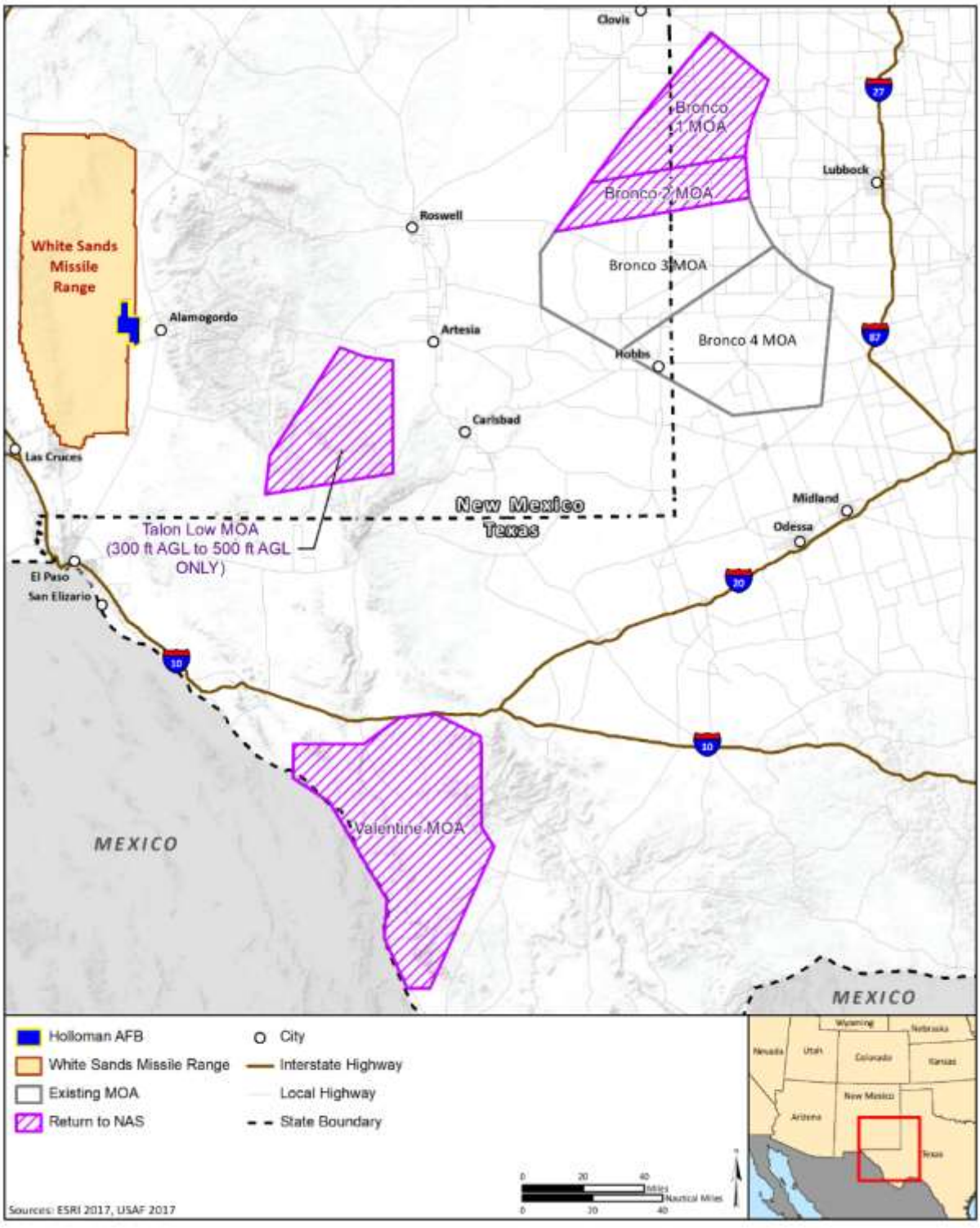


Note: Blue –low MOA; Orange –high MOA; Yellow –ATCAA.
Legend: AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA – Military Operations Area; MSL-mean sea level.

Figure 2.8-4. Alternative 1: Proposed Airspace Components

Return Airspace to National Airspace System

The floor of the Talon Low MOA would be raised from its current 300 feet AGL to 500 feet AGL. This would allow the Air Force to return the lower 200 feet of the airspace to the NAS. Also, as part of this Proposed Action, the Valentine MOA and Bronco 1 and 2 MOAs would also be returned to the NAS. These MOAs have had little to no usage in recent years and are no longer needed for Air Force training activities. Bronco 3 and 4 MOAs would be retained as they currently support other Air Force training operations. The airspace that would be returned to the NAS is illustrated in **Figure 2.8-5.**



Legend: AFB – Air Force Base; AGL; Above Ground Level; MOA-Military Operations Area; NAS – National Airspace System.

Figure 2.8-5. Alternative 1: Airspace to Return to NAS

Table 2.8-1. Existing and Proposed Talon MOA/ATCAA									
Airspace		**Floor**		**Ceiling**		**Dimensions (nm)**		**Ground Footprint (square nm)**	
Existing	**Proposed**	**Existing**	**Proposed**	**Existing**	**Proposed**	**Existing**	**Proposed**	**Existing**	**Proposed**
Talon Low	Talon Low A	300 feet AGL	500 feet AGL	12,500 feet MSL	12,500 feet MSL	25 by 40	30 by 44	1,027	1,336
None	Talon Low B	NA	500 feet AGL	NA	12,500 feet MSL	NA	18 by 25	NA	446
Talon High West	Talon High A	12,500 feet MSL	12,500 feet MSL	18,000 feet MSL	18,000 feet MSL	20 by 45	39 by 54	973	1,894
Talon High East	Talon High B	12,500 feet MSL	12,500 feet MSL	18,000 feet MSL	18,000 feet MSL	16 by 38	22 by 48	661	1,073
None	Talon High C	NA	12,500 feet MSL	NA	18,000 feet MSL	NA	9 by 19	NA	176
Talon East/ West ATCAA	Talon A, B, and C ATCAA	18,000 feet MSL	18,000 feet MSL	FL600	FL510	25 by 55	48 by 98	1,869	3,123
Total Ground Footprint of MOA:								**1,869**	**3,123**

Legend: AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; NA-not applicable; MOA-Military Operations Area; MSL-mean sea level; nm-nautical mile.

2.8.1.2 Proposed Operations

Frequency of airspace use would not be continuous. The proposed airspace would be scheduled for use during the current Holloman AFB operations window of 7:00 a.m. to 10:00 p.m., Monday through Friday, and through the NOTAM process as necessary (currently the Talon MOA is available sunrise to sunset, Monday through Friday and other times through NOTAM). Anticipated F-16 pilot training sorties, including those currently taking place, within the proposed airspace would be approximately 10,000 annually (**Table 2.8-2**). Supersonic operations would occur at or above FL300 (within the ATCAA) and would account for approximately 10 percent of the total sorties. F-16 pilot training from Holloman AFB would constitute the majority of operations within the proposed Talon MOA/ATCAA; however, transient military aircraft (not based at Holloman AFB) could schedule and use the airspace as well.

As defined in FAA Order JO 7400.2M, *Procedures for Handling Airspace Matters*, to ensure optimum use of the airspace, the using agencies must, where mission requirements permit, make their assigned SUA available to the activities of other military units on a shared basis. Therefore, transient aircraft use of the proposed airspace is included to ensure that the full cumulative effects are represented in the analysis. Transient aircraft are those that schedule and use the airspace, but are not based at Holloman AFB. Some squadrons operate on a temporary basis in various locations in order to take advantage of training opportunities that may be different than those at their home locations. With the expectation that optimization of the proposed airspace would probably increase the number of transient users, the Air Force estimated that the number of annual transient sorties would be as many as 1,000 per year when considering historical transient activity. One of the typical users of the existing airspace associated with Holloman AFB is the Canadian Air Force (FA-18 aircraft), who participate in local training as a part of bilateral training

events and other detachments. Other transient sorties by aircraft such as F-15 and F-16 would also be expected and are included in the overall 1,000 transients. As described in Section 2.2.2.1, *Proposed Sorties*, at the time of development of this EIS, the two additional squadrons noted in the Interim Relocation EA had yet to be added to Holloman AFB. However, these additional squadrons are still reasonably expected to occur and the proposed operations in this EIS need to address the maximum possible use of the proposed airspace from F-16 training and potential transients. Until these squadrons are relocated to Holloman AFB, the actual impacts within the proposed airspace would be less than what is analyzed in this EIS.

Table 2.8-2. Alternative 1: Proposed F-16 Sorties

Airspace	Altitude	Day (90%)	Night (10%)	Total[1]
Talon High A and B MOA/ATCAA	12,500 feet MSL to FL510	5,400	600	6,000
Talon High C MOA/ATCAA	12,500 feet MSL to FL510	270	30	300
Talon Low A and B MOA	500 feet AGL to 12,500 feet MSL	3,330	370	3,700
Total F-16 Sorties		**9,000**	**1,000**	**10,000**
Potential Transients				**1,000**
Total Sorties				**11,000**

Note: [1] The Talon MOA is currently used for F-16 training. The proposed total sorties under Alternative 1 includes all existing sorties plus the additional sorties that would be possible once the MOA is optimized.

Legend: % -percent; AGL--above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level.

Use of defensive countermeasures would occur throughout the MOA, to include RR188 Chaff and M206 Flares (**Table 2.8-3**). Chaff are not currently authorized for use within Talon MOA. As part of the airspace modification, Holloman AFB would request authorization from the FAA for use of chaff in the Talon MOA in accordance with FAA Order 6050.32B, *Spectrum Management Regulations and Procedures Manual*. Flares are currently used within the Talon MOA. Fire safety restrictions associated with the use of flares under the Proposed Action would be the same as those currently in place (see **Table 2.2-5**).

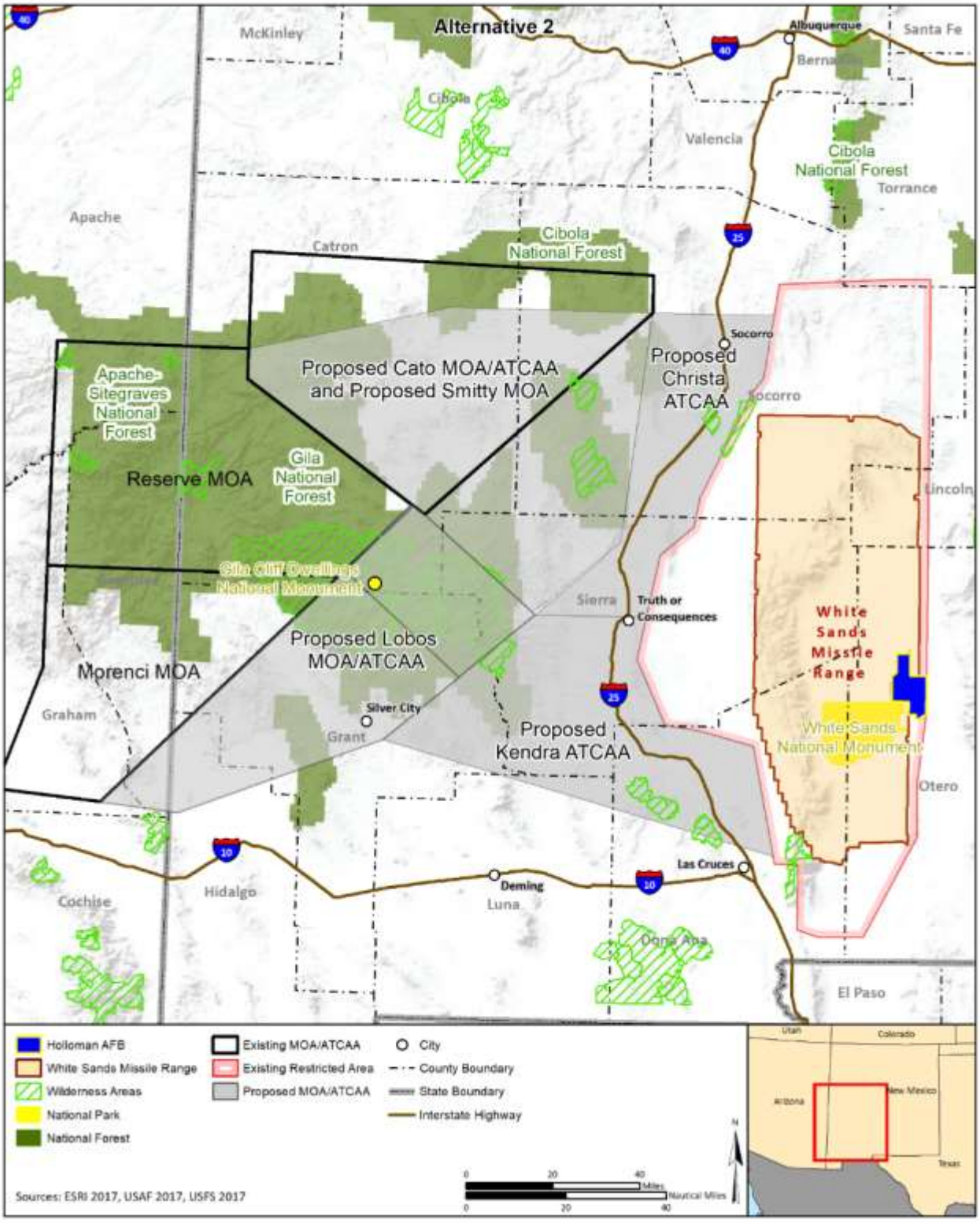
Each chaff bundle contains approximately 3.35 ounces of chaff. Once deployed, the inert chaff fibers land on the ground as described in **Section 2.2.4**, *Chaff and Flares*. Chaff and flare usage would also result in residual material landing on the ground. The residual material consists of plastic end caps, felt spacers, plastic piston, and mylar tape.

Table 2.8-3. Alternative 1: Proposed Chaff and Flare Use

	Chaff	Flare
Proposed Annual Use	15,360	15,360

2.8.2 Alternative 2: Cato, Smitty, and Lobos MOAs

Under Alternative 2, the Cato and Smitty MOAs would be reconfigured and expanded, the Lobos MOA would be established, and the Christa and Kendra ATCAAs would be established (**Figure 2.8-6**). Training operations, to include the use of defensive countermeasures would occur throughout the proposed airspace. Details of Alternative 2 are provided in the following sections.



Legend: AFB-Air Force Base; ATCAA-Air Traffic Control Assigned Airspace; MOA-Military Operations Area.

Figure 2.8-6. Alternative 2: Overview of Cato, Smitty, Lobos MOAs and Christa and Kendra ATCAAs

2.8.2.1 Proposed Airspace Modifications

Reconfigure and Expand Cato and Smitty MOAs, Establish Christa ATCAA

The existing Cato and Smitty MOAs, and the associated Cato ATCAA, would be reconfigured and expanded to the southeast. The proposed Smitty MOA would have the same floor and ceiling as it does currently, 500 feet AGL to 13,500 feet MSL (**Figure 2.8-7**).

The proposed Cato MOA would also have the same floor and ceiling as it does currently 13,500 feet MSL to 18,000 feet MSL (**Figure 2.8-8**). The proposed Cato ATCAA would be available to extend the vertical airspace to FL510 (**Figure 2.8-8**). **Figure 2.8-9** illustrates how the airspace components vertically relate to each other. The existing and proposed dimensions of the Cato and Smitty MOAs are provided in **Table 2.8-4**.

Table 2.8-4. Alternative 2: Existing and Proposed Cato and Smitty MOAs and Christa ATCAA

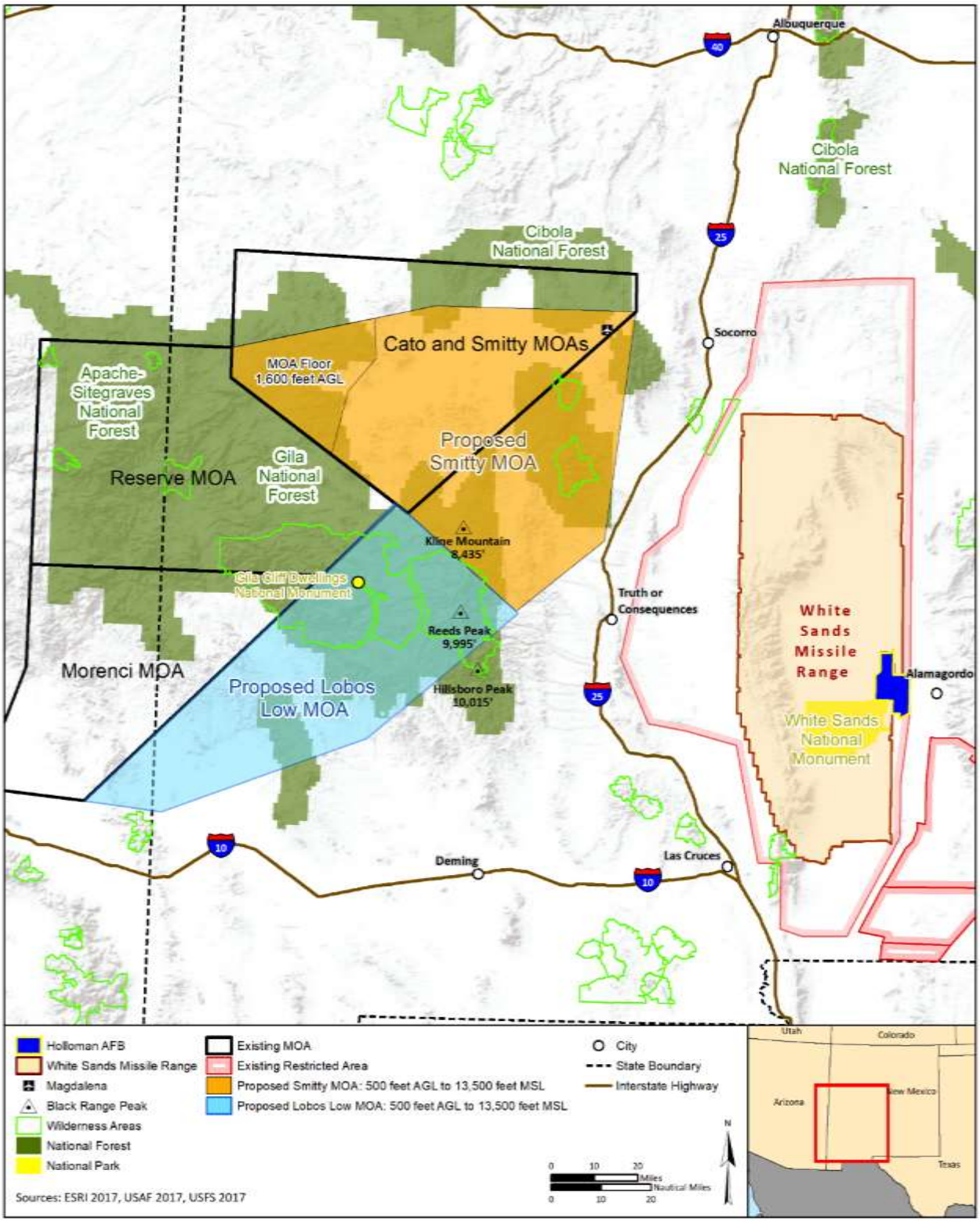
Airspace		Floor		Ceiling		Dimensions (nm)		Ground Footprint (square nm)	
Existing	**Proposed**	**Existing**	**Proposed**	**Existing**	**Proposed**	**Existing**	**Proposed**	**Existing**	**Proposed**
Smitty MOA	Smitty MOA	500 feet AGL	500 feet AGL	13,500 feet MSL	13,500 feet MSL	40 by 67	45 by 75	2,656	3,192
Cato MOA	Cato MOA	13,500 feet MSL	13,500 feet MSL	18,000 feet MSL	18,000 feet MSL	40 by 67	45 by 75	2,656	3,192
Cato ATCAA	Cato ATCAA	18,000 feet MSL	18,000 feet MSL	FL510	FL510	40 by 67	45 by 75	2,656	3,192
Total Ground Footprint of MOA:								**2,656**	**3,192**
NA	Christa ATCAA	NA	18,000 feet MSL	NA	FL510	NA	24 by 61	NA	1,119
Total Ground Footprint of Christa ATCAA								**NA**	**1,119**

Legend: AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level; NA-not applicable; nm-nautical mile.

In accordance with FAA minimum safe altitudes (14 CFR 91.119), aircraft must avoid congested areas of a city, town, or settlement or any open-air assembly of people by 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft; and outside congested areas, aircraft must avoid persons, vessels, vehicles, or structures by 500 feet. Withington and Apache Kid Wilderness Areas (within the Cibola National Forest) would not be overflown lower than 2,000 feet AGL. There are additional charted restrictions within the existing Smitty MOA that would remain in place with the proposed airspace modification:

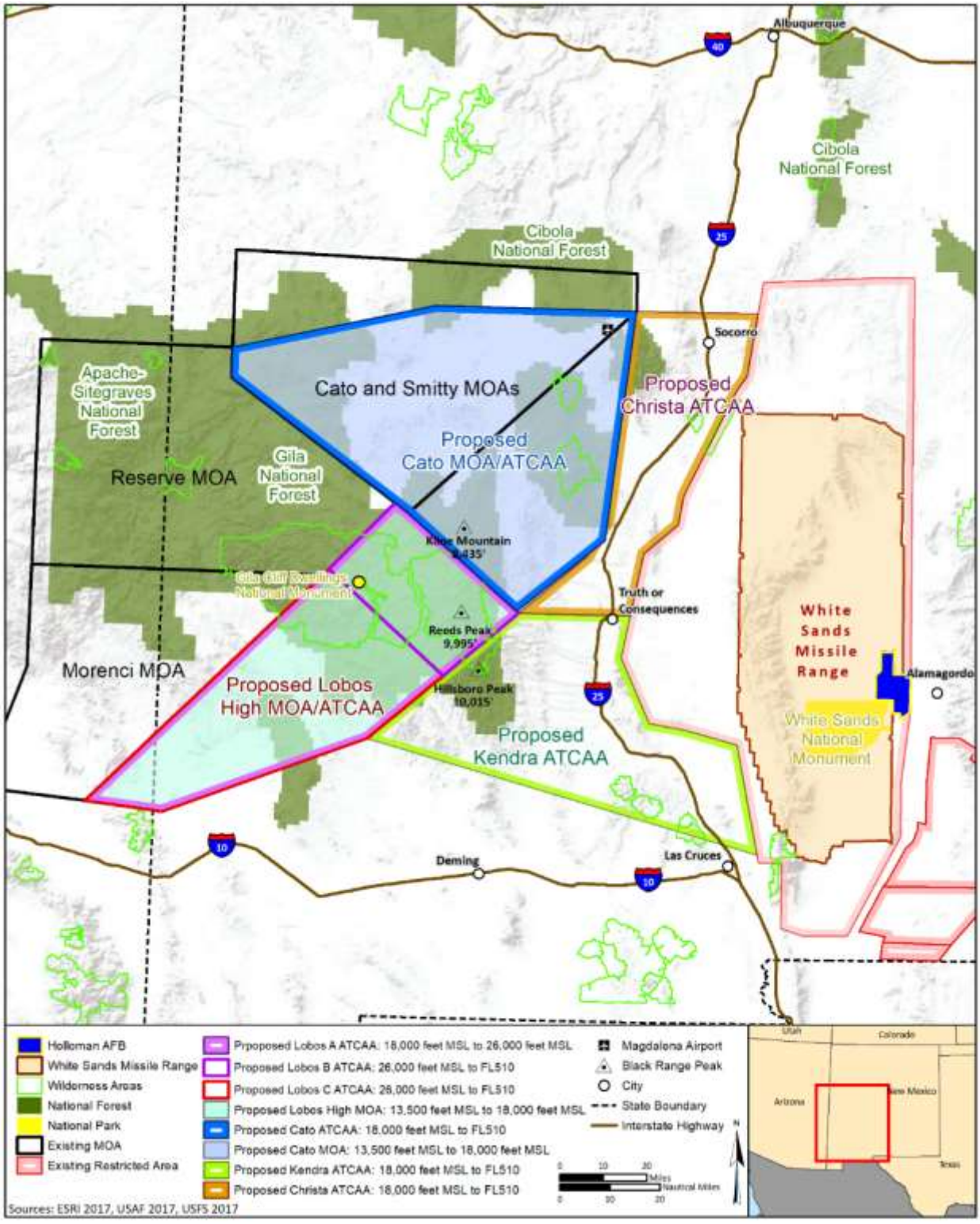
- The Magdalena Airport would not be overflown lower than 2,000 feet AGL within a 3 nm radius.
- The floor of the Smitty MOA in the western corner would continue to be 1,600 feet AGL.

The proposed Christa ATCAA would be created to the east of the proposed Cato ATCAA (see **Figure 2.8-8** and **Table 2.8-4**). The proposed Christa ATCAA would be activated temporarily to serve as a bridge between WSMR airspace and the proposed Cato ATCAA. The proposed Christa ATCAA would have a floor of 18,000 feet MSL and a ceiling of FL510. The Air Force and the Army have established a JTTOC that could provide a mechanism to transit WSMR airspace allowing for direct access to the Christa ATCAA



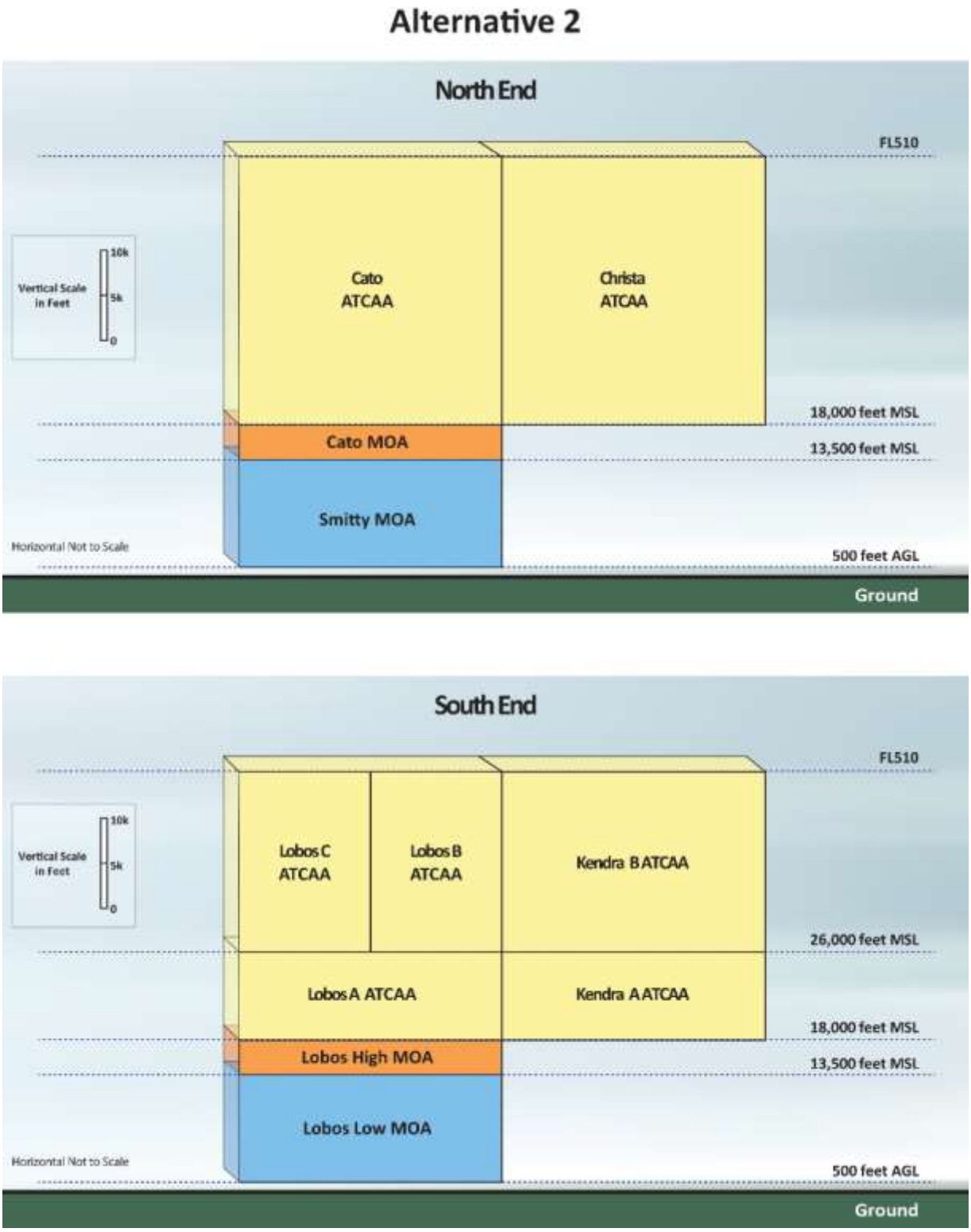
Legend: AFB-Air Force Base; AGL-above ground level; MOA-Military Operations Area; MSL-mean sea level.

Figure 2.8-7. Alternative 2: Proposed Smitty and Lobos Low MOAs



Legend: AFB-Air Force Base; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level.

Figure 2.8-8. Alternative 2: Proposed Cato and Lobos High MOAs/ATCAAs, and Christa and Kendra ATCAAs



Note: Blue –low MOA; Orange –high MOA; Yellow –ATCAA.
Legend: AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level.

Figure 2.8-9. Alternative 2: Proposed Airspace Components

Establish Lobos MOA and Kendra ATCAA

The proposed Lobos MOA would be 33 nm by 86 nm and would consist of a low MOA (see **Figure 2.8-7**) and a high MOA (see **Figure 2.8-8**) for a combined airspace with a floor of 500 feet AGL and a ceiling up to 18,000 feet MSL (See **Table 2.8-5**). The Black Mountain Range within the Gila National Forest contains a few mountain peaks that are up to 10,000 feet that would limit low-level training in that area. Aldo Leopold and Gila Wilderness Areas (within the Gila National Forest) and the Gila Cliff Dwellings National Monument would not be overflown below 2,000 feet AGL in accordance with FAA Aeronautical Information Manual (paragraph 7-4-6). In accordance with FAA minimum safe altitudes (14 CFR 91.119), aircraft must avoid congested areas of a city, town, or settlement or any open-air assembly of people by 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft, and outside congested areas, aircraft must avoid persons, vessels, vehicles, or structures by 500 feet.

An ATCAA with a ceiling of FL510 would be available to extend vertical dimensions of the Lobos MOA. This ATCAA would be divided into three components (A, B, and C) (**Figure 2.8-8 and Figure 2.8-9**). The Lobos A ATCAA would have the same horizontal boundaries as the Lobos MOA. The Lobos A ATCAA would have a floor of 18,000 feet MSL and extend up to FL260. The Lobos B ATCAA would overlie the Lobos A ATCAA at the northern end. The Lobos B ATCAA would be reserved for commercial jet traffic along an existing ATS route that transits this area (J-86). The Lobos C ATCAA would overlie the Lobos A ATCAA at the southern end, extending the ceiling to FL510.

The proposed Kendra ATCAA would be established adjacent to the Lobos ATCAA to connect with WSMR airspace (see **Figure 2.8-8**). The Kendra ATCAA would be activated temporarily to serve as a bridge between WSMR airspace and the proposed Lobos ATCAA. The Kendra ATCAA would be divided into two components, A (18,000 feet MSL to FL260) and B (FL270 to FL510) (please note the A and B components have the same horizontal dimensions and are shown on **Figure 2.8-8** as simply "proposed Kendra ATCAA"). The floor and ceiling of the B component would align with the Lobos B ATCAA and be reserved for commercial jet traffic along J-86.

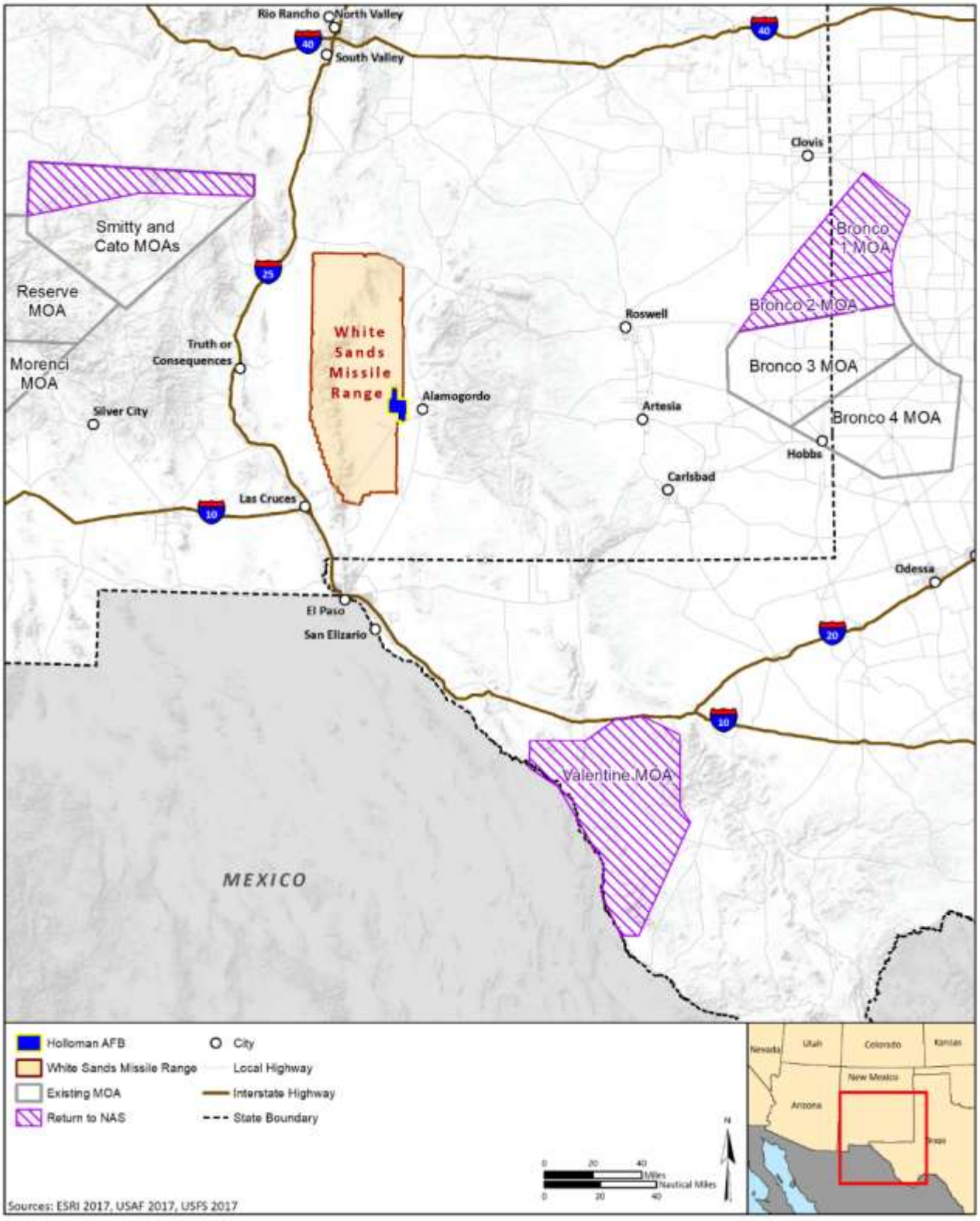
Table 2.8-5. Alternative 2: Proposed Lobos MOA and Kendra ATCAA

Airspace		Floor		Ceiling		Dimensions (nm)		Ground Footprint (square nm)	
Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
NA	Lobos Low MOA	NA	500 feet AGL	NA	13,500 feet MSL	NA	33 by 86	0	2,085
NA	Lobos High MOA	NA	13,500 feet MSL	NA	18,000 feet MSL	NA	33 by 86	0	2,085
NA	Lobos A ATCAA	NA	18,000 feet MSL	NA	FL260	NA	33 by 86	0	2,085
NA	Lobos B ATCAA	NA	FL270	NA	FL510	NA	19 by 33	0	620
NA	Lobos C ATCAA	NA	FL270	NA	FL510	NA	31 by 67	0	1,465
Total Ground Footprint of MOA:								**0**	**2,085**
NA	Kendra A ATCAA	NA	18,000 feet MSL	NA	FL260	NA	39 by 75	NA	1,824
NA	Kendra B ATCAA	NA	FL270	NA	FL510	NA	39 by 75	NA	1,824
Total Ground Footprint of Kendra ATCAA:								**0**	**1,824**

Legend: AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level; NA-not applicable; nm-nautical mile.

Return Airspace to National Airspace System

Reconfiguring the dimensions of the Cato and Smitty MOAs would allow for the northern portion of the MOAs to be returned to the NAS for civilian aircraft use (approximately 900 square nm) (**Figure 2.8-10**). Also, as part of this Proposed Action, the Valentine MOA and Bronco 1 and 2 MOAs would be returned to the NAS. These MOAs have had little to no usage in recent years and are no longer needed for Air Force training activities.



Legend: AFB – Air Force Base; MOA-Military Operations Area; NAS – National Airspace System.

Figure 2.8-10. Alternative 2: Airspace to Return to the NAS

2.8.2.2 Proposed Operations

For operational purposes, the Cato, Smitty, and Lobos MOAs could be used individually or in various combinations of airspace blocks. Therefore, the training exercises could occur anywhere within the proposed airspace areas. Frequency of airspace use within the proposed MOAs would not be continuous. The Cato and Smitty MOAs are currently charted for use from 8:00 a.m. to 10:00 p.m., Monday through Saturday with activation at other times through the NOTAM process. Under this alternative, the airspace would be scheduled for use during the current Holloman AFB operations window, 7:00 a.m. to 10:00 p.m., Monday through Friday, and through the NOTAM process as necessary.

The total F-16 pilot training sorties within the proposed airspace would be approximately 9,100 annually (**Table 2.8-6**). The Cato and Smitty MOAs are currently used rarely for F-16 training (see **Table 1.2-1**), this very limited use is included in the proposed sorties for Alternative 2. It should also be noted that the total proposed sorties for the Cato, Smitty, and Lobos MOAs/ATCAAs is less than 10,000 since the existing F-16 pilot training sorties in Talon MOA (approximately 830) would continue to occur in that MOA. Supersonic operations would occur at or above FL300 (within the ATCAAs) and would account for approximately 10 percent of the total sorties. F-16 pilot training from Holloman AFB would constitute the majority of operations within the proposed Cato, Smitty, and Lobos MOAs/ATCAAs; however, transient military aircraft (not based at Holloman AFB) could schedule and use the airspace as well.

As described in Alternative 1 (**Section 2.8.1.2**, *Proposed Operations*), transient aircraft use of the proposed airspace is included to ensure that the full cumulative effects are represented in the analysis. The anticipated transient aircraft in the proposed Cato, Smitty, and Lobos MOAs would be similar to those described for the proposed Talon MOA and would include up to 1,000 sorties per year of FA-18, F-15, and other F-16 aircraft. In addition, it is estimated that up to 300 sorties per year of F-35A aircraft could use the proposed Lobos High MOA/ATCAA. The F-35A aircraft currently uses adjacent MOAs (Outlaw, Jackal, Morenci, and Reserve MOAs); and, it is anticipated they may use the proposed Lobos High MOA/ATCAA occasionally for some training activities. As described in **Section 2.2.2.1**, *Proposed Sorties*, at the time of development of this EIS, the two additional squadrons noted in the Interim Relocation EA had yet to be added to Holloman AFB. However, these additional squadrons are still reasonably expected to occur and the proposed operations in this EIS need to address the maximum possible use of the proposed airspace from F-16 training and potential transients. Until these squadrons are relocated to Holloman AFB, the actual impacts within the proposed airspace would be less than what is analyzed in this EIS.

Table 2.8-6. Alternative 2: Proposed Sorties				
	Altitude	**Day (90%)**	**Night (10%)**	**Total**
Cato and Lobos High MOAs/ATCAA with Christa ATCAA	13,500 feet MSL to FL510[1]	3,600	400	4,000
Lobos High MOA/ATCAA with Kendra ATCAA	13,500 feet MSL to FL510	1,350	150	1,500
Smitty MOA	500 feet AGL to 13,500 feet MSL	2,610	290	2,900
Lobos Low MOA	500 feet AGL to 13,500 feet MSL	630	70	700
Total F-16 Sorties		**8,190**	**910**	**9,100[2]**
Potential Transients				**1,300**
Total Sorties				**10,400**

Notes: [1] Sorties within the proposed Lobos ATCAA would be limited to below FL260 to preserve the "B corridor" for J-86 as described in **Section 2.8.2.1** (Alternative 2: Proposed Airspace Modifications).
[2] The total proposed sorties for the Cato, Smitty, and Lobos MOAs/ATCAAs is less than 10,000 since the existing F-16 pilot training sorties in Talon MOA (approximately 830) would continue to occur in that MOA. The total sorties including transients in this table (10,400) is the total for the proposed Cato, Smitty, and Lobos MOAs/ATCAAs.
Legend: % - percent; AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level.

Use of defensive countermeasures would occur throughout the MOAs, to include RR188 Chaff and M206 Flares (**Table 2.8-7**). Chaff and flare are currently authorized for use within the Cato MOA (Air National Guard Readiness Center 2003). As part of the airspace modification, Holloman AFB would request authorization from the FAA for use of chaff in the proposed Lobos MOA in accordance with FAA Order 6050.32B, *Spectrum Management Regulations and Procedures Manual*. Use of flares would be in accordance with existing fire safety restrictions (see **Table 2.2-5**). Chaff and flares would not be used in the Christa and Kendra ATCAAs.

Table 2.8-7. Alternative 2: Proposed Chaff and Flare Use		
	Chaff	**Flare**
Proposed Annual Use	15,360	15,360

2.8.3 Alternative 3: Talon, Cato, Smitty, and Lobos MOAs

Alternative 3 represents a combination of Alternatives 1 and 2 in which the existing Talon, Cato, and Smitty MOAs would be reconfigured and expanded, Lobos MOA would be established, and the Christa and Kendra ATCAAs would be established. Proposed operations would be split among all the MOAs.

This alternative was developed in response to comments received during the scoping process (see **Section 1.6.1.4,** Scoping Comments). Details of Alternative 3 are provided in the following sections.

2.8.3.1 Proposed Airspace Modifications

Modify Existing Airspace and Create New Airspace

The existing Talon MOA and ATCAA would be reconfigured and expanded as described under Alternative 1, with the exception of Talon High C MOA/ATCAA, which would not be established. Without Talon High C MOA/ATCAA, the reconfigured and expanded Talon MOA would not have the dimensions to meet all of the high altitude training requirements proposed under **Section 2.2** (Proposed Action). Therefore, the Cato, Smitty, and Lobos MOAs would also have to be expanded and created to support training.

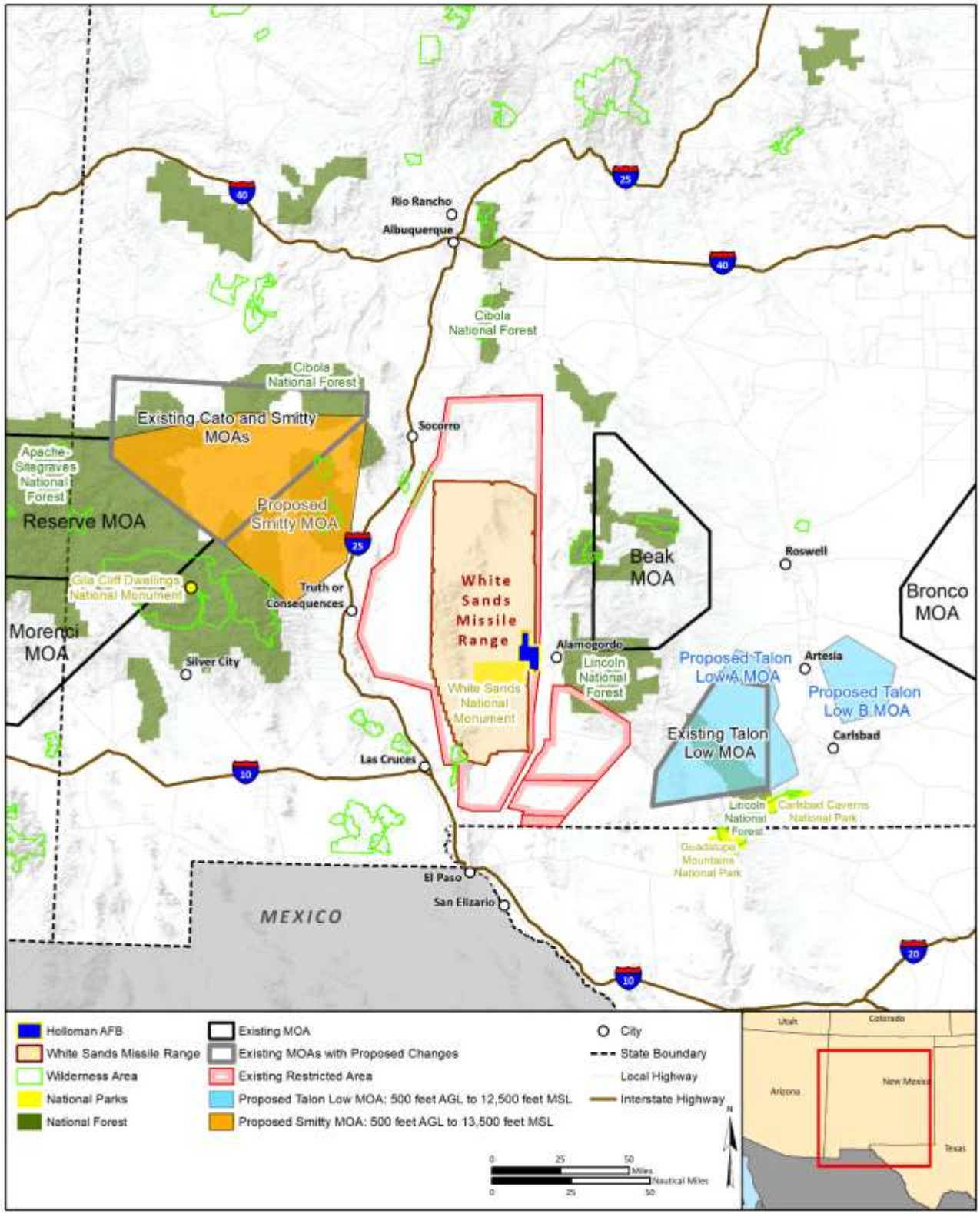
The Cato and Smitty MOAs would be reconfigured and expanded as described under Alternative 2. The Lobos MOA would be created as described under Alternative 2, but without a low MOA component. The floor of Lobos MOA would be 13,500 feet AGL and the ceiling would be up to 18,000 feet MSL. The overlying proposed Cato ATCAA and Lobos ATCAA would be the same as described under Alternative 2. The ATCAAs, in conjunction with the MOAs, would extend the usable airspace for training to FL510 when not needed for other air traffic.

As described under Alternative 2, two ATCAAs (Christa and Kendra ATCAAs) would be established to serve as temporary bridges to connect the proposed Cato ATCAA and Lobos ATCAA to WSMR airspace. **Table 2.8-8** provides a summary of the existing and proposed airspace modifications.

Figure 2.8-11 illustrates the existing and proposed low MOAs associated with Alternative 3. **Figure 2.8-12** illustrates the existing and proposed high MOAs and ATCAAs associated with Alternative 3. **Figure 2.8-13** illustrates how the airspace components vertically relate to each other.

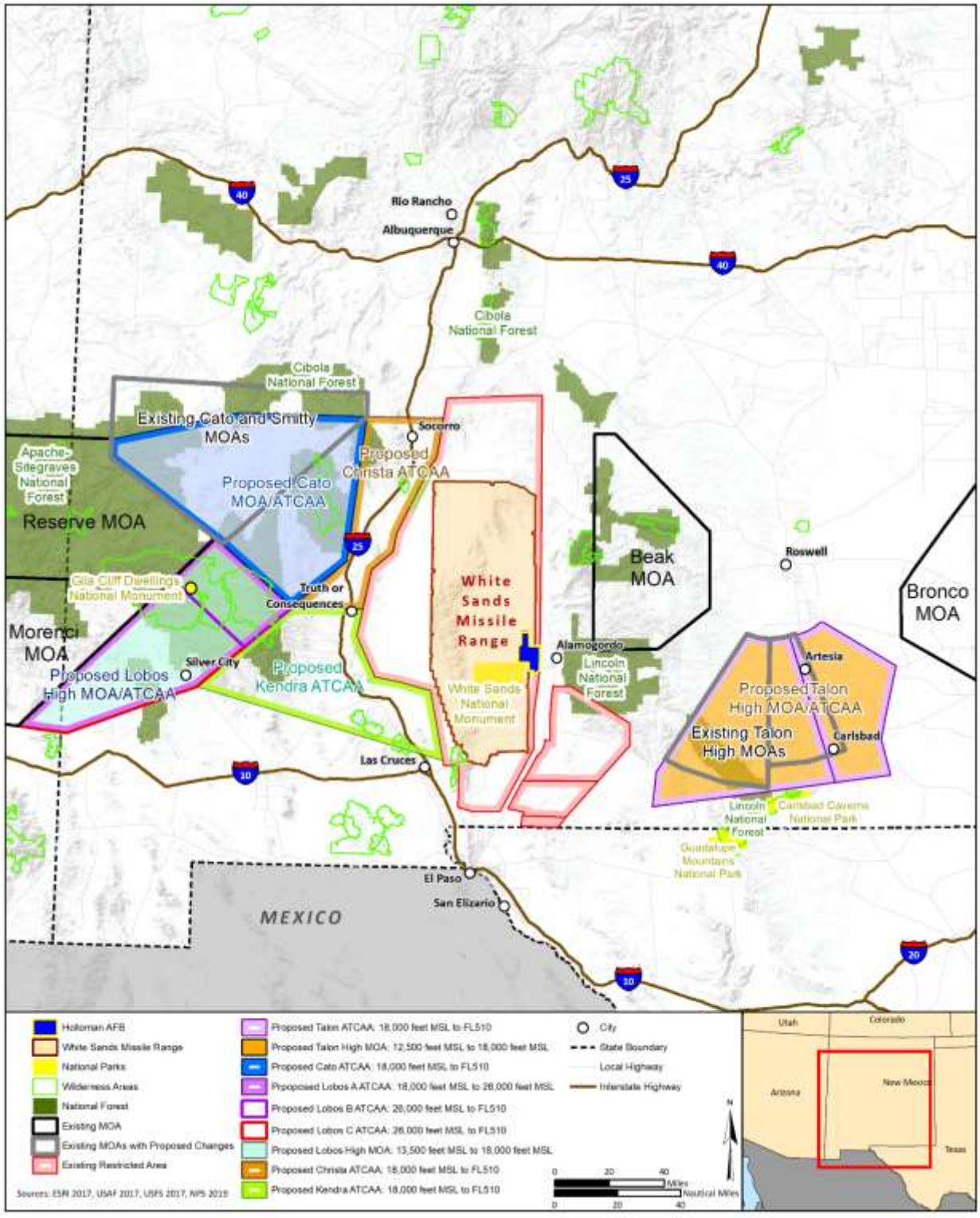
Return Airspace to National Airspace System

The floor of the Talon MOA would be raised from its current 300 feet AGL to 500 feet AGL (as described under Alternative 1). This would allow the Air Force to return the lower 200 feet of the airspace to the NAS. Reconfiguring the dimensions of the Cato and Smitty MOAs would allow for the northern portion of the MOAs to be returned to the NAS for civilian aircraft use (approximately 900 square nm) (as described under Alternative 2). Also, the Valentine MOA and Bronco 1 and 2 MOAs would be returned to the NAS (as described under Alternatives 1 and 2). These MOAs have had little to no usage in recent years and are no longer needed for Air Force training activities. **Figure 2.8-14** illustrates the airspace that would be returned to the NAS under Alternative 3.



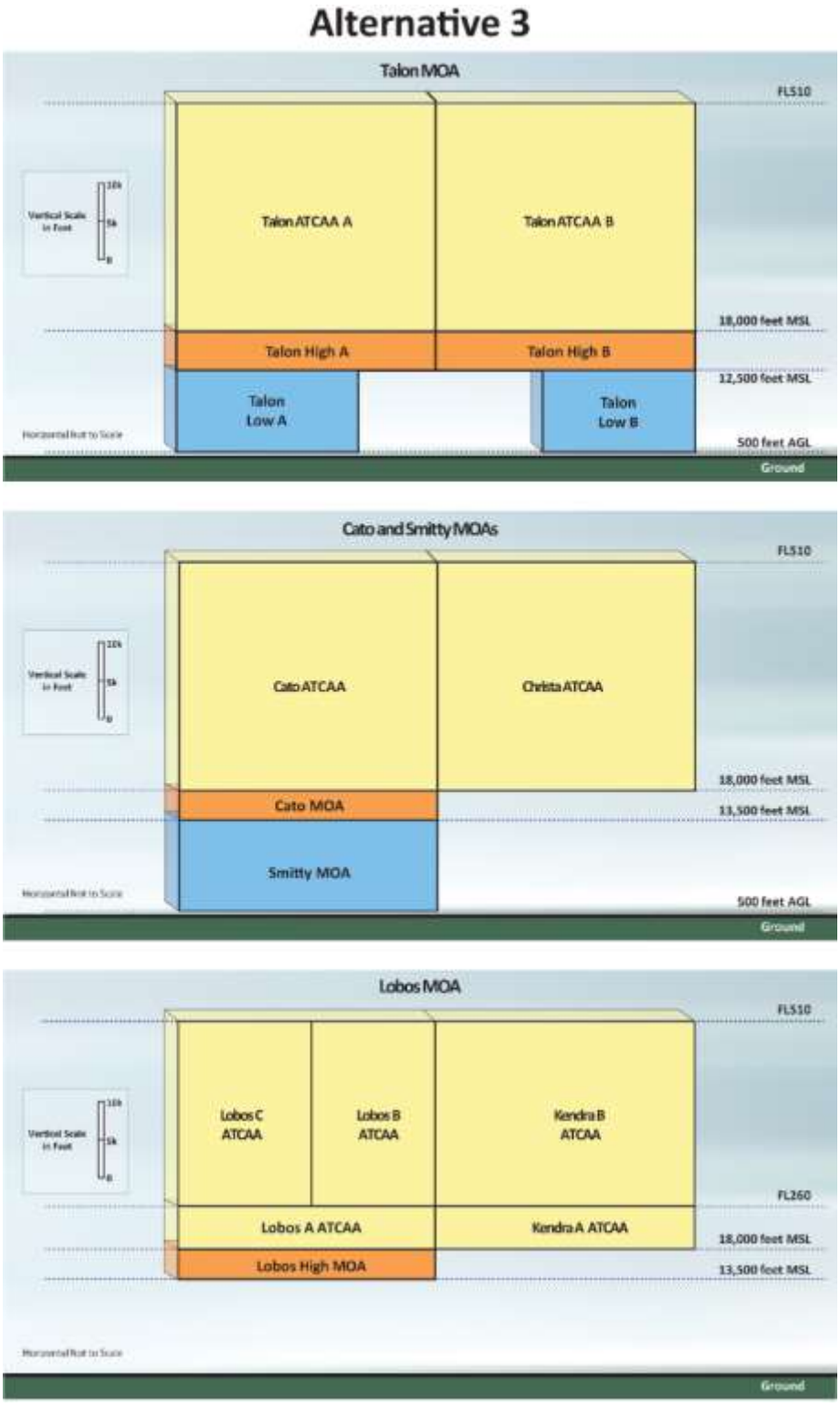
Legend: AFB-Air Force Base; AGL-above ground level; MOA-Military Operations Area; MSL-mean sea level.

Figure 2.8-11. Alternative 3: Proposed Low MOAs



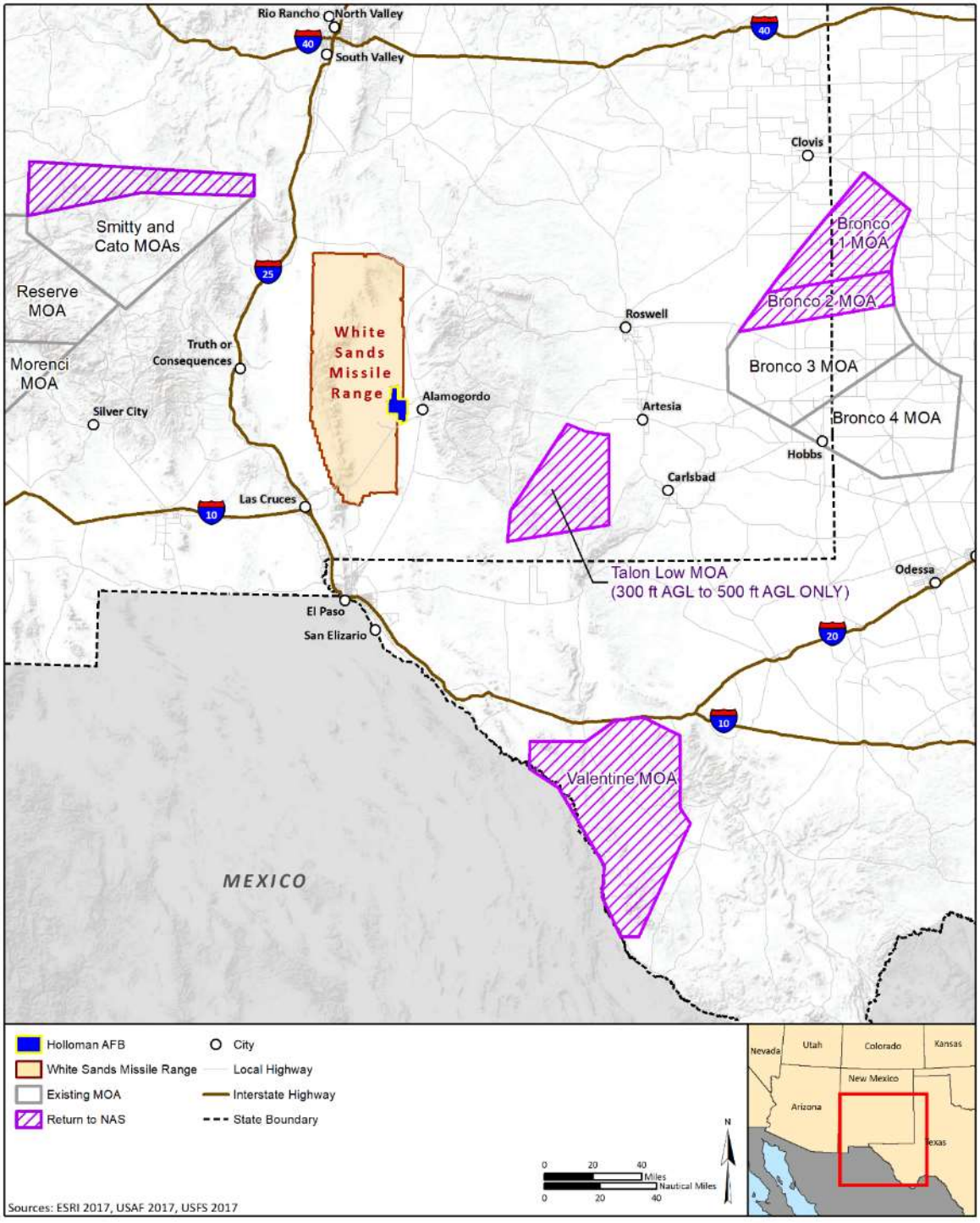
Legend: AFB-Air Force Base; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level.

Figure 2.8-12. Alternative 3: Proposed High MOAs and ATCAAs



Note: Blue –low MOA; Orange –high MOA; Yellow –ATCAA.
Legend: AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level.

Figure 2.8-13. Alternative 3: Proposed Airspace Components



Legend: AFB – Air Force Base; MOA-Military Operations Area; NAS – National Airspace System.

Figure 2.8-14. Alternative 3: Airspace to Return to NAS

Table 2.8-8. Alternative 3: Existing and Proposed Airspace Modifications

Airspace		Floor		Ceiling		Dimensions (nm)		Ground Footprint (square nm)	
Existing	**Proposed**	**Existing**	**Proposed**	**Existing**	**Proposed**	**Existing**	**Proposed**	**Existing**	**Proposed**
Talon Low	Talon Low A	300 feet AGL	500 feet AGL	12,500 feet MSL	12,500 feet MSL	25 by 40	30 by 44	1,027	1,336
None	Talon Low B	NA	500 feet AGL	NA	12,500 feet MSL	NA	18 by 25	NA	446
Talon High West	Talon High A	12,500 feet MSL	12,500 feet MSL	18,000 feet MSL	18,000 feet MSL	20 by 45	39 by 54	973	1,894
Talon High East	Talon High B	12,500 feet MSL	12,500 feet MSL	18,000 feet MSL	18,000 feet MSL	16 by 38	22 by 48	661	1,073
Talon ATCAA	Talon A, B ATCAA	18,000 feet MSL	18,000 feet MSL	FL500	FL510	25 by 55	48 by 84	1,869	2,967
Ground Footprint of Talon MOA:								**1,869**	**2,967**
Smitty MOA	Smitty MOA	500 feet AGL	500 feet AGL	13,500 feet MSL	13,500 feet MSL	40 by 67	45 by 75	2,656	3,192
Cato MOA	Cato MOA	13,500 feet MSL	13,500 feet MSL	18,000 feet MSL	18,000 feet MSL	40 by 67	45 by 75	2,656	3,192
Cato ATCAA	Cato ATCAA	18,000 feet MSL	18,000 feet MSL	FL510	FL510	40 by 67	45 by 75	2,656	3,192
NA	Lobos High MOA	NA	13,500 feet MSL	NA	18,000 feet MSL	NA	33 by 86	0	2,085
NA	Lobos A ATCAA	NA	18,000 feet MSL	NA	FL260	NA	33 by 86	0	2,085
NA	Lobos B ATCAA	NA	FL270	NA	FL510	NA	19 by 33	0	620
NA	Lobos C ATCAA	NA	FL270	NA	FL510	NA	31 by 67	0	1,465
Ground Footprint of Lobos MOA:								**0**	**2,085**
NA	Christa ATCAA	NA	18,000 feet MSL	NA	FL510	NA	24 by 61	0	1,119
NA	Kendra A ATCAA	NA	18,000 feet MSL	NA	FL260	NA	39 by 75	0	1,824
NA	Kendra B ATCAA	NA	FL270	NA	FL510	NA	39 by 75	NA	1,824
Ground Footprint of Christa and Kendra ATCAAs:								**0**	**2,943**

Legend: AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level; NA-not applicable; nm-nautical miles.

2.8.3.2 Proposed Operations

F-16 pilot training sorties would occur within all proposed airspace areas: Talon, Cato, Smitty, and Lobos MOAs and the associated ATCAAs (**Table 2.8-9**). Supersonic operations would occur at or above FL300 (within the ATCAAs) and would account for approximately 10 percent of the total sorties. F-16 pilot training from Holloman AFB would constitute the majority of operations within the proposed airspace; however, transient military aircraft (not based at Holloman AFB) could schedule and use the airspace as needed. As described in Alternative 1 (**Section 2.8.1.2**, *Proposed Operations*) and Alternative 2 (**Section**

2.8.2.2, *Proposed Operations*), transient aircraft use of the proposed airspace is included to ensure that the full cumulative effects are represented in the analysis. The anticipated transient aircraft in the proposed Talon, Cato, Smitty, and Lobos MOAs would include up to 1,000 sorties per year of FA-18, F-15, and other F-16 aircraft (split between the east and west airspace areas, 700 and 300, respectively). As described for Alternative 2 (**Section 2.8.2.2**, *Proposed Operations*), it is estimated that up to 300 sorties per year of F-35A aircraft could use the proposed Lobos High MOA/ATCAA, thus the potential transients under Alternative 3 could be 700 in the east and 600 in the west for a total of 1,300. As described in **Section 2.2.2.1**, *Proposed Sorties*, at the time of development of this EIS, the two additional squadrons noted in the Interim Relocation EA had yet to be added to Holloman AFB. However, these additional squadrons are still reasonably expected to occur and the proposed operations in this EIS need to address the maximum possible use of the proposed airspace from F-16 training and potential transients. Until these squadrons are relocated to Holloman AFB, the actual impacts within the proposed airspace would be less than what is analyzed in this EIS.

Table 2.8-9. Alternative 3: Proposed Sorties

		Day (90%)	Night (10%)	Total[1]
Talon High A and B MOA/ATCAA	12,500 feet MSL to FL510	3,780	420	4,200
Talon Low A and B MOA	500 feet AGL to 12,500 feet MSL	2,340	260	2,600
Cato and Lobos High MOAs/ATCAA with Christa ATCAA	13,500 feet MSL to FL510[1]	1,440	160	1,600
Lobos High MOA/ATCAA with Kendra ATCAA[2]	13,500 feet MSL to FL510	450	50	500
Smitty MOA	500 feet AGL to 13,500 feet MSL	990	110	1,100
Total F-16 Sorties		**9,000**	**1,000**	**10,000**
Potential Transients (700 in east, 600 in west)				**1,300**
Total Sorties				**11,300**

Note: [1] The proposed total sorties include all existing sorties plus the additional sorties that would be possible once the MOAs are optimized.
[2] Sorties within the proposed Lobos ATCAA would be limited to below FL260 to preserve the "B corridor" for J-86.
Legend: %-percent; AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level.

Frequency of airspace use for F-16 pilot training within the proposed airspaces would not be continuous. The airspace would be scheduled for use during the current Holloman AFB operations window, 7:00 a.m. to 10:00 p.m., Monday through Friday, and through the NOTAM process.

Use of defensive countermeasures would occur throughout all the MOAs and ATCAAs, to exclude the Christa and Kendra ATCAAs (**Table 2.8-10**). Chaff and flare are currently authorized for use within the Cato MOA (Air National Guard Readiness Center 2003). Chaff are not currently authorized for use within Talon MOA. Flares are currently used within the Talon MOA. As part of the airspace modification, Holloman AFB would request authorization from the FAA for use of chaff within the proposed Lobos and Talon MOAs in accordance with FAA Order 6050.32B, *Spectrum Management Regulations and Procedures Manual*. Use of flares within all airspace would be in accordance with existing fire safety restrictions (see **Table 2.2-4**).

Table 2.8-10. Alternative 3: Proposed Annual Chaff and Flare Use		
	Chaff	**Flare**
Cato, Smitty, and Lobos MOAs	4,608	4,608
Talon MOA	10,752	10,752
Total	**15,360**	**15,360**

Legend: MOA-Military Operations Area.

2.8.4 No Action Alternative

Under the No Action Alternative, there would be no SUA modifications in the vicinity of Holloman AFB in support of F-16 pilot training. Training for F-16 aircrews stationed at Holloman AFB would continue to use restricted areas at WSMR and Fort Bliss, and MOAs in the vicinity of Holloman AFB to the extent practicable (see **Section 1.2.2**). The boundaries of Talon, Cato, and Smitty MOAs would remain unchanged and they would continue to be used as they are currently. No airspace would be returned to the NAS. The current inefficiencies in accomplishing F-16 pilot training would continue. The No Action Alternative is carried forward for analysis consistent with CEQ guidelines to provide a baseline against which to measure the impacts of the Proposed Action and alternatives.

2.8.5 Summary of Alternatives

Table 2.8-11 provides a summary of the alternatives. **Table 2.8-12** provides a summary of the proposed F-16 pilot training sorties.

Table 2.8-11. Summary of Alternatives				
	Alternative 1	**Alternative 2**	**Alternative 3**	**No Action**
Talon MOA/ATCAA	Expansion: Low A,B (500 feet AGL to 12,500 feet MSL) High A,B,C (12,500 to 18,000 feet MSL) ATCAA A,B,C (18,000 feet MSL to FL 510)	No change to existing MOA/ATCAA	Expansion: Low A,B (500 feet AGL to 12,500 feet MSL) High A,B (12,500 to 18,000 feet MSL) ATCAA A,B (18,000 feet MSL to FL 510)	No change to existing MOA/ATCAA
Cato and Smitty MOAs/ATCAA	No change to existing MOAs/ATCAA	Expansion: Smitty MOA (500 feet AGL to 13,500 feet MSL) Cato MOA (13,500 to 18,000 feet MSL) Cato ATCAA (18,000 feet MSL to FL510)	Same as Alternative 2	No change to existing MOAs/ATCAA

Table 2.8-11. Summary of Alternatives (cont.)				
	Alternative 1	**Alternative 2**	**Alternative 3**	**No Action**
Lobos MOA/ATCAAs	Would not be established	Establish new: Low MOA (500 feet AGL to 13,500 feet MSL) High MOA (13,500 to 18,000 feet MSL) Lobos ATCAA A (18,000 feet MSL to FL270) Lobos ATCAA B (FL270 to FL510) Lobos ATCAA C (FL270 to FL 510)	Establish new: High MOA (13,500 to 18,000 feet MSL) Lobos ATCAA A (18,000 feet MSL to FL270) Lobos ATCAA B (FL270 to FL510) Lobos ATCAA C (FL270 to FL 510)	Would not be established
Christa and Kendra ATCAAs	Would not be established	Establish new: Christa ATCAA (18,000 feet MSL to FL510) Kendra A and B ATCAA (18,000 feet MSL to FL510)	Same as Alternative 2	Would not be established
Return Airspace to NAS	Return to NAS: lower 200 feet of existing Talon Low MOA, Valentine MOA, and Bronco 1 and 2 MOAs	Return to NAS: Northern portion of Cato and Smitty MOA (900 square miles), Valentine MOA, and Bronco 1 and 2 MOAs	Return to NAS: lower 200 feet of existing Talon Low MOA, northern portion of Cato and Smitty MOA (900 square miles), Valentine MOA, and Bronco 1 and 2 MOAs	No airspace returned to NAS
Chaff and Flare Usage	15,360 chaff and 15,360 flares in Talon MOA/ATCAA	15,360 chaff and 15,360 flares in Cato, Smitty, and Lobos MOAs/ATCAAs	10,752 chaff and 10,752 flares in Talon MOA 4,608 Chaff and 4,608 Flares in Cato, Smitty, and Lobos MOAs/ATCAAs	No change to existing chaff and flare usage in Talon or Cato MOAs/ATCAAs

Legend: AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level; NAS-National Airspace System.

Table 2.8-12. Summary of Proposed F-16 Pilot Training Sorties			
Airspace	**Alternative 1**	**Alternative 2**	**Alternative 3**
Talon High A and B MOA/ATCAA	6,000	830[1]	4,200
Talon High C MOA/ATCAA	300		
Talon Low A and B MOA	3,700		2,600
Cato and Lobos High MOAs/ATCAA with Christa ATCAA		4,000	1,600
Lobos High MOA/ATCAA with Kendra ATCAA		1,500	500
Smitty MOA		2,900	1,100
Lobos Low MOA		700	
Total F-16 Sorties	**10,000**	**9,930**	**10,000**
Potential Transients	**1,000**	**1,300**	**1,300**
Total Sorties	**11,000**	**11,230[2]**	**11,300**

Legend: ATCAA-Air Traffic Control Assigned Airspace; MOA-Military Operations Area.
Notes: [1] There are currently approximately 830 F-16 sorties in the existing Talon MOA. These sorties would continue under Alternative 2. The existing 830 sorties are included in the proposed F-16 sorties in Talon MOA for Alternatives 1 and 3.
[2] The total sorties in Table 2.8-6, *Alternative 2: Proposed Sorties*, showed 10,400 total sorties since that table was only showing the total sorties in the proposed Cato, Smitty, and Lobos MOAs/ATCAAs.

2.8.6 Identification of Preferred Alternative

The Air Force has selected Alternative 1: Talon MOA as the Preferred Alternative. The selection of this alternative was primarily based on feedback from the cooperating agencies, the analysis presented in this EIS, and comments from the public and stakeholders. All of the actions identified in the Preferred Alternative were included in the Aeronautical Proposal. Revocation of airspace, specifically the return of three MOAs (Valentine, Bronco 1, and Bronco 2 MOAs), would occur concurrently with the same effective date as modifying the Talon MOA. During the Aeronautical Proposal process, a minor change to the southern boundary of the Talon MOA was included which would shift the boundary slightly to the north. This change would move the MOA boundary four nautical miles from the centerline of an existing ATS route (J66) eliminating potential conflicts with civil aviation along this route. In addition, this adjustment would avoid establishing the MOA over the Carlsbad Caverns National Park, which was a concern for the NPS.

The preferred dimensions were provided to the FAA for circularization and proposed for charting. The minor adjustment is largely indistinguishable at the scale of the figures in this EIS; the slight difference between the Talon MOA as presented in the Draft EIS and the Preferred Talon MOA proposed for charting is illustrated in **Figure 2.8-15**. **Figure 2.8-15** and **Table 2.8-13** shows that the overall size of the Preferred Talon MOA decreases slightly from the Draft EIS Talon MOA; however, the geographic extent of the MOA remains largely the same as the version presented in the Draft EIS. The notable difference would be that the northern boundary of Carlsbad Caverns National Park would not overlap the Talon High A MOA as previously described in the Draft EIS. The figures and any calculations involving the ground footprint or land use beneath the MOA have been revised in the Final EIS to reflect the Preferred Talon MOA boundary; however, this minor change in the boundary does not change the environmental consequences described in the Draft EIS.

Table 2.8-13. Comparison of Draft EIS Talon MOA and Preferred Talon MOA			
	Draft EIS Talon MOA (acres)	**Preferred Talon MOA (acres)**	**Difference (acres)**
Ground Footprint	2,752,244	2,663,678	(88,566)
***Note*:** The High MOAs are over the Low MOAs, thus the ground footprint is the total of the High A, B, and C MOAs.			

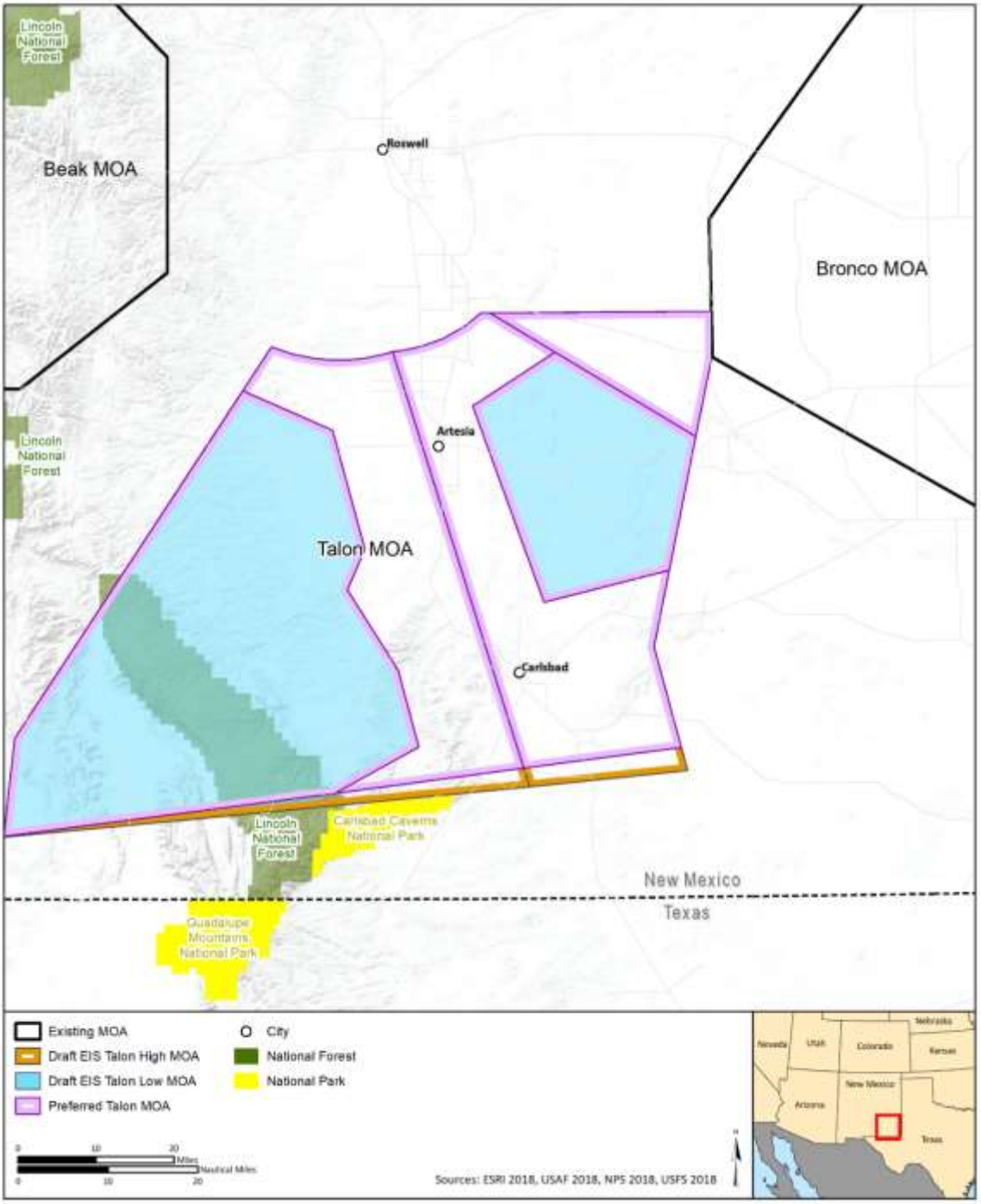


Figure 2.8-15. Comparison of Draft EIS Talon MOA and Preferred Talon MOA

2.9 COMPARISON OF ENVIRONMENTAL IMPACTS

Table 2.9-1 provides a comparison of the potential environmental impacts associated with the Proposed Action and alternatives.

Table 2.9-1. Comparison of Environmental Impacts			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Airspace Operations and Management			
• Civilian aircraft operating under VFR could transit the MOAs. • Some civilian aircraft operating under IFR below 12,500 feet MSL would be required to be re-routed around Talon Low MOAs A/B when they are active. • Some civilian aircraft operating under IFR above 12,500 feet MSL would be either routed around Talon High MOAs A/B/C when they are active, or stay below 12,500 feet MSL for a portion of their route to stay beneath the SUA. • Some civilian aircraft operating under IFR would be re-routed around the Talon ATCAAs when active. • Deviations around active MOAs would range from 1 to 9 minutes depending on origin and destination route. • There is no anticipated impact to local public or private airports beneath the proposed Talon MOA.	• Civilian aircraft operating under VFR could transit the MOAs. • Some civilian aircraft operating under IFR would be required to be re-routed around the proposed Smitty, Cato, and Lobos MOAs, and Christa and Kendra ATCAAs when they are active. Most of these deviations would be less than a minute. • The Catron County Airport, which is currently under the existing Smitty MOA, would no longer be under any SUA. • The Adobe Ranch and Chloride airstrips would lie beneath the proposed Smitty MOA boundaries. Aircraft using these airstrips would be VFR and would have to check NOTAMS to be aware of the MOA operating schedules. • The Beaverhead and Me-Own airstrips and the Whiskey Creek Airport would lie beneath the proposed Lobos Low MOA. Aircraft using these airstrips would be VFR and would have to check NOTAMS to be aware of the MOA operating schedules. • The Socorro Municipal and Truth or Consequences Municipal Airports would lie beneath the proposed Christa ATCAA. The ATCAA would begin at 18,000 feet MSL and would not impact the airports when active.	• Alternative 3 results in impacts that are less than any described in Alternatives 1 or 2, since the total operations would be spread across the east area (Talon MOAs/ATCAAs) and the west area (Cato and Smitty MOAs, Lobos MOAs/ATCAA, and the Christa/Kendra ATCAAs). • Talon High A and B MOAs would be used 30 percent less than Alternative 1, and impacts to civil aviation would be reduced proportionally. • The use of Talon Low A MOA would be reduced by 20 percent, and the use of Talon Low B MOA would be reduced by 54 percent, when compared to Alternative 1. The impacts to civil aviation and local airports would be reduced proportionally. • The use of Cato MOA would be reduced by 60 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally. • The use of Smitty MOA would be reduced by 62 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally. • The use of proposed Lobos High MOA would be reduced by 67 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally.	• Airspace operations and management would continue as they do currently. • The current airspace is not optimal for meeting the training requirements for pilots stationed at Holloman AFB. • Continued use of the suboptimal airspace would continue to result in training delays and inefficiency; ultimately reducing the number of pilots ready for the combat mission. • Existing operations in the Talon, Cato, and Smitty MOAs/ATCAAs would continue. • Civilian air traffic would continue to dominate the areas proposed for new or expanded MOAs.

Table 2.9-1. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Airspace Operations and Management (cont.)			
	• The Casas Adobes Airpark would lie beneath the proposed Kendra ATCAA. The ATCAA would begin at 18,000 feet MSL and would not impact the airport when active. • A small area of Grant County Airport's Class E airspace would overlap with the Lobos Low MOA. None of the published approaches or departures for the airport use this area of airspace.	• The proposed Lobos Low MOA would not exist under Alternative 3, so all impacts to civil air traffic and local airports due to the establishment of proposed Lobos Low MOA in Alternative 2 would be eliminated. • The use of proposed Christa ATCAA would be reduced by 60 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally. • The use of proposed Kendra ATCAA would be reduced by 67 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally.	
Acoustic Environment			
• There would be no adverse impacts to hearing or health, and there would be no land use restrictions related to noise beneath the proposed Talon MOA. • It would be anticipated that there would be a perceptible increase to the subsonic noise levels attributed to aircraft activity to some areas beneath the proposed Talon MOA and ATCAA.	• There would be no adverse impacts to hearing or health, and there would be no land use restrictions related to noise beneath the proposed MOAs. • It would be anticipated that there would be a perceptible increase to the subsonic noise levels attributed to aircraft activity to some areas beneath the proposed MOAs and ATCAAs. • The greatest change in DNL would be at Magdalena and Old Horse Springs, which would have values of 50 DNL. All values would be well below the 65 DNL threshold for land use restrictions. 1.66 percent of the population beneath the proposed airspace would be expected to be highly annoyed at the subsonic noise.	• There would be no adverse impacts to hearing or health, and there would be no land use restrictions related to noise beneath the proposed MOAs. • The greatest proposed increase in DNL value would occur at Loco Hills, with a projected 53 DNL. All values would be well below the 65 DNL threshold for land use restrictions. Approximately 3.31 percent of the population beneath the proposed airspace would be expected to be highly annoyed based on the highest DNL value. • Noise levels from supersonic activity at all of the POIs would be less than 42 CDNL which is the lowest CDNL with a relationship to annoyance.	• Aircraft noise in the existing MOAs would continue as it does currently. • Aircraft noise would continue along MTRs in the region.

Table 2.9-1. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Acoustic Environment (cont.)			
• The greatest change in DNL would occur at Loco Hills, where the estimated DNL from aircraft operations would be 56 DNL. It would be near to the 55 DNL threshold set by USEPA for which adverse noise effects would not be expected to occur. The projected DNL would also be well below the 65 DNL threshold for land use restrictions. It would be anticipated that less than 6.48 percent of the population beneath the proposed airspace would be highly annoyed • Supersonic noise levels at the POIs would be less than the 42 CDNL which is the lowest CDNL with a relationship to annoyance. The anticipated CDNL would not exceed the threshold identified by USEPA that would be harmful to public health. • Overpressures from sonic booms under the Proposed Action would not be expected to cause structural damage.	• Noise levels from supersonic activity at all of the POIs would be less than 42 CDNL which is the lowest CDNL with a relationship to annoyance. The anticipated CDNL would not exceed the threshold identified by USEPA that would be harmful to public health. • Overpressures from sonic booms under the Proposed Action would not be expected to cause structural damage.	• Overpressures from sonic booms would be similar or less than those described for Alternatives 1 or 2 and would not be expected to cause structural damage.	
Air Quality			
• The estimated criteria pollutant emissions associated with Alternative 1 would not alter the current attainment status of Chaves, Eddy, or Otero Counties. • Criteria pollutant emissions would increase though the proposed net increases for VOCs, CO, SO_2, PM, and HAPs would be less than the comparative thresholds used as a guide for assessing significance.	• The estimated criteria pollutant emissions associated with Alternative 2 would not alter the attainment status of Sierra, Catron, Socorro, or Hidalgo Counties in New Mexico or Graham County in Arizona. • Criteria pollutant emissions would increase though the proposed net increases for VOCs, CO, NO_x, PM, and HAPs would be less than the comparative thresholds used as a guide for significance.	• The estimated criteria pollutant emissions associated with Alternative 3 would not alter the attainment status of Chaves, Eddy, Otero, Hidalgo, Sierra, Catron, or Socorro Counties in New Mexico or Graham County in Arizona.	• Air emissions associated with military aircraft operations in the existing airspace in the region would continue.

Table 2.9-1. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Air Quality (cont.)			
	• The SO_2 net change in emissions, at 3.25 tons per year, does not exceed the 100 ton per year *de minimis* threshold under General Conformity (applies to Grant County, New Mexico and Greenlee County, Arizona).	• Criteria pollutant emissions would increase though the proposed net increases for VOCs, CO, SO_2, PM, and HAPs would be less than the comparative thresholds used as a guide for assessing significance. • The SO_2 emissions would not exceed the *de minimis* threshold (applicable to Grant County, New Mexico and Greenlee County, Arizona).	
Natural Resources			
• Based on estimated noise levels, the proposed pilot training in the proposed Talon MOA would be expected to have minor impacts to wildlife inhabiting land beneath the proposed airspace. • Based on toxicological studies on chaff and flare residual materials, impacts to biological resources are not expected. • The possibility of an animal being struck by a dud flare, undeployed clump of chaff, or residual materials would be extremely remote.	• The potential impacts to wildlife from aircraft noise and use of chaff and flares would be the same as those described for Alternative 1. • No significant impacts to special-status species expected. The potential impacts associated with the proposed training activities to special-status species would be the same as those described for wildlife. • If Alternative 2 were selected, the Air Force would informally consult with USFWS to gain their concurrence with their findings for the three mammal species that were not included in the consultation for Alternative 1.	• The potential impacts to wildlife from aircraft noise and use of chaff and flares would be the same as those described for Alternative 1. • No significant impacts to special-status species expected. The potential impacts associated with the proposed training activities to special-status species would be the same as those described for wildlife. If Alternative 3 were selected, the Air Force would informally consult with USFWS to gain their concurrence with their findings for the three mammal species that were not included in the consultation for Alternative 1.	• Natural resources beneath the existing Talon, Cato, and Smitty MOAs would continue to be exposed to aircraft operations. • Natural resource beneath the existing MTRs that transit the areas proposed as MOAs would continue to experience military aircraft noise.

Table 2.9-1. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Natural Resources (cont.)			
• The possibility of a wildfire from flare usage impacting wildlife habitat would be remote considering the release altitude under the Proposed Action. Flares would not be released below 2,000 feet AGL and are designed to burn completely within the first 400 feet of descent. The risk of wildfires from flare usage would be mitigated by operational constraints, including the prohibition of flares during periods of "Very High" or "Extreme" National Fire Danger Ratings. During periods of "High" fire danger, aircraft would not use flares below 18,000 feet MSL. • Domestic animal responses to low overflights vary, but typically include startling and eventually habituating to the noise. Low overflights are not expected to occur with any sort of regularity or frequency at any given location. • Horses are likely to be startled by low overflights and possibly bolt from the noise and the safety of the rider or handler would be of concern. Low overflights are not expected to occur with any sort of regularity or frequency at any given location. • No significant impacts to special-status species expected. The potential impacts associated with the proposed training activities to special-status species would be the same as those described for wildlife. • The Air Force consulted with and received concurrence from the USFWS that there would be no adverse impacts to species protected by the Endangered Species Act.			

Table 2.9-1. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Land Management			
• Nearly 1.6 million acres including Brantley and Avalon Reservoirs, Living Desert Zoo and Gardens, and the towns of Carlsbad, Artesia, La Huerta, Atoka, Happy Valley, and Livingston Wheeler lie beneath the existing Talon Low MOA, the floor of which would be raised from 300 to 500 feet AGL. • The configuration of Talon MOA proposed under Alternative 1 would overlie an additional 1.08 million acres, primarily non-Federal lands, including the town of Loving, and land managed by the BLM in addition to a smaller area of the Lincoln National Forest. • No areas would be exposed to a noise level in excess of 65 DNL, though some increases in noise levels from military aircraft would be experienced beneath the proposed Talon Low A and B MOAs.	• More than 2.25 million acres of land underlie the existing configuration of the Cato and Smitty MOAs. These lands are primarily non-Federal, including the town of Magdalena, or are managed by the BLM or USFS, including the Cibola, Gila, and Apache-Sitgreaves National Forests. • The proposed configuration of the Cato and Smitty MOAs would overlie an additional 297,442 acres of lands, primarily non-Federal land and larger areas of the Cibola and Gila National Forests, including the Apache Kid and Aldo Leopold Wildernesses. • Approximately 180,000 acres of the Apache-Sitgreaves National Forest that lie under the current configuration of the Cato and Smitty MOAs would not underlie the new configuration, and this airspace would be returned to the NAS. • The proposed Lobos MOA would overlie a total of nearly 1.5 million acres of federally-managed land, including nearly 1 million acres of the Gila National Forest that includes the Aldo Leopold and Gila Wildernesses, lands managed by the Las Cruces District and Safford Field Offices of the BLM, and the Gila Cliff Dwellings National Monument. Additionally more than 1.1 million acres of non-Federal land lie beneath the proposed Lobos MOA including the communities of Silver City, Santa Clara, Arenas Valley, and Tyrone	• The proposed 10,000 annual flights would be divided among the Talon MOA to the east of Holloman AFB and the Cato, Smitty, and Lobos MOAs to the west, resulting generally in dispersal over a larger area and less frequent exposure to overflight noise on lands beneath all airspace. • The configuration of Talon MOA proposed by Alternative 3 would not include Talon High C, resulting in approximately 150,000 fewer acres of BLM and non-Federal land lying beneath the configuration of Talon MOA. No areas beneath the configuration of Talon, Cato, Smitty, and Lobos MOAs and the Christa and Kendra ATCAAs proposed under Alternative 3 would be exposed to a noise level in excess of 65 DNL, though some increases in noise levels, similar to those experienced under Alternatives 1 and 2, would occur. • While these levels would be perceptible, they are well below the threshold of 65 DNL considered to be incompatible with residential and recreational land uses. Additionally, due to the size of the airspace, single event noise-related impacts in these areas associated with direct aircraft flyovers would be infrequent, temporary, and short-term.	• Land beneath airspace would continue to be managed by a variety of federal agencies and private citizens.

Table 2.9-1. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Land Management (cont.)			
• The communities of Loco Hills and Loving lie beneath the expanded boundaries of Talon MOA and would experience an increase in noise (56 and 42 DNL, respectively) from proposed aircraft operations within the MOA. While these levels would be perceptible, they are well below the threshold of 65 DNL considered to be incompatible with residential and recreational land uses. Additionally, due to the size of the airspace, single event noise-related impacts in these areas associated with direct aircraft flyovers would be infrequent, temporary, and short-term.	• .The proposed Christa and Kendra ATCAAs would overlie a total of more than 1.35 million acres of federally-managed land including nearly more than 230,000 acres of the USFS land that includes the Aldo Leopold Wilderness, lands managed by the Las Cruces District and Socorro Field Offices of the BLM, The Bosque del Apache National Wildlife Refuge, the BOR-managed Elephant Butte and Caballo Reservoirs, and the Jornada Experimental Station. • Approximately 387,000 acres of non-Federal land lie beneath the proposed ATCAAs, including: Hurley, Bayard, Mimbres, Hatch, Doña Ana, Radium Springs, Salem, Placitas, Las Cruces, and Truth or Consequences. • The floor of these ATCAAs would be 18,000 feet MSL, consequently underlying lands such as the towns of Truth or Consequences and Socorro and managed lands like Bosque del Apache National Wildlife Refuge and Elephant Butte and Caballo Reservoirs would not experience any perceptible increase in noise above background levels. • No areas beneath the configuration of Cato, Smitty, and Lobos MOAs or the Christa and Kendra ATCAAs proposed under Alternative 2 would be exposed to a noise level in excess of 65 DNL, though some increases in noise levels would be experienced beneath the proposed airspace.		

Table 2.9-1. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Land Management (cont.)			
	• While these levels would be perceptible, they would be well below the threshold of 65 DNL considered to be incompatible with residential and recreational land uses. Additionally, due to the size of the airspace, single event noise-related impacts in these areas associated with direct aircraft flyovers would be infrequent, temporary, and short-term.		
Recreation			
• The proposed airspace modifications would not alter, prohibit, or otherwise limit the public's access to recreational areas beneath the MOA. • The proposed pilot training would generate noise, which could detract from the public's enjoyment of outdoor recreational areas.	• The proposed airspace modifications would not alter, prohibit, or otherwise limit the public's access to recreational areas beneath the MOA. • The proposed pilot training would generate noise, which could detract from the public's enjoyment of outdoor recreational areas. • Recreational users of some of the lands under the airspace would experience slight noise increases, but the projected noise would not be considered incompatible with recreational land uses. • Some training activity would occur at night (approximately 10 percent of the operations); therefore, people camping on land beneath the airspace would have the potential to hear aircraft after dark.	• The impacts to recreation are similar to those described for Alternatives 1 and 2, however the potential noise impacts under Alternative 3 would be less than the potential noise impacts in Alternatives 1 and 2, and none of the projected noise levels would be considered incompatible with recreational uses.	• Recreational areas located beneath existing SUA would continue to be subject to aircraft noise.

Table 2.9-1. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Recreation (cont.)			
• Recreational users of some of the lands under the airspace would experience slight noise increases, but the projected noise would not be considered incompatible with recreational land uses. • Some training activity would occur at night (approximately 10 percent of the operations); therefore, people camping on land beneath the airspace would have the potential to hear aircraft after dark. • Many of the recreational areas beneath the proposed Talon MOA are under the existing Talon MOA and are currently subjected to aircraft training activity. • Sonic booms, if heard, would be a sudden and startling noise that could adversely impact the experience of recreational users.	• The Air Force is committed to avoiding Wilderness areas and national parks beneath the proposed airspace by 2,000-feet AGL in accordance with FAA Advisory Circular 91-36D. • Noise from military training may detract from visitor enjoyment but is not expected to have a significant impact on visitation to these areas.		
Socioeconomics			
Impacts Common to All Action Alternatives: • The Proposed Action would not result in an increase in personnel at Holloman AFB or within the region. Therefore, the population within the ROI would remain unchanged. • Given the low expected DNL values and the distribution of the training activity across such a large area, it would not be expected that the Proposed Action would have any quantifiable impacts to the existing housing values within the ROI. • Noise analysis indicates that the average noise resulting from the Proposed Action would not be at a level that would be considered incompatible with recreational land uses. Though studies show that noise from a number of sources, including aircraft, can affect visitor experience and enjoyment of parks and forests, it is not clear how such experience affects visitation. While it is possible that noise could reduce visitation, potentially reducing contributions to local economies, it is not possible to quantify the economic impact.			• The populations beneath existing airspace would continue to be exposed to military aircraft activity. • Agriculture; public administration; oil, gas, manufacturing; education; research; banking; and medical services would continue to be important economic industries in the eastern airspace area. • Mining; educational services, and health care and social assistance; agriculture; and public administration would continue to be important economic industries in the western airspace area.

Table 2.9-1. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Environmental Justice			
Impacts Common to All Action Alternatives: • No significant impacts were identified in association with any resource areas that would be anticipated to adversely impact the health or environment of minority or low-income populations living under the areas affected by any of the action alternatives. Noise levels in the airspace would remain below 65 DNL. Because there would not be significant impacts that would adversely affect minority or low-income populations, there would be no impact to environmental justice.			• Minority populations within the counties associated with existing and proposed airspace range from 21.4 percent (Catron County, New Mexico) to 64.4 percent (Socorro County, New Mexico). • Low-income populations within the counties associated with existing and proposed airspace range from 13.2 percent (Greenlee County, Arizona) to 23.7 percent (Hidalgo County, New Mexico).
Safety			
Impacts Common to All Action Alternatives: • Ground operations and maintenance procedures conducted by Holloman AFB personnel would not change from current conditions. All activities would continue to be conducted in accordance with applicable regulations, Technical Orders, and Air Force Occupational Safety and Health standards. There would be no aspects of the Proposed Action that would be expected to create new or unique ground safety issues or create additional risk. • Priority to life-flight status would not change with implementing the Proposed Action. Military training in the affected airspace would be stopped during such an event. • In the unlikely event of a crash within the proposed airspace area, local first responders would likely be first on the scene given the distance from Holloman AFB. Holloman AFB crash response would continue to follow standard procedures and plans. • Land within the proposed MOAs would continue to be managed for fire risk by local owners and agencies that manage that land. F-16 operations currently occur within airspace associated with Holloman AFB and have not presented an increased fire risk. • The type of training proposed would be the same as what is performed currently, and there would be no aspect of the Proposed Action that would increase the chances of Class A mishaps. The Air Force would make every effort to locate, document, and then clean up debris resulting from any accident. • It would be unlikely that F-16s using the proposed MOAs would generate vortices of sufficient strength or duration to reach the ground and pose a safety risk. • The safety risk to people under or immediately adjacent to the MOAs in which chaff and flares would be dispensed would be minimal. • Dud flares may be mishandled if discovered on non-DoD lands by the uninformed public; however, the probability of such an occurrence would be extremely low. • Additional fire restrictions for flare use would be implemented to reduce the risk of fires. Flares would not be used at altitudes less than 18,000 feet MSL under “High” fire conditions and flares would not be used at all under “Very High” or “Extreme” fire conditions.			• Current operations and training activities in the existing MOAs and ATCAAs do not pose a significant safety risk to the public, military personnel, or property. • Procedures in place for ground safety (crash response and fire risk management) and flight safety (bird-aircraft strike hazards and chaff and flare usage) would continue as they do currently.

Table 2.9-1. Comparison of Environmental Impacts (cont.)			
Alternative 1 (Preferred Alternative)	**Alternative 2**	**Alternative 3**	**No Action Alternative**
Cultural Resources			
• The overall potential for bird aircraft strikes would not be anticipated to be statistically different with implementation of any of the alternatives. F-16 aircrews operating in the MOAs would be required to follow applicable procedures outlined in the Holloman AFB BASH Plan. • Vertical obstructions would be noted and avoided as they currently are in existing areas where obstructions intrude into proposed airspace. Impacts Common to All Action Alternatives: • The Proposed Action would result in flights being distributed over a vast area of airspace, most of which would occur above 10,000 feet AGL. Due to the altitude of the overflights, small size of the aircraft, and the high speeds, the aircraft are not expected to be a visual intrusion at archaeological or architectural sites. • Chaff and flares deployed from the aircraft would not pose a visual intrusion. The likelihood of residual chaff and flare material to land at archaeological or architectural sites would be very rare and would not have an adverse effect on these resources. • Sonic booms would occur during supersonic flights, however, no structural damage to NRHP-listed archaeological or architectural resources would be anticipated since the overpressures would not exceed 1 psf. The risk of damaging structures at this level of psf would be very low, one in a billion. • The Air Force consulted with and received concurrence from the New Mexico and Arizona State Historic Preservation Offices. Likewise, it was determined through government-to-government consultation that there would be no impact to traditional cultural properties.			• Cultural resources beneath existing airspace would continue to be exposed to military aircraft activity. Current activities have not resulted in impacts to existing cultural resources.
Hazardous Materials			
Impacts Common to All Action Alternatives: • There would be the potential for hazardous materials to be introduced into the environment in the case of an aircraft mishap. However, aircraft mishaps are rare, and in the event that one occurs, the Air Force has SOPs to identify potential hazardous materials and situations, protect responding personnel and the environment from immediate hazards, and to provide guidelines for the ultimate cleanup and disposal of the crash residues. • The components of chaff are not considered toxic and distribution of chaff filaments (primarily aluminum and silica) and residual materials would not affect ground or water quality. • The components and combustion materials of flares are not considered toxic. The amount of magnesium dispersed from flares is too small to result in levels that would be associated with acute exposure.			• Hazardous materials management procedures to protect the public and the environment would continue. • The use of chaff and flares would continue in all areas already approved for such use.

Legend: AFB-Air Force Base; AGL-Above Ground Level; ATCAA-Air Traffic Control Assigned Airspace; BASH-Bird Aircraft Strike Hazard; BLM-Bureau of Land Management; BOR-Bureau of Reclamation; CDNL-C-weighted Day-Night Average Sound Level; CO-Carbon Monoxide; DNL-Day-Night Average Sound Level; DoD-Department of Defense; FAA-Federal Aviation Administration; GHG-Greenhouse Gas; HAP-Hazardous Air Pollutant; IFR-Instrument Flight Rules; MOA-Military Operations Area; MSL-Mean Sea Level; MTR-Military Training Route; NOTAM-Notice to Airmen; NO_x-Nitrogen Oxides; NRHP-National Register of Historic Places; PM-Particulate Matter;POI-Point of Interest; psf-Pounds per Square Foot; ROI-region of influence; SO_2-Sulfur Dioxide; SOP-Standard Operating Procedure; USFS-U.S. Forest Service; USFWS-U.S. Fish and Wildlife Service; VOC-Volatile Organic Compound; VFR-Visual Flight Rules.

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3.0 AFFECTED ENVIRONMENT

3.1 ANALYSIS APPROACH

NEPA requires focused analysis of the areas and resources potentially affected by an action or alternative. It also provides that an EIS should consider, but not analyze in detail, those areas or resources not potentially affected by the proposal. This EIS focuses on those resources potentially affected by the Air Force proposal to modify the dimensions and altitudes of training airspace in the vicinity of Holloman AFB. The primary geographic ROI covered in this EIS are the lands beneath the proposed airspace boundaries as illustrated in Figures 2.8-1 (Talon MOA/ATCAA) and 2.8-6 (Cato, Smitty, and Lobos MOAs/ATCAAs, Christa and Kendra ATCAAs). There are no changes proposed for Holloman AFB itself, so, it is not included in the ROI.

The Proposed Action does not include any proposed changes to the air traffic procedures at Holloman AFB or general operations within the regional airspace, in addition, the altitude for aircraft transiting from the airfield to the proposed MOAs would be above the altitude for determining the noise analysis per the FAA Order 1050.1F and the FAA Desk Reference (FAA 2020, 2015). Therefore the ROI in this EIS are the lands beneath the proposed airspace boundaries.

CEQ regulations for NEPA require a discussion of impacts in proportion to their significance and only enough discussion of other than significant issues to show why more study is not warranted. The analysis in this EIS considers the current conditions (i.e., baseline) of the affected environment and compares those to conditions that might occur should the Proposed Action and alternatives be implemented. Baseline conditions provide a benchmark against which an agency measures the effects of a Proposed Action. The differences in the conditions between the baseline and the Proposed Action reflect the magnitude of impacts relative to the various resources analyzed. For the Proposed Action, establishing a baseline within the affected environment meant consideration of the conditions of each resource within the existing use of the airspace in 2018 and 2019 based on the best available information.

3.1.1 Regulatory Framework

The laws, regulations, and Executive Orders (EOs) listed below include, but are not limited to, the regulatory framework that serves as the basis for analysis for the affected resources that follow:

- NEPA (42 USC 4321-4370h)
- CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508)
- Air Force Environmental Impact Analysis Process (32 CFR 989)
- FAA Order 1050.1F, Environmental Impacts: Policies and Procedures
- Clean Air Act (CAA) (42 USC 7401 et seq.)
- National Historic Preservation Act (NHPA) (54 USC 306108 et seq.)
- Endangered Species Act (ESA) (16 USC 1531 et seq.)
- Migratory Bird Treaty Act (MBTA) (16 USC 703-712)
- Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668-668d)
- Wilderness Act (16 USC 23)
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*

- EO 13175, *Consultation and Coordination with Indian Tribal Governments*

3.1.2 Resources Analyzed

Table 3.1-1 presents the results of the process of identifying resources to be analyzed in this EIS. The assessment evaluates airspace operations and management; acoustic environment; air quality; natural resources; land management; recreation resources; socioeconomics; environmental justice; safety; cultural resources; and hazardous materials.

As a Federal agency, the FAA has its own agency-specific NEPA obligations (outlined in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*) with which it must comply prior to approving an airspace action. The resource areas identified in the FAA Order vary slightly from the Air Force regulations. **Table 3.1-1** presents the Air Force resources and the FAA resources. As a cooperating agency, FAA independently reviewed this EIS prepared by the Air Force and assessed whether it met the agency's standards for adequacy under NEPA. The FAA will adopt the Final EIS document in whole or in part to fulfill its NEPA obligations and sign its own ROD for the proposed airspace action.

Table 3.1-1. Air Force and FAA Resources Analyzed in the Environmental Impact Analysis Process

Air Force			FAA	
Resource	**Carried Forward for Detailed Analysis**		**Resource**	**Carried Forward for Detailed Analysis**
Airspace Operations and Management	Yes		Department of Transportation Act, Section 4(f)	No
Acoustic Environment (Noise)	Yes		Noise and Noise Compatible Land Use	Yes
Air Quality	Yes		Air Quality; Climate	Yes
Natural Resources	Yes		Biological Resources (including fish, wildlife, and plants)	Yes
Land Management	Yes		Land Use	Yes
Recreation Resources	Yes		Farmlands	No
Socioeconomics	Yes		Visual Effects	No
Environmental Justice	Yes		Socioeconomics, Environmental Justice, and Children's Health and Safety Risks	Yes
Safety	Yes		Historical, Architectural, Archaeological, and Cultural Resources	Yes
Cultural Resources	Yes		Hazardous Materials, Solid Waste, and Pollution Prevention	Yes
Hazardous Materials	Yes		Water Resources	No
Water Resources	No		Natural Resources and Energy Supply	No
Earth Resources	No		Coastal Resources	No
Coastal Zone	No			

Legend: FAA-Federal Aviation Administration.

3.1.3 Resources Not Carried Forward for Detailed Analysis

CEQ regulations (40 CFR 1501.7(a)(3)) indicate that the lead agency should identify and eliminate from detailed study the issues that are not relevant or that have been covered by prior environmental review. The discussion of these issues in the EIS should be a brief presentation of why the Proposed Action and alternatives would not have a significant effect on those resources. The following resource areas have been eliminated from detailed analysis: water resources; earth resources; coastal zone and coastal resources;

visual effects; farmlands; natural resources and energy supply; and Department of Transportation Act Section 4(f).

Water Resources include surface water, groundwater, wetlands, Wild and Scenic Rivers, and floodplains. The Proposed Action would be limited to the modification or establishment of airspace only and would not include any components that would touch or directly affect the quantity, flows, percolation rate, or accessibility of surface or ground water resources. The Proposed Action and alternatives would not have an impact to Wild and Scenic Rivers as none exist in the areas underlying the proposed new or expanded airspace. Floodplains are protected by EO 11988, *Floodplain Management*, which requires that each Federal agency "…take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains." No floodplains would be impacted since there are no construction activities associated with this proposal. Consequently, there would be no direct impact to water resources, including wetlands and floodplains as a result of the Proposed Action. Waterbodies beneath the proposed Talon MOA account for only 0.3 percent of the total area (approximately 12,300 acres), while waterbodies beneath the proposed Cato, Smitty, and Lobos MOAs account for only 0.08 percent of the total area (approximately 3,700 acres) (U.S. Geological Survey 2015). An analysis of the potential water quality-related impacts from chaff and flares is provided in **Section 4.12**, *Hazardous Materials*.

There is a possibility that chaff fibers or residual material from chaff and flares could collect on water surfaces; however, the probability of a substantial amount of residues being deposited in any one location, specifically within a small, confined waterbody, would be minuscule due to the large area within which flight operations would occur. To put this into perspective, **Table 3.1-2** provides the amount of chaff potentially distributed beneath the airspace under each alternative. As shown, there would be less than 0.55 grams (0.0193 ounces) of chaff per acre for any of the alternatives. Use of chaff and flares also results in residual material that falls to the ground. **Table 3.1-3** provides the amount of residual material potentially distributed beneath the airspace under each alternative. Since the pieces of residual material would remain intact, a fraction of residual materials per acre as shown in the table is not possible (0.0461for Alternative 1 and 0.0275 for Alternative 2), therefore, the last line of **Table 3.1-3** provides the approximate acreage for one piece of residual material. Alternative 1 would average one piece of residual material per approximately 22 acres and Alternative 2 would average one piece of residual material per approximately 36 acres. Under Alternative 3, the use of chaff and flare would be distributed across all of the proposed airspace averaging one piece of residual material per 30 acres beneath the proposed Talon MOA and one piece of residual material per 121 acres beneath the proposed Cato, Smitty, and Lobos MOAs.

Table 3.1-2. Potential Chaff Distribution					
	Alternative 1*	**Alternative 2****	**Alternative 3 (Proposed Talon MOA)**	**Alternative 3 (Proposed Cato, Smitty, Lobos MOA)**	**Alternative 3 (Total)**
Proposed Usage (annually)	15,360	15,360	10,752	4,608	15,360
Chaff per bundle (ounces)	3.35	3.35	3.35	3.35	3.35
Total Chaff Volume (ounces)	51,456	51,456	36,019	15,437	51,456
Proposed Airspace Area (acre)	2,663,678	4,472,510	2,514,015	4,472,510	6,986,525
Chaff per Acre (ounces)	**0.0193**	**0.0115**	**0.0143**	**0.0035**	**0.0178**
Chaff per Acre (grams)	**0.55**	**0.33**	**0.41**	**0.09**	**0.50**

Note: * The acreage from high and low MOAs vertically overlap, hence the lateral acreage is the total of Talon High A, B, and C.
** Chaff and flares would not be deployed in Christa and Kendra ATCAAs. Only within Cato, Smitty, and Lobos MOAs.
Legend: MOA-Military Operations Area.

Table 3.1-3. Potential Chaff and Flare Residual Material				
	Proposed Usage (annually)	**Pieces of Residual Material per Unit***	**Alternative 1 Total Pieces of Residual Material (annually)**	**Alternative 2 Total Piece of Residual Material (annually)**
Chaff	15,360	3	46,080	46,080
Flare	15,360	5	76,800	76,800
Total Residual Materials (annually)			***122,880***	***122,880***
Proposed Airspace Area (acres)			2,663,678	4,472,510
Pieces of Residual Material per Acre (annually)			**0.0461**	**0.0275**
1 Piece of Residual Material per X acre			**21.68**	**36.40**

Note: *Residual material includes plastic end caps, felt spacers, tape, and plastic piston.

Earth Resources include geology, topography, and soils. The Proposed Action and alternatives would expand or create new airspace to support military training operations. There are no activities proposed that would impact the geology or topography in the affected environment. Military aircraft would dispense chaff and flares during training exercises. Residual materials of chaff and flare could collect on the soil surface; however, the probability of such residual materials being deposited in any one location would be minuscule due to the dispersal of chaff and flares (see **Tables 3.1-2 and 3.1-3)**. Therefore, impacts to soils would be insignificant. The effect of potential fires due to the rare occurrence of still ignited flares reaching the ground are analyzed in **Section 3.10** and **4.10**, *Safety*. There have been no reported flare caused fires under the existing MOAs or ATCAAs as a result of Holloman AFB pilot training. The toxicity of chaff and flare and the potential impact to the environment is provided in **Section 3.12 and 4.12**, *Hazardous Materials*.

Coastal Zone and Coastal Resources include designated coastal land and the natural resources dependent on that land. The Coastal Zone Management Act of 1972 was established to plan comprehensively for and manage development of the Nation's coastal land and water resources. Federal actions that are likely to affect any land or water use or natural resource of the coastal zone must be consistent with the enforceable policies of the State's Coastal Zone Management Plan. There are no coastal zones within or near the ROI

for this Proposed Action. Therefore, the Proposed Action and alternatives would not have any impact to coastal zone management.

Visual Effects are required in FAA NEPA Desk Reference (FAA 2015) to determine the extent to which a Proposed Action and alternatives would produce light emissions that would create annoyance or interfere with activities or contrast with or detract from the visual character of the existing environment. Training would be dispersed throughout the proposed airspace and occur at various altitudes with most of the training occurring above 10,000 feet AGL. Approximately ten percent of training operations would occur after dark. Safety lights on the F-16 aircraft would not be any different than common commercial aircraft in the area. Flares, if used in the proposed training airspace after dark, would be a temporary source of light emissions (flares burn for approximately 3 to 5 seconds). Assuming ten percent of the annual flare usage would occur after dark, this would result in approximately 1,536 flares annually that would burn cumulatively for 7,680 seconds (128 minutes) throughout a year. Flares are currently used within the Talon, Cato, and Smitty MOAs so there would be no change to the current light emissions associated with flare usage. However, flares are not currently used in the proposed Lobos MOA. Aircraft operations and the use of flares in the training airspace would be dispersed through the horizontal limits of the airspace. As such, no one location would receive a consistent distribution of flares and flare usage would not create a consistent source of light. **Figure 3.1-1** illustrates the visual perspective of an F-16 at various altitudes. As shown, operations at any altitude would not create a significant visual intrusion, especially at the higher altitudes. The graphic shows the percentage of an observer's field of view obstructed by an F-16 silhouette, which would be less than half a percent (0.37588 percent) for even the lowest of the proposed overflights. At 30,000 feet the F-16 is nearly undetectable. Implementation of the Proposed Action or alternatives would not be expected to adversely affect this resource; therefore, no further analysis is warranted.

Farmlands are defined in the FAA NEPA Desk Reference as those agricultural areas considered important and protected by Federal, state, and local regulations (FAA 2015). The Farmland Protection Policy Act regulates Federal actions with the potential to convert farmland to non-agricultural uses. The proposal would not involve any ground disturbance or conversion of farmland to non-agricultural uses, therefore, farmlands were not considered further in this EIS.

Natural Resources and Energy Supply impacts are required under FAA NEPA guidance to determine a proposal's consumption of natural resources (such as water, asphalt, aggregate, wood, etc.) and use of energy supplies (such as coal for electricity, natural gas for heating, etc.). Consumption of natural resources and use of energy supplies would result from construction, operation, and maintenance activities associated with a Proposed Action. The proposal evaluated in this EIS does not include the construction of any facilities. Maintenance and general operation of the existing F-16 aircraft at Holloman AFB would remain unchanged with this proposal; therefore, natural resources and energy supply were not evaluated further in this EIS.

Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 USC 303) protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. Section 4(f) provides that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance, only if there is no feasible and prudent alternative to using that land and the program or project includes all possible planning to minimize harm resulting from the use. Section 4(f) applies only to agencies within the U.S. Department of Transportation.

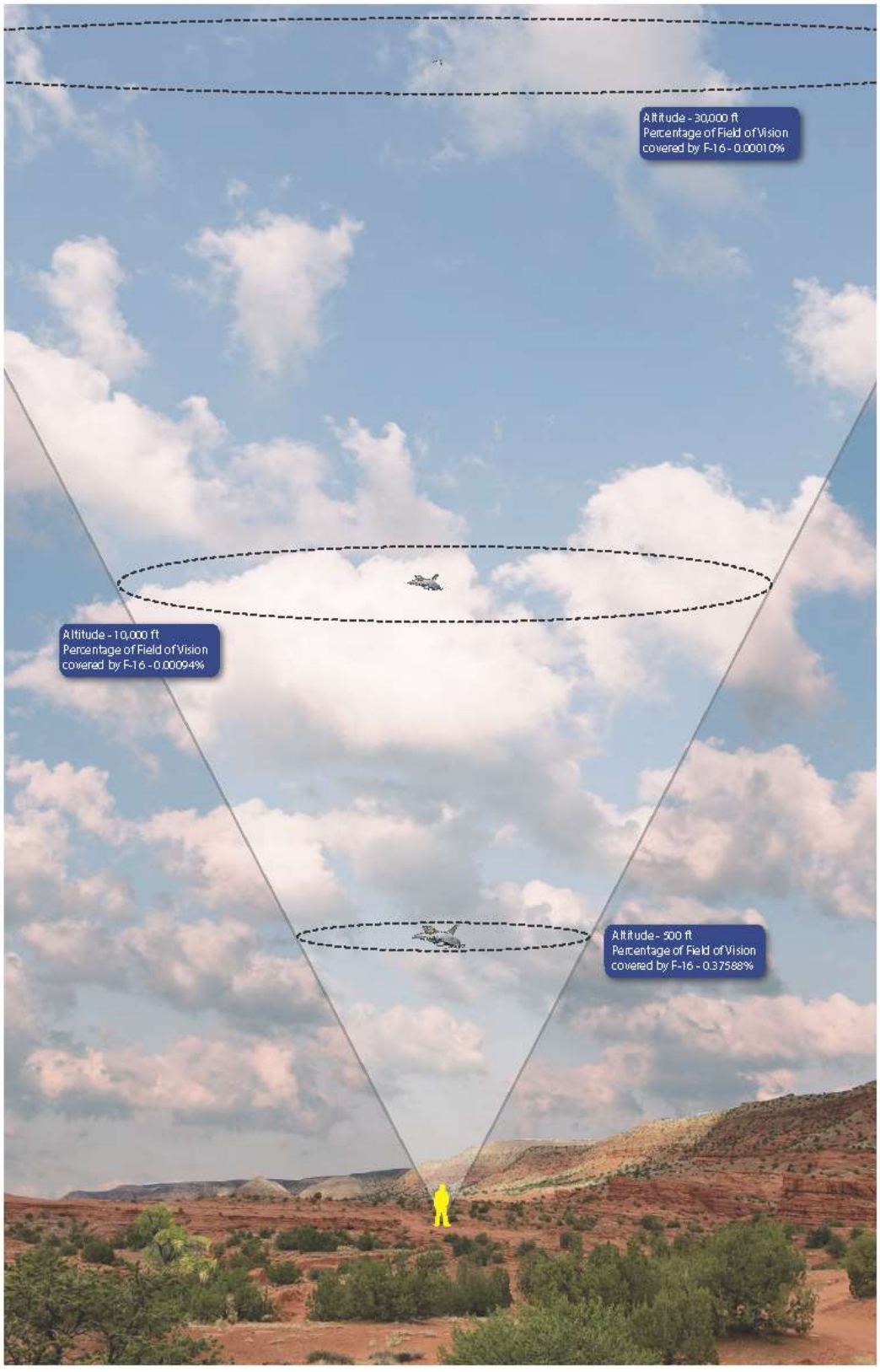


Figure 3.1-1. Visual Intrusion of Proposed Overflights

The proposal would not require the use or modification of any publicly owned land. In addition, SUA actions are exempt from the requirements of Section 4(f) (FAA 2015).

3.2 AIRSPACE MANAGEMENT AND OPERATIONS

3.2.1 Resource Definition

Airspace management considers how airspace is designated, used, and administered in a manner that best accommodates the individual and common needs of military, commercial, general aviation, and other users of the airspace.

3.2.1.1 Regulatory Framework

In the U.S., airspace is managed and controlled by the FAA. The FAA is solely responsible for developing plans and policy for the use of airspace and for managing airspace in such a manner that it ensures the safety of flight and that all users of the NAS can operate in a safe, secure, and efficient manner (49 USC 40103[b]). The FAA considers multiple and sometimes competing demands for airspace in relation to airport operations, ATS Routes, military training airspace and other special needs to determine how the NAS can best be structured to address all user requirements.

The Department of Defense (DoD) requests airspace from the FAA and schedules and uses airspace in accordance with the processes and procedures detailed in DoDD 5030.19, *DoD Responsibilities on Federal Aviation,* and FAA regulations. SUA identified for military and other governmental activities is charted and published by the National Aeronautical Charting Office in accordance with FAA Order JO 7400.2M, *Procedures for Handling Airspace Matters* (FAA 2019a). Descriptions of approved SUA, except temporary areas and controlled firing areas, are compiled and published once a year in FAA JO 7400.10A, *SUA* (current version effective February 14, 2020). Airspace designated for military use is released to the FAA when the airspace is not needed for military requirements (DoD 2017).

Procedures governing the use of training areas and airspace operated and controlled by the Air Force are included in Air Force Policy Directive 13-2 *Air Traffic, Airfield, Airspace and Range Management* and its implementing regulations. The Air Force manages airspace in accordance with processes and procedures detailed in AFI 13-201, *Airspace Management*. AFI 13-201 also provides the guidance and procedures used to develop and process SUA actions. It governs planning, acquisition, use, and management of the airspace required to support the flight training necessary to ensure pilot proficiency (Air Force 2012).

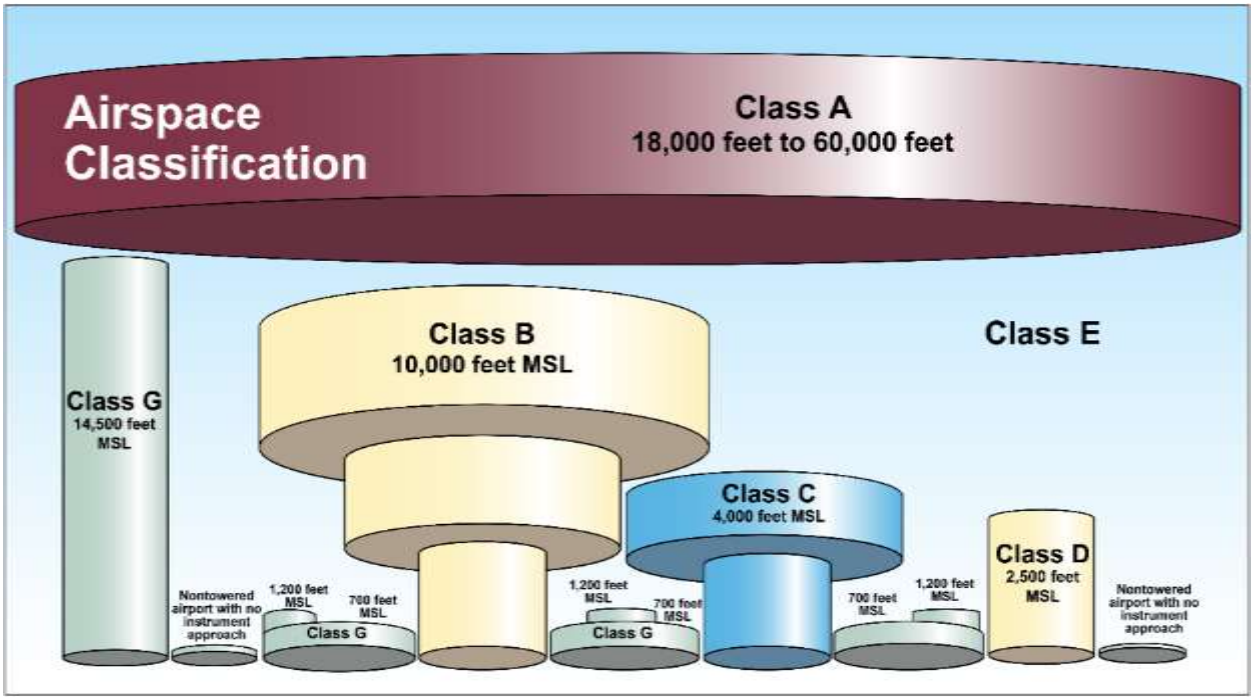
3.2.1.2 Airspace Classification

Airspace is a three-dimensional resource defined by latitude, longitude, and altitude. There are six classes of airspace, A, B, C, D, E (controlled), and G (uncontrolled) that are available to all users (civilian and military) (**Figure 3.2-1**). The airspace classes dictate pilot qualification requirements, rules of flight that must be followed, and the type of equipment necessary to operate within that airspace (**Table 3.2-1**).

Controlled airspace is airspace of defined dimensions within which air traffic control service is provided (FAA 2019a). Controlled airspace is categorized into five separate classes, Classes A through E. Controlled airspace is airspace that supports airport operations and includes airways supporting en-route transit from place-to-place.

Uncontrolled airspace is designated as Class G airspace. Within the Continental U.S. and out to 12 nm off shore, Class G airspace includes all airspace up to 14,500 feet MSL that has not been designated as Class

A, B, C, D, or E. Class G airspace has no specific prohibitions associated with its use. Class G airspace is described as uncontrolled because there are no entry requirements and air traffic control service is not guaranteed.



Source: FAA 2018a.
Legend: MSL-mean sea level.

Figure 3.2-1. Cross Section of Airspace Classes and Relationships

Table 3.2-1. Airspace Classification Requirements						
Airspace	**Class A**	**Class B**	**Class C**	**Class D**	**Class E**	**Class G**
General Definition	Controlled airspace from 18,000 feet MSL up to and including FL600	Controlled airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports	Controlled airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower and are serviced by radar approach control	Controlled airspace that extends upward from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower	Controlled airspace designated to serve a variety of terminal or en-route purposes. Class E airspace is often designated for an airport where instrument procedures exist without the presence of a control tower and as extensions to Class B, C, D, and E surface areas.	Uncontrolled airspace that has not been designated as Class A, B, C, D, or E.
Entry Requirements	Air Traffic Control Clearance	Air Traffic Control Clearance	Air Traffic Control Clearance for IFR. Two-way radio communication with Air Traffic Control required	Air Traffic Control Clearance for IFR. All require radio contact	None for VFR. Air Traffic Control Clearance and two-way radio for IFR.	None
Two-Way Radio Communication	Required	Required	Required	Required	Required only under IFR flight plan[1]	Not required[1]
VFR Visibility Minimum[2]	NA	3 SM	3 SM	3 SM	Below 10,000 feet MSL 3 SM At or above 10,000 feet MSL: 5 SM	• Below 1,200 feet AGL (regardless of MSL): Day: 1 SM; Night: 3 SM; • Above 1,200 feet AGL and less than 10,000 feet MSL: Day: 1 SM; Night: 3 SM At or Above 10,000 MSL:5 SM.
Traffic Advisories	Yes	Yes	Yes	Workload Permitting	Workload Permitting	Workload Permitting

Source: FAA 2017.
Notes: [1]Unless a temporary tower is present. [2]Minimum distance from clouds vary by airspace class and altitude.
Legend: AGL=above ground level, FL=Flight Level, IFR=Instrument Flight Rules; VFR=Visual Flight Rules; NA = Not Applicable; SM = Statute Mile; MSL=mean sea level.

3.2.2 Affected Environment

3.2.2.1 Talon MOA

Figures 3.2-2 and 3.2-3 identify the ROI for airspace management and operations. The figures are divided into airspace management components below 18,000 feet MSL (**Figure 3.2-2**) and those above 18,000 feet MSL (**Figure 3.2-3**). The airspace management components include existing and proposed SUA, ATCAAs, military training routes (MTRs) (not visible on the figure), airports, and low and high ATS routes. **Appendix D1** (Airports in region of influence) provides detailed information (description, based aircraft, and annual operations) on each airport in the ROI. This EIS uses data from the FAA's Performance Data Analysis and Reporting System (PDARS). The PDARS continuously collects flight plan and radar track data from systems located at Air Route Traffic Control Centers, Terminal Radar Approach Control Facilities, and air traffic control towers. The PDARS report was provided as an appendix in the Draft EIS (formerly Appendix D2). To reduce the volume of the Final EIS, this report is referenced (Air Force 2017), included in the administrative record, and no longer an Appendix to the EIS.

Existing Special Use Airspace

Table 3.2-2 provides a description of the existing SUA within the ROI. To the extent practicable, SUA within the ROI was originally designed to minimize impacts to civilian air traffic by avoiding ATS routes and public airports.

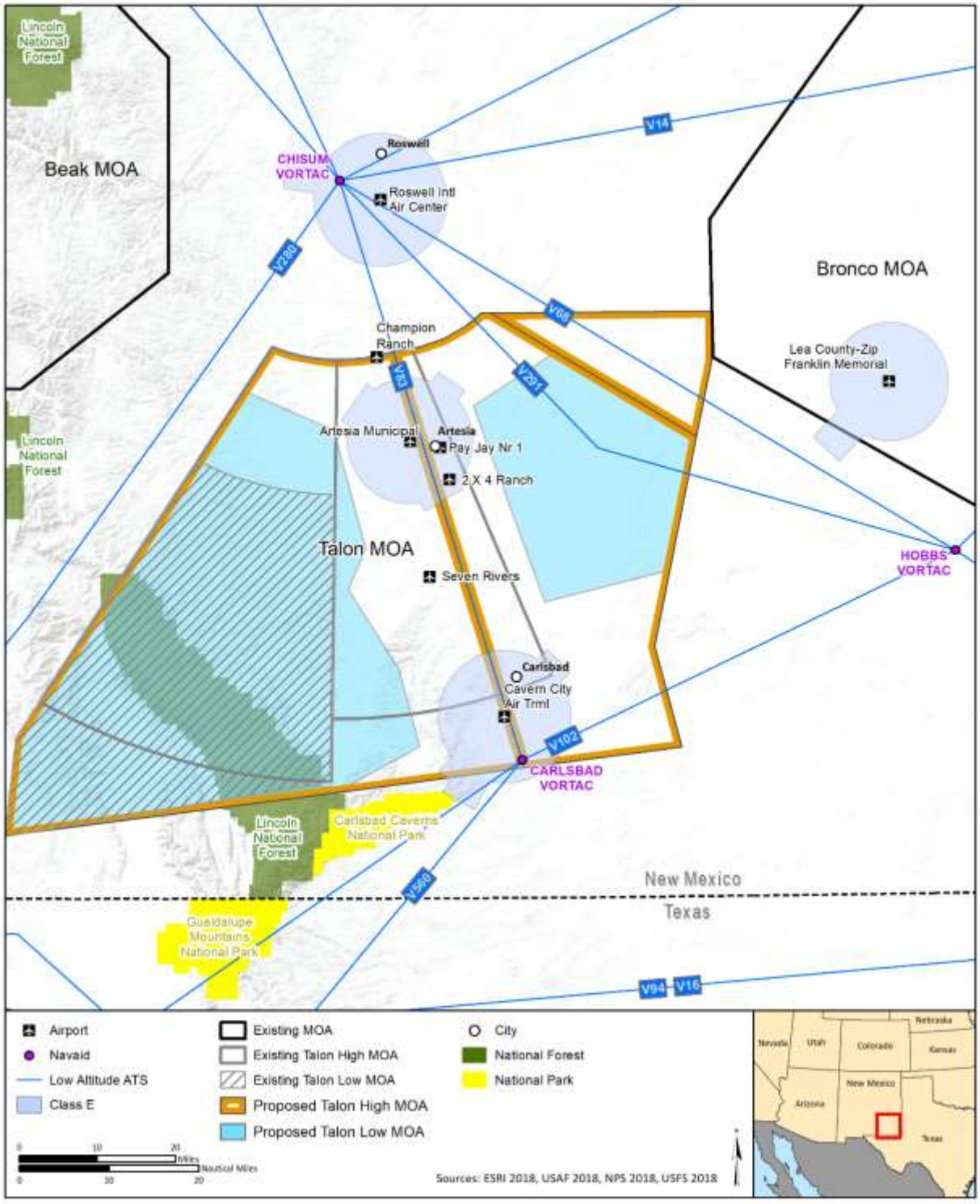
Table 3.2-2. SUA within the ROI for Talon MOA

Airspace	Altitude		Published Hours of Use		Published Days of Use
	Minimum	Maximum	From	To	
Talon High East MOA	12,500 feet MSL	FL180	Sunrise	Sunset	Monday-Friday[1]
Talon High West MOA	12,500 feet MSL	FL180	Sunrise	Sunset	Monday-Friday[1]
Talon Low MOA	300 feet AGL	12,499 feet MSL	Sunrise	Sunset	Monday-Friday[1]
Bronco MOA	10,000 feet MSL	FL180	7:00 a.m.	8:00 p.m.	Monday-Friday[1]
Beak MOA	12,500 feet MSL	FL180	6:00 a.m.	6:00 p.m.	Monday-Friday[1]

Source: FAA 2019b.
Note: [1] Other times by NOTAM.
Legend: AGL-above ground level; FL-Flight Level; MOA-Military Operations Area; MSL-mean sea level; NOTAM-Notice to Airmen; ROI-region of influence; SUA-special use airspace.

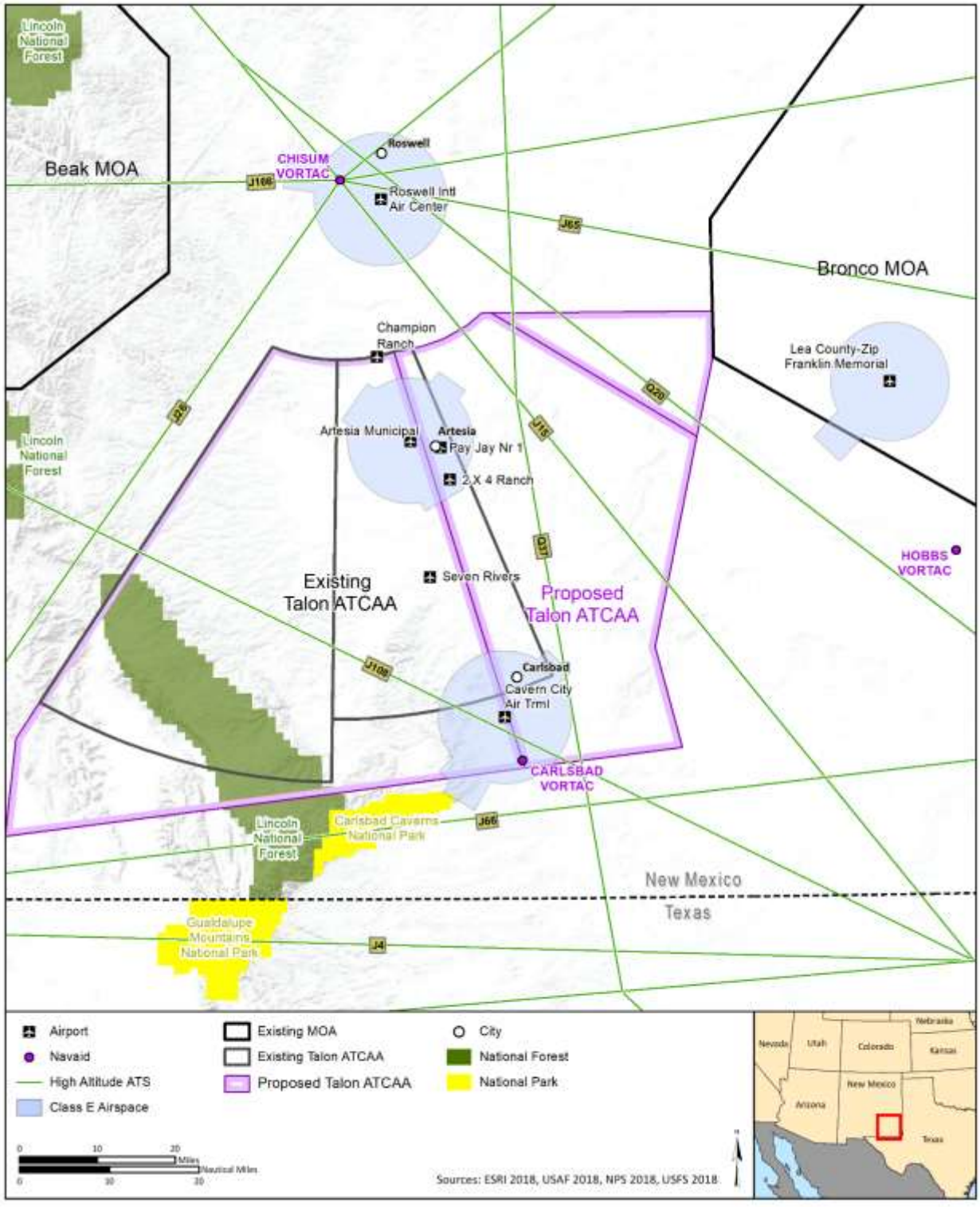
The Talon MOAs are scheduled and managed by Holloman AFB and the controlling agency is Albuquerque Center. Entry into and departure from the Talon High airspace requires clearance from Albuquerque Center and departures from the Talon Low airspace is VFR or via continuance on a filed instrument route (i.e., IR-192/194, 134/195). Scheduling of the Talon Low MOA requires scheduling of at least the Talon High West MOA/ATCAA and/or IR-134/192, 134/195 (Air Force 2014).

The Bronco MOA lies to the east of the existing Talon MOA. Under Alternative 1, the proposed Talon High C MOA would adjoin the western edge of one of the segments of the Bronco MOA (Bronco 3). The Bronco 3 MOA is scheduled and managed by Cannon AFB, New Mexico and the controlling agency is the Fort Worth Air Route Traffic Control Center (Fort Worth Center). As described in **Section 2.8.1.1**, *Proposed Airspace Modifications*, the Bronco 3 and Talon High C MOAs would not be activated at the same time.



Legend: ATS-Air Traffic Service; MOA-Military Operations Area.

Figure 3.2-2. Airspace Components in Talon MOA ROI Below 18,000 feet MSL



Legend: ATS-Air Traffic Service; ATCAA – Air Traffic Control Assigned Airspace.

Figure 3.2-3. Airspace Components in Talon MOA ROI above 18,000 feet MSL

The Beak MOA lies to the west of the existing Talon MOA. The space between these two MOAs forms a corridor that contains ATS routes that lead to Roswell International Air Center. The western edge of the Talon MOA would not be changed under this Proposed Action; therefore, flight operations using this corridor would not be affected by the Proposed Action.

Table 3.2-3 presents the estimated annual flight counts based on PDARS data for civilian aircraft operating within the area of the proposed Talon MOA. Any PDARS record of an aircraft flight track penetrating this airspace is counted as 1 "count". Military aircraft (to include those from Holloman AFB and other bases) also use airspace within the Talon MOA ROI. Operational data for military aircraft is not presented since military use of the airspace is coordinated and scheduled by the Air Force and would not be affected by the Proposed Action.

Table 3.2-3. Estimated Civilian Flight Counts for SUA within Talon MOA ROI, FY17

Airspace	Estimated Annual Counts[1]
Talon High East MOA	1,416
Talon High West MOA	1,083
Talon Low MOA	1,674
Bronco 3 MOA	4,965
Area between Talon and Bronco MOAs (Proposed expansion of Talon MOA)	7,005

Source: Air Force 2017.
Note: [1] PDARS data was collected for four months equally spaced throughout the year. The 4 months' worth of data was extrapolated to provide an annual estimate.
Legend: FY-fiscal year; MOA-Military Operations Area; ROI-region of influence SUA-special use airspace.

Air Traffic Control Assigned Airspace

Holloman AFB frequently uses ATCAAs to extend the vertical limits of their MOAs above FL180. ATCAAs in the ROI are controlled and assigned by the Albuquerque Center with the exception of the ATCAA associated with Bronco 3 MOA that is controlled and assigned by the Fort Worth Center. **Table 3.2-4** identifies the ATCAAs within the Talon MOA ROI.

Table 3.2-5 presents the estimated annual flight counts based on PDARS data for civilian aircraft operating in the ATCAAs within the Talon MOA ROI: Talon High East, Talon High West, and Bronco 3 ATCAAs. Any PDARS record of an aircraft flight track penetrating this airspace is counted as 1 "count" here. It should be noted that the flight operations through the ATCAAs should not be combined as many of the flights would have flown through multiple areas.

Table 3.2-4. Existing ATCAAs within Talon MOA ROI

Airspace	Altitudes		Associated MOA
	Minimum	Maximum[1]	
Talon High East ATCAA	FL180	FL290 (coordination to FL600 can be accomplished real time)	Talon East High
Talon High West ATCAA	FL180	FL290 (coordination to FL600 can be accomplished real time)	Talon West High
Bronco 3 ATCAA	FL180	FL510	Bronco 3

Source: Air Force 2014, 2016.
Note: [1] Or as assigned by Air Traffic Control.
Legend: ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operations Area; ROI-region of influence.

Table 3.2-5. Estimated Civilian Flight Counts for ATCAAs within Talon MOA ROI, FY17	
Airspace	**Estimated Annual Counts[1]**
Talon High East ATCAA	19,443
Talon High West ATCAA	27,042
Bronco 3 ATCAA	43,995
Area between Talon High East ATCAA and Bronco 3 ATCAA (Proposed expansion of Talon ATCAA)	22,767

Source: Air Force 2017.
Note: [1] PDARS data was collected for four months equally spaced throughout the year. The 4 months' worth of data was extrapolated to provide an annual estimate.
Legend: ATCAA-Air Traffic Control Assigned Airspace; FY-fiscal year; MOA-Military Operations Area; ROI-region of influence SUA-special use airspace.

Military Training and Air Refueling Routes

The existing MTRs that intersect the Talon MOA ROI are described in **Table 3.2-6** (there are no air refueling routes within the ROI). MTRs are used for training at high speeds and at low altitudes. All of the MTRs located in the Talon MOA ROI are managed and scheduled by Holloman AFB. Proposed modifications to and operations within the Talon MOA would not affect use of the MTRs. Scheduling and existing rules of use would ensure separation of aircraft, and therefore, MTRs are dismissed from detailed analysis.

Table 3.2-6. MTRs within Talon MOA ROI			
MTR	**Times of Use**	**Associated Airspace**	**Using Agency**
IR-192/194	Sunrise – 11:00 p.m.	Talon Low and Talon High East MOAs	49 OSS, Holloman AFB
IR-134/195	Sunrise – 11:00 p.m.	Talon Low and Talon High West MOAs	49 OSS, Holloman AFB

Source: DoD 2018.
Legend: AFB-Air Force Base; MOA-Military Operations Area; MTR-Military Training Routes; OSS-Operational Support Squadron; ROI-region of influence.

Airports

Airports within the vicinity of the Talon MOA ROI are shown on **Figure 3.2-2**. **Appendix D1** (Airports in Region of Influence) provides detailed information (description, based aircraft, and annual operations) on each airport in the ROI. There are four public airports and four private airports in the vicinity of the Talon MOA ROI.

The four public airports include: Artesia Municipal Airport, Cavern City Air Terminal Airport, Lea County-Zip Franklin Memorial Airport, and Roswell International Air Center Airport. The Cavern City Air Terminal Airport and the Roswell International Air Center Airport are not currently located beneath SUA. Cavern City Air Terminal Airport would be beneath the shared border of the proposed Talon High A and B MOAs. This airport reported 6,862 operations in FY16 and has 27 based aircraft (SkyVector 2019). Roswell International Air Center Airport is not located beneath existing or proposed SUA, but some of the approach corridors for this airport would be beneath the proposed Talon MOA. This airport reported 25,546 operations in FY16 and has 43 based aircraft (SkyVector 2019). The other two public airports (Artesia Municipal Airport and Lea County-Zip Franklin Memorial Airport) are located beneath existing SUA. The Artesia Municipal Airport, located beneath the existing and proposed Talon MOA, reported 14,050 operations in FY16 and has 30 based aircraft (SkyVector 2019). The Lea County-Zip Franklin Memorial

Airport, located beneath the existing Bronco MOA, reported 2,200 operations in FY16 and has 12 based aircraft (SkyVector 2019).

The four private airports are all located beneath the existing and proposed Talon MOA (see **Appendix D1,** Airports in region of influence, for operations). Aircraft operating from private airports typically fly using VFR and at lower altitudes.

ATS Routes

ATS routes are designated for the en-route phase of flight, or that segment of flight from the termination point of the departure airport's procedures to the origination point of the landing airport's arrival procedure. These flights are under the control of an air route traffic control center, such as the Albuquerque Center. **Table 3.2-7** identifies the ATS routes in the Talon MOA ROI. Route V-83, V-291, V-68, and V-102 are designated for low altitude IFR flight between 1,200 feet AGL and 18,000 feet MSL and originate and/or terminate at multiple airports close to or within the Talon MOA ROI (see **Figure 3.2-2**). Routes J-15, J-108, Q-37, and Q-20 are associated with commercial carriers traversing the Talon ATCAA on long distance flights (see **Figure 3.2-3**).

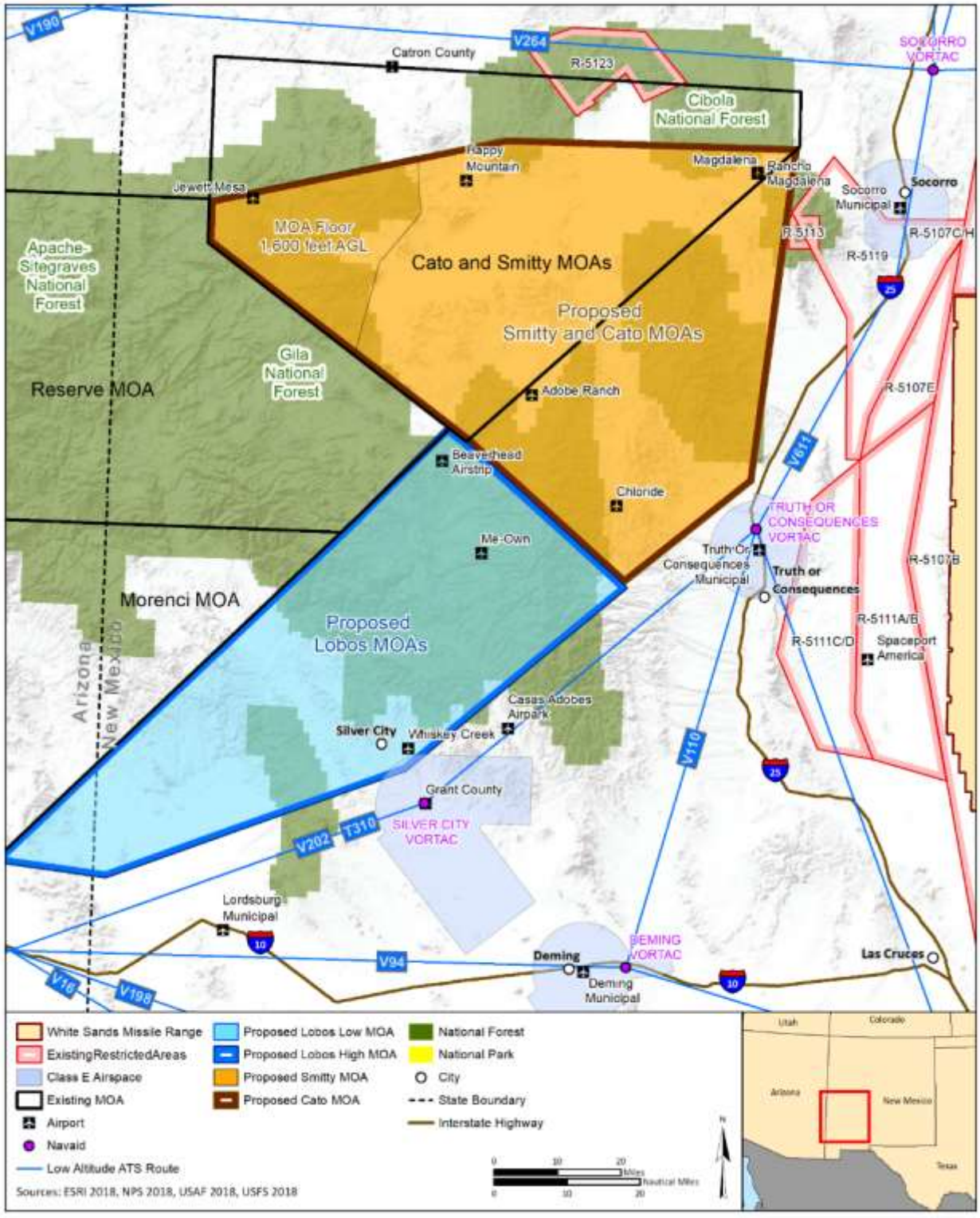
Table 3.2-7. ATS Routes in the Talon MOA ROI

Route[1]	Associated Existing Airspace	Associated Proposed Airspace	Route Origination/Termination
V-83	Talon High West MOA	Talon High A MOA and Talon High B MOA	From Carlsbad, New Mexico to Black Forest, Colorado
V-291	None	Talon Low B MOA and Talon High B MOA	From Hobbs, New Mexico to Peach Springs, Arizona
V-68	None	Talon High C MOA	From Montrose, Colorado to Hobby, Texas
V-102	None	Talon High A and B MOA	From Salt Flat, Texas to Wichita Falls, Texas
J-15	None	Talon High B ATCAA	From Humble, Texas to Battle Ground, Washington
J-108 (MEA 24,000 feet MSL)	Talon High West/East ATCAA	Talon High A and B ATCAA	From Winslow, Arizona to Wink, Texas
Q-37 (MEA 25,000 feet MSL)	None	Talon High B ATCAA	From Fort Stockton-Pecos, Texas to Pueblo, Colorado
Q-20 (MEA 24,000 feet MSL)	None	Talon High C ATCAA	From Corona, New Mexico to Junction, Texas

Source: FAA 2018a.
Note: [1] MEAs do not apply to every published ATS route.
Legend: ATCAA-Air Traffic Control Assigned Airspace; ATS-Air Traffic Service; MEA- Minimum En-route Altitude; MOA-Military Operations Area; MSL-mean sea level; ROI-region of influence.

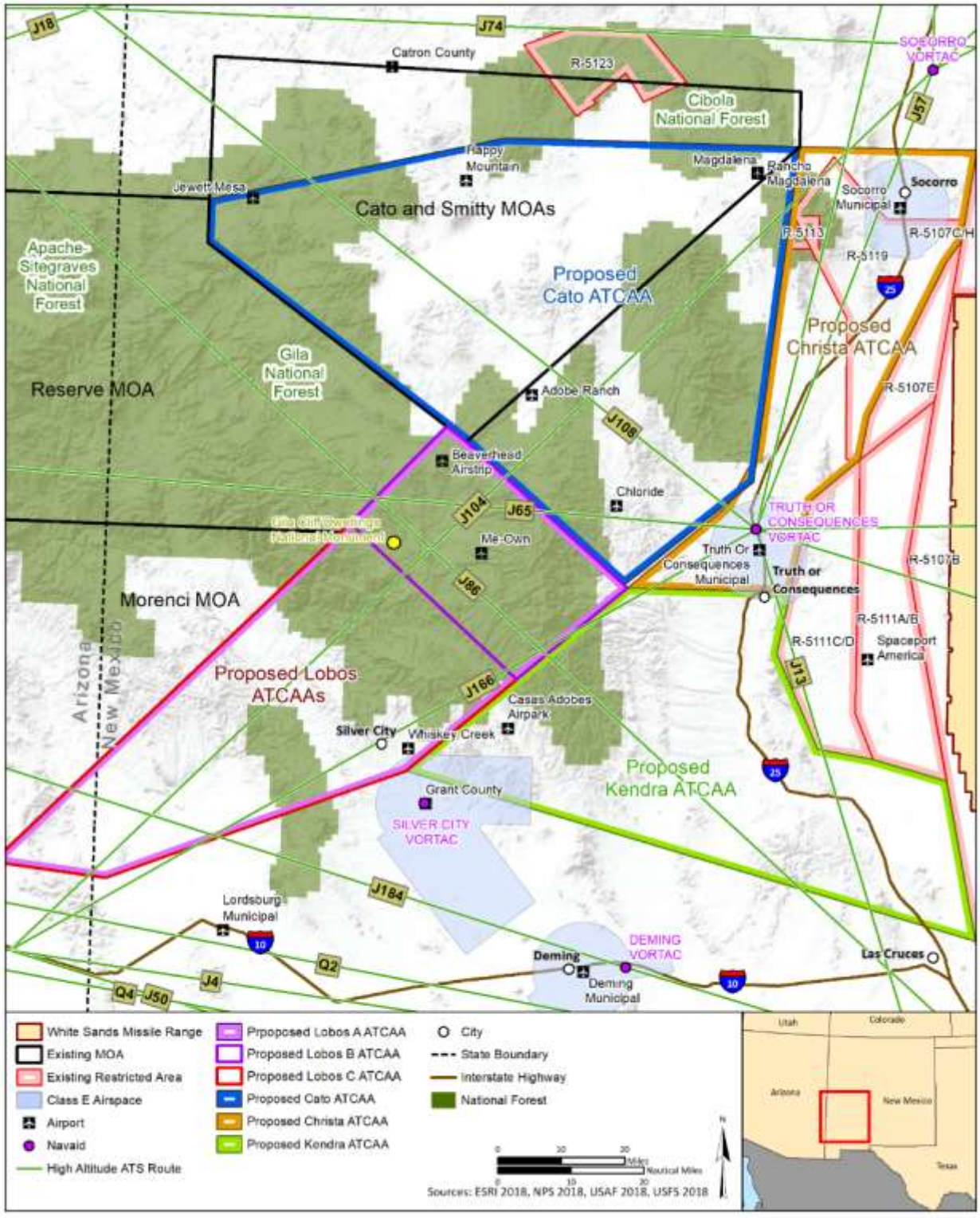
3.2.2.2 Cato, Smitty, and Lobos MOAs and Christa and Kendra ATCAAs

Figure 3.2-4 and 3.2-5 depict the ROI for airspace management and operations. The figures are divided into airspace components below 18,000 feet MSL (**Figure 3.2-4**) and those above 18,000 feet MSL (**Figure 3.2-5**).



Legend: ATS-Air Traffic Service; MOA-Military Operations Area.

Figure 3.2-4. Airspace Components the Cato, Smitty, and Lobos MOAs ROI below 18,000 feet MSL



Legend: ATS-Air Traffic Service; ATCAA – Air Traffic Control Assigned Airspace; MOA-Military Operations Area.

Figure 3.2-5. Airspace Components the Cato, Lobos, Christa and Kendra ATCAAs ROI above 18,000 feet MSL

It includes existing and proposed SUA, ATCAAs, MTRs (not visible on the figure), airports, and low and high ATS routes. **Appendix D1** (Airports in region of influence) provides detailed information (description, based aircraft, and annual operations) on each airport in the ROI.

Existing Special Use Airspace

Table 3.2-8 provides a description of the existing SUA within the ROI and includes MOAs and Restricted Areas. To the extent practicable, SUA within the ROI was originally designed to minimize impacts to civilian air traffic by avoiding ATS routes and public airports.

Table 3.2-8. SUA within the ROI for Smitty, Cato, and Lobos MOAs and Christa and Kendra ATCAAs

Airspace	Altitudes		Published Hours of Use		Published Days of Use
	Minimum	Maximum	From	To	
Cato MOA	13,500 feet MSL	FL180	8:00 a.m.	10:00 p.m.	Monday-Saturday[1]
Smitty MOA	500 feet AGL	13,500 feet MSL	8:00 a.m.	10:00 p.m.	Daily
Morenci MOA	1,500 feet AGL	FL180	6:00 a.m.	11:00 p.m.	Monday-Friday[1]
Reserve MOA	5,000 feet AGL	FL180	By NOTAM		By NOTAM
R-5107A	Surface	Unlimited	Continuous		Continuous
R-5107B	Surface	Unlimited	Continuous		Continuous
R-5107C	9,000 feet MSL	Unlimited	Continuous		Monday-Friday[1]
R-5107D	Surface	22,000 feet MSL	Continuous		Continuous
R-5107E	Surface	Unlimited	By NOTAM[1]		By NOTAM[1]
R-5107F	FL240	FL450	12:01 a.m.	11:59 p.m.	Monday-Friday[2]
R-5107G	FL240	FL450	12:01 a.m.	11:59 p.m.	Monday-Friday[2]
R-5107 H	Surface	9,000 feet MSL	By NOTAM[1]		By NOTAM
R-5107 J	Surface	9,000 feet MSL	Continuous		Monday-Friday[2]
R-5107K	Surface	Unlimited	7:00 a.m.	8:00 p.m.	Monday-Friday[2]
R-5109A	24,000 feet MSL	Unlimited	Intermittent		By NOTAM[2]
R-5109B	24,000 feet MSL	Unlimited	Intermittent		By NOTAM[2]
R-5111A	13,000 feet MSL	Unlimited	By NOTAM[1]		By NOTAM[1]
R-5111B	Surface	13,000 feet MSL	By NOTAM[1]		By NOTAM[1]
R-5111C	13,000 feet MSL	Unlimited	By NOTAM[1]		By NOTAM[1]
R-5111D	Surface	13,000 feet MSL	By NOTAM[1]		By NOTAM[1]
R-5113	Surface	45,000 feet MSL	9:00 a.m.	7:00 p.m.	Daily[3]
R-5123	Surface	Unlimited	By NOTAM[4]		By NOTAM[4]
R-5119	FL350	Unlimited	By NOTAM[4]		By NOTAM[4]

Sources: FAA 2019b, 2018b.

Notes: [1]Other times by NOTAM issued at least 12 hours in advance;[2]Other times by NOTAM (normally, at least 4 hours in advance);[3] Jun 1 through September 30, annually; [4]Intermittent by NOTAM 24 hours in advance.

Legend: ATCAA-Air Traffic Control Assigned Airspace; AGL-above ground level; FL-flight level; MOAs-Military Operations Areas; MSL-mean sea level; NOTAM-Notice to Airmen; ROI-region of influence; SUA-special use airspace.

The Smitty and Cato MOAs are scheduled and managed by the Air National Guard's 150th Special Operations Wing located at Kirtland AFB, New Mexico. The controlling agency is the Albuquerque Center.

The Morenci and Reserve MOAs are adjacent to the proposed Cato, Smitty, and Lobos MOAs. The Morenci and Reserve MOAs are scheduled and managed by the 162nd Fighter Wing located in Tucson, Arizona. The controlling agency is the Albuquerque Center.

Under the Proposed Action, Holloman AFB aircraft would need to fly through or around the restricted areas associated with WSMR: R-5107A-K, R-5109A/B, and R-5111A-D. In addition, the proposed expanded Cato and Smitty MOAs would abut R-5113, and R-5123 overlaps with the portion of the Cato and Smitty MOAs proposed for return to the NAS. With the exception of R-5107A, R-5107K, and R-5113, the using agency for the restricted areas is the Commanding General of WSMR. The using agency for R-5107A is the Commanding General of Fort Bliss; for R-5107K the using agency is the Commanding General of the U.S. Army Air Defense Artillery Center and Fort Bliss Center. For R-5113, the using agency is the Air Force Research Laboratory. The controlling agency for all restricted areas is the Albuquerque Center.

Table 3.2-9 presents the estimated annual flight counts based on PDARS data for civilian aircraft operating within the area of the ROI. Any PDARS record of an aircraft flight track penetrating this airspace is counted as 1 "count". Military aircraft also use airspace within the ROI. Operational data for military aircraft is not presented since military use of the airspace is coordinated and scheduled by the Air Force and would not be affected by the Proposed Action. Because an individual aircraft can fly through multiple SUA areas, the numbers cannot be combined into a single total number of aircraft. It should be noted that the restricted areas are activated and used in support of both ground training maneuvers and flight training.

Table 3.2-9. Estimated Civilian Flight Counts for SUA within Cato, Smitty, and Lobos MOAs ROI, FY17

Airspace	Estimated Annual Counts
Cato MOA	729
Smitty MOA	492
Reserve MOA	534
Morenci MOA	2,382
Combined R-5103/R-5107/R5109/R5111	253,164
Area for Proposed Lobos MOA	22,587

Legend: ATCAA-Air Traffic Control Assigned Airspace; FY-Fiscal Year; MOA-Military Operations Area; ROI-region of influence; SUA-special use airspace.

Air Traffic Control Assigned Airspace

ATCAAs in the ROI are controlled and assigned by the Albuquerque Center and described in **Table 3.2-10**.

Table 3.2-10. Existing ATCAAs within Cato, Smitty, and Lobos MOAs ROI

Airspace	Altitudes		Associated MOA
	Minimum	Maximum	
Cato East ATCAA	FL180	FL510	Cato MOA
Cato West ATCAA	FL180	FL510	Cato MOA
Morenci ATCAA	FL180	FL290 (coordination to FL600 can be accomplished real time)	Morenci MOA
Reserve A ATCAA	FL180	FL510	Reserve A MOA
Reserve B ATCAA[1]	FL180	FL510	Reserve B MOA
Reserve C ATCAA[1]	FL180	FL510	Reserve C MOA

Source: DoD 2018.
Note: [1]Rustler ATCAA is a combination of Reserve B and C ATCAAs.
Legend: ATCAA-Air Traffic Control Assigned Airspace; FL-Flight Level; MOA-Military Operation Area.

Table 3.2-11 presents the estimated annual flight counts based on PDARS data for civilian aircraft operating within the ROI. Any PDARS record of an aircraft flight track penetrating this airspace is counted as 1 "count". Military aircraft also use airspace within the ROI. Operational data for military aircraft is not presented since military use of the airspace is coordinated and scheduled by the Air Force and would not be affected by the Proposed Action.

Table 3.2-11. Estimated Civilian Flight Counts within ATCAAs ROI, FY17

Airspace	Estimated Annual Counts
Cato East ATCAA	57,327
Cato West ATCAA	52,251
Morenci ATCAA	124,722
Reserve A ATCAA	38,769
Reserve B and C ATCAAs	54,162
Area for Proposed Lobos, Christa, and Kendra ATCAAs	169,350

Source: Air Force 2017.
Legend: ATCAA-Air Traffic Control Assigned Airspace; FY-Fiscal Year; ROI-region of influence.

Military Training and Air Refueling Routes

There are two MTRs (VR-176 and VR-263) that intersect the proposed Lobos MOA (**Table 3.2-12**). In addition, AR-613 is located partially within the Reserve B and C ATCAAs (adjacent to the Proposed Action airspace). There are no changes proposed to any of the military training or air refueling routes located within the ROI, and they are therefore dismissed from detailed analysis.

Table 3.2-12. Military Training Routes

MTR	Times of Use	Associated Airspace	Using Agency
VR-176	8:00 a.m.– 5:00 p.m.	Lobos MOA	49 OSS, Holloman AFB
VR-263	Continuous	Lobos MOA	162 OSS, Arizona ANG, Tucson
AR-613	Unlimited[1]	Morenci and Reserve ATCAAs	162 OSS, Arizona ANG, Tucson

Source: DoD 2018.
Notes: [1] Air traffic control assigned.
Legend: AFB-Air Force Base; ANG-Air National Guard; ATCAA-Air Traffic Control Assigned Airspace; MOA-Military Operations Area; MTR-Military Training Routes; OSS-Operational Support Squadron.

Airports

Airports in the vicinity of the ROI were shown on **Figure 3.2-3**. **Appendix D1** (Airports in region of influence) provides detailed information (description, based aircraft, and annual operations) on each airport in the ROI. There are eight public airports: Grant County, Lordsburg, Deming Municipal, Truth or Consequences, Socorro Municipal, Catron County Heliport, Jewett Mesa, and Magdalena Airport. Two additional airports (Beaverhead Airstrip and Me-Own Airport) are classified as public since they are owned by the USFS but they are only available for private use. Grant County, Truth or Consequences Municipal, and Socorro Municipal are not currently located under SUA. All of these would be located beneath the proposed Christa and Kendra ATCAAs where military aircraft activity would be limited to higher altitudes (over FL180). Catron County airport is located in the area proposed to be released to NAS. There are seven private airports within the ROI. Aircraft operating from private airports typically fly using VFR at lower altitudes.

ATS Routes

Table 3.2-13 identifies the ATS Routes associated with the reconfiguration of the Cato and Smitty MOA, proposed Lobos MOA, and the Christa and Kendra ATCAAs. It should be noted that routes T-310, V-110, V-202, V-611 are located beneath the proposed area for the Christa and Kendra ATCAAs. Military aircraft operating within the proposed ATCAAs would only have the potential to affect routes J-13 and J-57.

Table 3.2-13. ATS Routes in the ROI for the Cato, Smitty, and Lobos MOAs and Christa and Kendra ATCAAs

Route[1]	Associated Existing Airspace	Associated Proposed Airspace	Route Origination/Termination	Notes
T-310	None	Christa and Kendra ATCAAs[2]	Tucson, Arizona to Truth or Consequences, New Mexico	Below ATCAA
V-110	None	Kendra ATCAAs[2]	Deming, New Mexico to Truth or Consequences, New Mexico	Below ATCAA
V-202	None	Christa and Kendra ATCAAs[2]	San Simon, Arizona to Truth or Consequences, New Mexico	Below ATCAA
V-611	None	Christa ATCAAs[2]	Newman, Texas to Havre, Montana	Below ATCAA
J-13	None	Christa and Kendra ATCAAs	Mexican Border to Lethbridge, Canada	
J-57	None	Christa ATCAA	Truth or Consequences, New Mexico to Albuquerque, New Mexico	
J-65 (MEA 24,000 feet MSL)	Reserve A and B ATCAAs, WSMR ATCAAs	Cato, Christa, and Lobos B ATCAA	San Antonio, Texas to Seattle, Washington	J-65 normally not available within restricted areas Monday - Friday
J-86 (MEA 27,000 feet MSL)	Reserve B ATCAA and WSMR	Kendra ATCAA, Lobos ATCAA	Beatty, Nevada to Leeville, Louisiana	
J-104 (MEA 20,000 feet MSL)	None	Cato, Lobos A, B and C, and Christa ATCAAs	Los Angeles, California to Pueblo, Colorado	
J-108	Cato ATCAA	Cato and Christa ATCAAs	Winslow, Arizona to Wink, Texas	J-108 normally unavailable within restricted areas Monday-Friday (i.e., through WSMR)
J-166 (MEA 24,000 feet MSL)	None	Christa, Kendra and Lobos A, B and C ATCAAs	San Simon, Arizona to Wichita Falls, Texas	J-166 normally not available within restricted areas Monday - Friday (i.e., through WSMR)
J-184	Morenci ATCAA	Lobos A and C ATCAAs	Buckeye, Arizona to Newman, Texas	

Source: FAA 2018a.
Notes:[1] MEAs do not apply to all ATS routes. [2] Route is within the ROI but would be located beneath the ATCAA.
Legend: ATCAA-Air Traffic Control Assigned Airspace; MEA-Minimum En-route Altitude; MOA-Military Operations Area; MSL-mean sea level; ROI-region of influence; WSMR-White Sands Missile Range.

3.2.2.3 Valentine and Bronco MOAs

Valentine MOA is located south of Holloman AFB in Texas and covers approximately 2,432 square nm (see **Figure 2.4-2**). Holloman AFB schedules the use of Valentine MOA. The floor of this MOA is 15,000 feet MSL and extends up to 18,000 feet MSL. The associated ATCAA extends the training airspace to FL450. There has been no Air Force activity in this MOA in recent years.

The Bronco MOA (see **Figure 2.4-2**) is located east of Holloman AFB and covers approximately 5,115 square nm. Cannon AFB schedules use of Bronco MOA. The MOA is divided into four segments (1, 2, 3, and 4) with designated floors of 8,000 to 10,000 feet MSL and a ceiling that extends up to 18,000 feet MSL. With the associated ATCAA, the airspace extends to FL510. There has been no Air Force activity in Bronco 1 and 2 in recent years. Bronco 3 and 4 currently supports Air Force training.

3.3 ACOUSTIC ENVIRONMENT

3.3.1 Resource Definition

Noise is considered unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. Noise may be intermittent or continuous, steady or impulsive. It may also be stationary or transient. Stationary sources are normally related to specific land uses, e.g., housing tracts or industrial plants. Transient noise sources move through the environment, either along relatively established paths (e.g., highways, railroads, and aircraft flight tracks around airports), or randomly. There is wide diversity in responses to noise that not only vary according to the type of noise and the characteristics of the sound source, but also according to the sensitivity and expectations of the receptor, the time of day, and the distance between the noise source (e.g., an aircraft) and the receptor (e.g., a person or animal). Although aircraft are not the only source of noise in any area, they are readily identifiable to those affected by noise they produce and are routinely singled out for special attention and criticism.

The physical characteristics of noise and/or sound include its intensity, frequency, and duration. Sound is created by acoustic energy, which produces minute pressure waves that travel through a medium, like air, and are sensed by the eardrum. This may be likened to the ripples in water that would be produced when a stone is dropped into it. As the acoustic energy increases, the intensity or amplitude of these pressure waves increase, and the ear senses louder noise. The unit used to measure the intensity of sound is the decibel (dB). Sound intensity varies widely (from a soft whisper to a jet engine) and is measured on a logarithmic scale to accommodate this wide range. The logarithm, and its use, is nothing more than a mathematical tool that simplifies dealing with very large and very small numbers. For example, the logarithm of the number 1,000,000 is 6, and the logarithm of the number 0.000001 is -6 (minus 6). Obviously, as more zeros are added before or after the decimal point, converting these numbers to their logarithms greatly simplifies calculations that use these numbers. Human hearing ranges from 0 dB (barely audible) to 120 dB, where physical discomfort is caused by the sound.

The frequency of sound is measured in cycles per second, or hertz (Hz). This measurement reflects the number of times per second the air vibrates from the acoustic energy. Low frequency sounds are heard as rumbles or roars, and high frequency sounds are heard as screeches. Sound measurement is further refined through the use of "weighting." The normal human ear can detect sounds that range in frequency from about 20 Hz to 15,000 Hz. However, not all sounds throughout this range are heard equally well. Because the human ear is most sensitive to frequencies in the 1,000 to 4,000 Hz range, sound meters may be calibrated to emphasize frequencies in this range. Sounds measured with these instruments are termed "A-

weighted," and are indicated in terms of A-weighted decibels (dBA). A-weighting simply accounts for the frequency sensitivity of the human ear. The dBA is also appropriate for measuring continuous sounds.

The duration of a noise event and the number of times noise events occur are also important considerations in assessing noise impacts. As a basis for comparison when noise levels are considered, it is useful to note that at distances of about 3 feet, noise from normal human speech ranges from 63 to 65 dBA, operating kitchen appliances range from about 83 to 88 dBA, and rock bands approach 110 dBA.

3.3.1.1 Noise Metrics

The word "metric" is used to describe a standard of measurement. Many different types of noise metrics have been developed by researchers attempting to represent the effects of environmental noise. Each metric used in environmental noise analysis has a different physical meaning or interpretation.

The metrics supporting the assessment of noise from aircraft operations within this EIS are the Day-Night Average Sound Level (DNL), Onset Rate Adjusted Day-Night Average Sound Level (L_{dnmr}), C-weighted Day-Night Average Sound Level (CDNL), Maximum Sound Level (L_{max}), and Sound Exposure Level (SEL). Each metric is briefly discussed below.

DNL and L_{dnmr}

The DNL is an A-weighted cumulative noise metric that measures noise based on annual average daily aircraft operations. When DNL is averaged over a busy month of operations (vice an average month), and is adjusted for the onset rate of the noise to account for the "surprise factor," the metric is L_{dnmr}. In the case of this analysis, Holloman AFB is a training base with a steady operations tempo, typically there is no month busier than the others. The onset rate adjustment was included in the model calculations; however, it was small enough to not make a difference in the DNL calculation. Therefore, in this EIS the calculations of L_{dnmr} and DNL would be the same. Since DNL is the U.S. Government (including FAA, a cooperating agency for this EIS) standard for modeling the cumulative noise exposure and assessing community noise impacts, the subsonic noise exposure is reported in DNL. DNL has two time periods of interest: daytime and nighttime. Daytime hours are from 7:00 a.m. to 10:00 p.m. local time. Nighttime hours are from 10:00 p.m. to 7:00 a.m. local time. DNL weights operations occurring during its nighttime period by adding 10 dB to their single event sound level. Note that "daytime" and "nighttime" in calculation of DNL are sometimes referred to as "acoustic day" and "acoustic night" and always correspond to the times given above. This is often different than the "day" and "night" used commonly in military aviation, which are directly related to the times of sunrise and sunset, and vary throughout the year with the seasonal changes.

CDNL

CDNL is similar to DNL, in that it is based on C-weighted noise, which emphasizes lower frequency sound vibrations. C-weighting better targets the lower frequencies that are "felt," instead of "heard" – usually impulsive noise caused by things like explosions. This metric averages all of the sound energy produced during the assessment period, in this case a year, while weighting any event occurring between 10:00 p.m. to 7:00 a.m. by adding 10 dB, to account for the likelihood of higher public annoyance by nighttime noise. CDNL is used to measure the effects of sonic booms that occur from aircraft flying at supersonic speeds.

L_{max} and SEL

Individual time-varying noise events have two main characteristics—a sound level, which changes throughout the event and a period of time during which the event is heard. L_{max} is the maximum sound level

experienced by a receptor during a noise event. Although the maximum sound level provides some measure of the intrusiveness of the event, it alone does not completely describe the total event. The period of time during which the sound is heard is also relevant. The SEL combines both of these characteristics into a single metric. The SEL takes all of the sound energy from a single event and compresses it into 1 second. This is useful for comparing single noise events. It is worth noting, that SEL is always greater in value than L_{max} because it compresses all sound energy into a 1-second timeframe. So for example, as a jet approaches the observer, the sound gets louder and louder, until the jet passes the observer. At that point, the observer would experience the L_{max} (the maximum sound level), then the sound would diminish as the jet moves past the observer and off into the distance. SEL compresses all of the sound energy into a 1-second timeframe.

3.3.1.2 Relationship Between Noise and Annoyance

Generally, the louder the noise, the more annoyance it causes. **Table 3.3-1** presents the results of over a dozen studies on the relationship between noise and annoyance levels. This relationship was suggested by Schultz (1978) and was re-evaluated for use in describing the reaction of people to environmental noise (Fidell et al. 1988). These data provide a perspective on the level of annoyance that might occur. For example, 12 to 22 percent of people exposed on a long-term basis to 65 to 70 DNL may be expected to be highly annoyed by noise events. The study results summarized in **Table 3.3-1** are based on outdoor noise levels.

Table 3.3-1. Estimated Percentage of Population Highly Annoyed by Outdoor Noise Exposure

DNL Interval (dBA)	Percentage of Persons Highly Annoyed
<65	<12
65-70	12 – 22
70-75	22 – 37
75-80	37 – 54
>85	61

Source: Adapted from National Academy of Sciences 1977.
Note: Noise impacts on individuals vary as do individual reactions to noise. This is a general prediction of the percentage of the community potentially highly annoyed based on environmental noise surveys conducted around the world.
Legend: <-less than; >-greater than; dBA- A-weighted decibels; DNL- Day-Night Average Sound Level.

3.3.1.3 Noise Induced Hearing Loss

Noise induced hearing loss risk has been studied extensively. As per DoD policy memorandum, populations exposed to noise greater than 80 DNL are at the greatest risk of potential hearing loss (Undersecretary of Defense for Acquisition Technology and Logistics 2009). The DoD policy directs that hearing loss risk should be assessed using the methodology described in U.S. Environmental Protection Agency (USEPA) Report No. 550/9-82-105, Guidelines for Noise Impact Analysis (USEPA 1982). USEPA's Guidelines for Noise Impact Analysis quantify hearing loss risk in terms of Noise Induced Permanent Threshold Shift (NIPTS), a quantity that defines the permanent change in the threshold level below which a sound cannot be heard. NIPTS is stated in terms of the average threshold shift at several frequencies that can be expected from daily exposure to noise over a normal working lifetime of 40 years, with exposure lasting 8 hours per day for 5 days per week.

The actual value of NIPTS for any given person depends on that individual's physical sensitivity to noise. Over a 40-year working lifetime, some people will experience more loss of hearing than others. The actual

noise exposure for any person living in an area subject to 80 DNL or greater is determined by the length of time that a person is outdoors and directly exposed to the noise. For example, noise exposure within an 80 DNL noise contour near an airfield would be affected by whether a person was at home during the daytime hours when most flying occurs. Many people would be inside their homes and would, therefore, be exposed to lower noise levels due to noise attenuation provided by the house structure. Under the existing airspace or under the airspace proposed by this action, no person or place would be exposed to noise levels greater than 80 DNL. Therefore, noise induced hearing loss is not discussed further in this analysis.

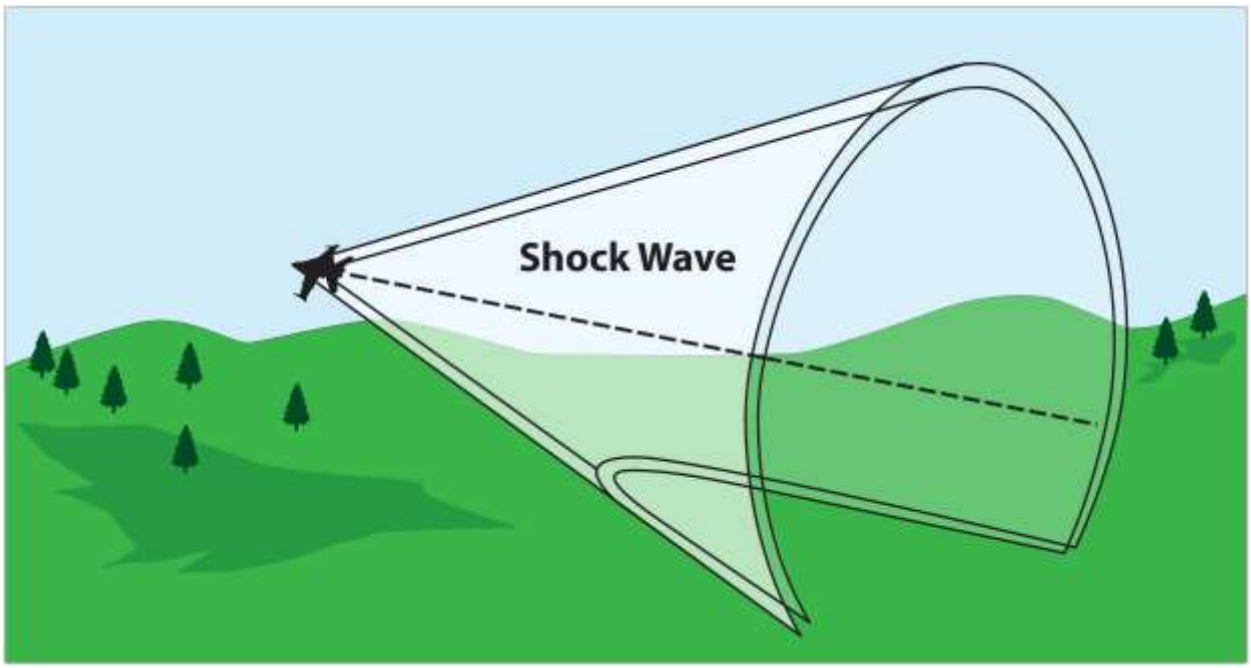
3.3.1.4 Subsonic and Supersonic Noise

For this EIS, two types of aircraft noise are assessed: subsonic noise and supersonic noise. Conventional subsonic noise is noise generated by an aircraft's engines and airframe. This is the most familiar form of aircraft noise.

The second type of noise is generated when an aircraft flies faster than the speed of sound. A sonic boom is the sound associated with shock waves generated when an aircraft travels at supersonic speeds. The shock wave forms a "cone" of pressurized or built-up air molecules which move outward and rearward in all directions from the aircraft (**Figure 3.3-1**). As the "cone" moves outward, upward, and away from the aircraft, it gets wider and its strength is reduced. The altitude at which the shock wave is created determines the distance shock waves travel before reaching the ground and affects the intensity of the boom. The higher the aircraft, the greater the distance the shock wave must travel before reaching receptors on the ground, reducing the intensity of the boom. In general, the width of the cone beneath the aircraft is about 1 mile for each 1,000 feet in altitude. For example, an aircraft traveling supersonic at FL300 can produce a cone with a width of about 30 miles.

The shape and sound of the sonic boom resulting from supersonic flight depends on the aircraft's size, weight, geometry, flight altitude, speed, and type of maneuvering. Aircraft exceeding the speed of sound always create a sonic boom; however, not all supersonic flight activities will cause a boom audible at the ground. As altitude increases, air temperature decreases, and these layers of temperature change can cause booms to be reflected, or turned upward, and in some cases the boom never reaches the ground.

A sonic boom is characterized as an overpressure which is a rapid rise in pressure, followed by a rapid drop-off before the pressure returns to normal atmospheric levels. This change occurs very quickly (i.e., in significantly less than one second). In the vast majority of cases, the overpressures created are well below levels that would cause physical injury or damage to structures. In rare cases, a sonic boom could cause physical damage, as to a window, if the overpressure is of sufficient magnitude. Sonic booms may also cause startle effects in humans and animals.



Note: Figure not to scale, for illustration purposes only.

Figure 3.3-1. Sonic Boom Shock Wave

3.3.2 Affected Environment

Federal, state, and local governments regulate noise to prevent noise sources from affecting noise sensitive areas, such as residences, hospitals, and schools, and to protect human health and welfare. Federal agencies, such as the Department of Housing and Urban Development, have established health-based maximum noise exposure recommendations. Local agencies, including cities and counties, are responsible for defining and enforcing land use compatibility in various noise environments.

Noise analysis requires data defining aircraft activity in terms of time in the MOA and ATCAA airspace, as well as the speed, altitude, power setting, and position information. Additionally, jet aircraft activity within MTRs that overlap the existing or proposed MOAs were also modeled as part of the existing conditions. MTRs are low-level flying routes used by military aircraft to access training areas (see **Section 3.2.2**, *Airspace Management and Operations,* for additional information on MTRs). The MTRs that transit the existing and proposed airspace discussed in this EIS have a minimum altitude of 100 feet AGL.

The noise analysis was performed using the input data on both subsonic and supersonic operations and accepted noise modeling programs, MR_NMAP and BOOMAP 96 sonic boom model (Plotkin 1996; Frampton et al. 1993), were used to define noise levels for both baseline and proposed conditions. MR_NMAP assumes an even distribution of noise across the entire airspace modeled. Therefore, contour results are not presented for subsonic aircraft noise.

Twenty-eight points of interest (POIs) were chosen beneath or near the existing and proposed airspace (**Figure 3.3-2 and Figure 3.3-3)**. These POIs include municipalities and towns beneath the airspace as well as a few representative areas outside of the airspace. Major outdoor recreation areas (National Forests, National Parks, National Wildlife Refuges, Wilderness Areas, and state parks) beneath or near the airspace were also selected as POIs. The Continental Divide Trail is also a POI, however, a single point cannot be shown for this linear feature. The full trail is shown on **Figure 3.3-3** and several points are along or near

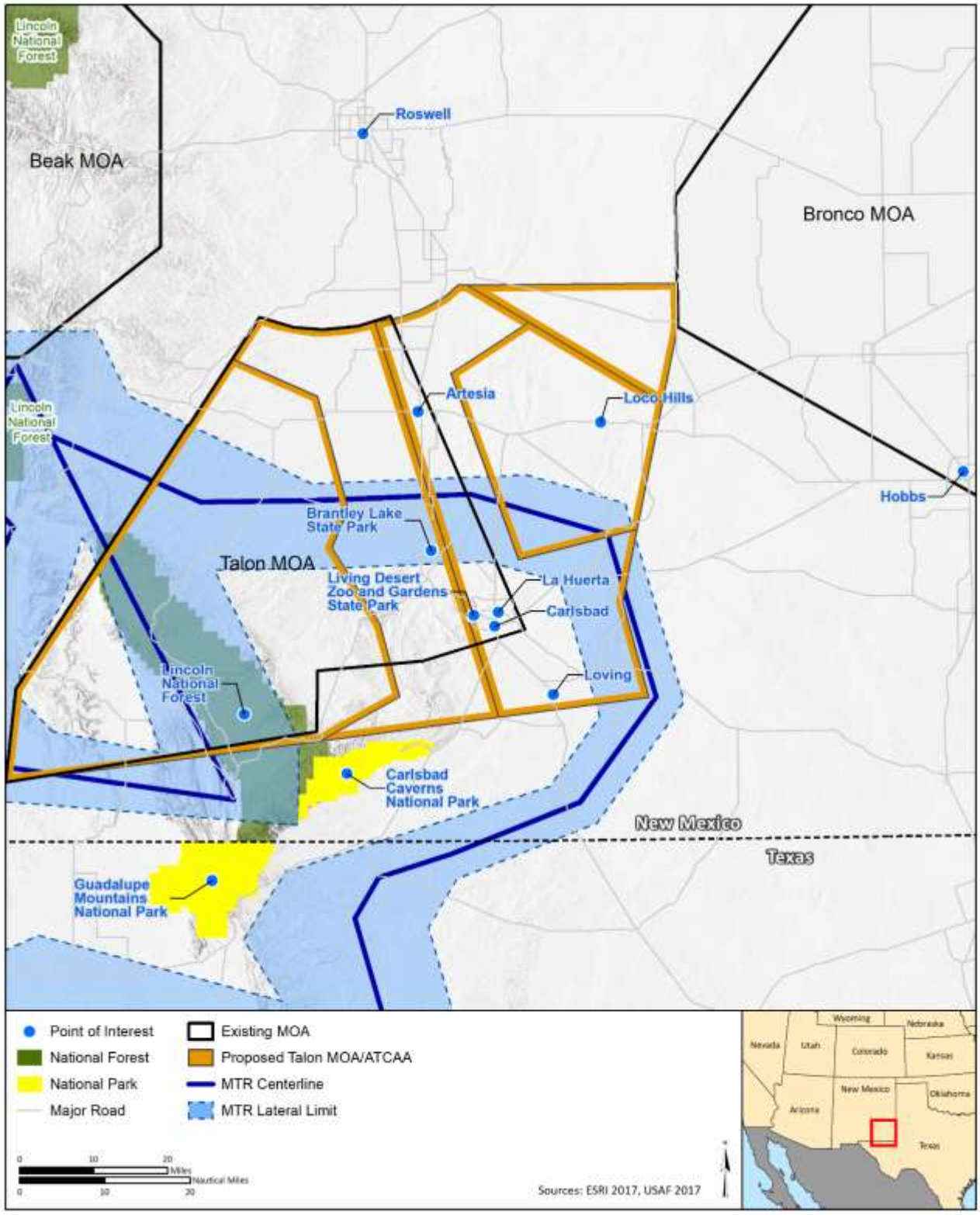
the trail that can be reviewed for representative noise along the trail. The baseline noise attributed to jet aircraft activity at these POIs was calculated using MR_NMAP. The model calculates noise at the exact point shown on the figure. The calculated noise provides a representation of the noise that may be experienced in that general area. The subsonic and supersonic noise conditions at the POIs is provided in the following sections.

3.3.2.1 Subsonic Noise

As discussed in **Section 3.3.1.1** (Noise Metrics), the cumulative metric DNL represents the most widely accepted method of quantifying the noise impact. However, it does not provide an intuitive description of the noise environment. People often want to know what the loudness of an individual aircraft will be.

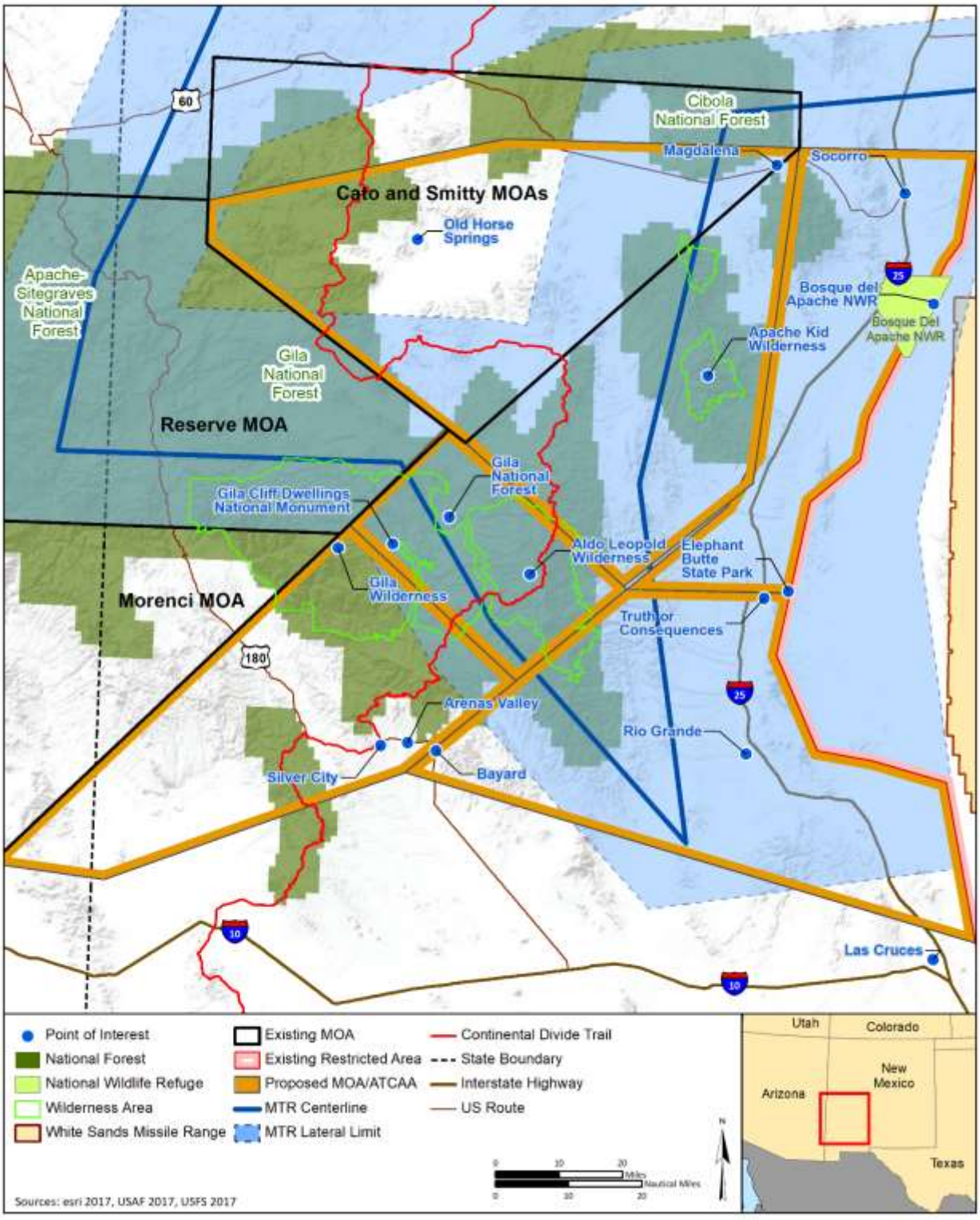
The analysis in this EIS also uses MR_NMAP to provide the L_{max} and SEL for individual aircraft overflights at various distances to provide a better perspective of what an observer may experience during an overflight. These results will be presented in **Section 4.3** (Acoustic Environment).

Under existing conditions, the Talon MOA is currently utilized for training by Holloman AFB. There are also MTRs within the existing and proposed Talon MOA that contribute to the baseline noise. Currently, Talon High East and Talon High West MOAs have maximum DNL values of 41 and 47 DNL, respectively. Talon Low MOA has the highest value of 54 DNL. The Cato and Smitty MOAs are existing airspace, though they are almost never used by Holloman AFB and have had little use in recent years so the noise contribution from military aircraft activity in the MOAs is zero. However, there is an MTR that overlaps the Cato and Smitty MOAs and the area proposed for the Lobos MOA. The aircraft activity along this MTR is included in the baseline noise calculation. **Table 3.3-2** shows the calculated noise levels from jet aircraft activity for the various POIs in and around the affected airspace. Under existing conditions, most values are less than 35 DNL or are below the model's ability to predict due to low noise levels from aircraft. The highest value, 53 DNL, occurs at Lincoln National Forest.



Legend: ATCAA-Air Traffic Control Assigned Airspace; MOA-Military Operations Area; MTR-Military Training Route.

Figure 3.3-2. Points of Interest East



Legend: ATCAA-Air Traffic Control Assigned Airspace; MOA-Military Operations Area; MTR-Military Training Route; NWR-National Wildlife Refuge.

Figure 3.3-3. Points of Interest West

Table 3.3-2. Baseline Noise Attributable to Military Aircraft Modeled for POIs beneath or near Proposed Airspace

Name	DNL (dBA)
Eastern POIs	
Carlsbad, New Mexico	40
Artesia, New Mexico	40
Loving, New Mexico	<35
Loco Hills, New Mexico	<35
La Huerta, New Mexico	40
Hobbs, New Mexico	<35
Roswell, New Mexico	<35
Carlsbad Caverns National Park	<35
Guadalupe Mountains National Park	<35
Lincoln National Forest	53
Living Desert Zoo and Gardens State Park	41
Brantley Lake State Park	41
Western POIs[1]	
Gila Cliff Dwellings National Monument	<35
Socorro, New Mexico	<35
Truth or Consequences, New Mexico	<35
Las Cruces, New Mexico	<35
Magdalena, New Mexico	<35
Bayard, New Mexico	<35
Old Horse Springs, New Mexico	<35
Arenas Valley, New Mexico	<35
Silver City, New Mexico	<35
Gila Wilderness	<35
Elephant Butte State Park	<35
Gila National Forest	49
Aldo Leopold Wilderness	<35
Apache Kid Wilderness	45
Bosque del Apache National Wildlife Refuge	<35
Rio Grande	<35

Legend: <-less than; dBA-A-weighted decibel; DNL-Day-Night Average Sound Level; POI-Point of Interest.

Note: [1] A single point wasn't established for the Continental Divide Trail since it is a linear feature. The noise calculated at nearby POIs along the trail provide a representation of the noise attributable to military aircraft.

Many of the areas that underlie the existing and proposed airspace that Holloman AFB would use are undeveloped wilderness or rural areas. Because of the remote nature of these areas and their large size, ambient noise levels are difficult to predict, but are assumed to be quite low since these areas lack man-made noise sources (traffic, industrial activities, etc.). The NPS develops soundscape maps for their park units to help determine the quality of the acoustic environment. These maps use the noise metric L50 dBA, which is the A-weighted sound level which happens 50 percent or more of the time of the measurement. The L50 dBA existing sound pressure levels for units beneath or adjacent to proposed airspace (e.g., Carlsbad Caverns National Park, Gila Cliff Dwellings National Monument, and Guadalupe Mountain National Park) are very low (ranging from 27.4 to 35.1 dBA). This indicates there is a prominence of natural sounds at the parks with very little man-made sounds (Wood 2015a, b, c). It is assumed that

surrounding wilderness areas and rural areas would also have a low ambient noise environment with minimal man-made noise sources. The L50 dBA metric is not directly comparable to the FAA and U.S. Air Force standard of DNL; however, this metric does provide a frame of reference for the quietness of the existing ambient noise conditions.

3.3.2.2 Supersonic Noise

Supersonic aircraft flight is primarily associated with air combat training. In this Proposed Action, supersonic flight would occur in airspace above FL300. Currently, aircraft from Holloman AFB use the Talon ATCAA for supersonic training activities.

Noise calculations for the current supersonic operations within the Talon ATCAA show values of less than 35 CDNL. Under existing conditions, there are no supersonic operations within the existing Cato ATCAA.

3.4 AIR QUALITY

3.4.1 Resource Definition

Air quality is defined by ambient air concentrations of specific pollutants determined by the USEPA to be of concern with respect to the health and welfare of the public. The major pollutants of concern, called "criteria pollutants," are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), total suspended particulate matter less than or equal to 10 (PM_{10}) and 2.5 ($PM_{2.5}$) micrometers in aerodynamic diameter, and lead (Pb). The USEPA has established National Ambient Air Quality Standards (NAAQS) for these pollutants as shown in **Table 3.4-1**.

Ambient air quality refers to the atmospheric concentration of a specific compound pollutant that occurs at a particular geographic location. Ambient air quality concentrations are generally reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction of the air (e.g., parts per million by volume). The ambient air quality concentrations at a particular location are determined by the interactions of emissions, meteorology, and chemistry. Emission considerations include the types, amounts, and locations of pollutants emitted into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions. Chemical reactions can transform pollutant emissions into other chemical substances.

Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly emitting the pollutant in the ambient air (primary pollutants) or by direct emissions interacting in the atmosphere to form criteria pollutants (secondary pollutants). Secondary pollutants, such as O_3, NO_2, and some particulates form through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. PM_{10} and $PM_{2.5}$ are generated as primary pollutants by various mechanical processes (for example, abrasion, erosion, mixing, or atomization) or combustion processes. However, PM_{10} and $PM_{2.5}$ can form as secondary pollutants through chemical reactions or by gaseous pollutants condensing into fine aerosols. In general, for secondary pollutants, the emissions of the compounds that are considered "precursors" to secondary pollutants in the atmosphere are the pollutants for which emissions can be evaluated to control their level in the ambient air. These include reactive organic gases and nitrogen oxides (NO_x), which are precursors to O_3.

Table 3.4-1. National Ambient Air Quality Standards (cont.)

Pollutant		Primary/ Secondary	Averaging Time	Level	Form
CO		primary	8 hours	9 parts per million	Not to be exceeded more than once per year
			1 hour	35 parts per million	
Pb		primary and secondary	Rolling 3 month period	0.15 micrograms per cubic meter (1)	Not to be exceeded
NO_2		primary	1 hour	100 parts per billion	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 parts per billion (2)	Annual mean
O_3		primary and secondary	8 hours	0.070 parts per million (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle pollution	$PM_{2.5}$	primary	1 year	12.0 micrograms per cubic meter	Annual mean, averaged over 3 years
		secondary	1 year	15.0 micrograms per cubic meter	Annual mean, averaged over 3 years
		primary and secondary	24 hours	35 micrograms per cubic meter	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24 hours	150 micrograms per cubic meter	Not to be exceeded more than once per year on average over 3 years
SO_2		primary	1 hour	75 parts per billion (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 parts per million	Not to be exceeded more than once per year

Source: USEPA 2016, current as of December 20, 2016.

Note: (1) In areas designated nonattainment for the lead standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 micrograms per cubic meter as a calendar quarter average) also remain in effect.

(2)The level of the annual nitrogen dioxide standard is 0.053 parts per million. It is shown here in terms of parts per billion for the purposes of clearer comparison to the 1-hour standard level.

(3)Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) ozone standards additionally remain in effect in some areas. Revocation of the previous (2008) ozone standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(4)The previous sulfur dioxide standards (0.14 parts per million 24-hour and 0.03 parts per million annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous sulfur dioxide standards or is not meeting the requirements of a State Implementation Plan call under the previous sulfur dioxide standards (40 Code of Federal Regulations 50.4(3)). A State Implementation Plan call is a USEPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the require National Ambient Air Quality Standards.

Legend: CO-carbon monoxide; NO_2-nitrogen dioxide; O_3-ozone; Pb-lead; $PM_{2.5}$-particulate matter less than or equal to 2.5 microns; PM_{10}-particulate matter less than or equal to 10 microns; SO_2 – sulfur dioxide.

3.4.1.1 Hazardous Air Pollutants

In addition to the NAAQS for criteria pollutants, national standards exist for hazardous air pollutants (HAPs), which are regulated under Section 112(b) of the 1990 CAA Amendments.

Aircraft gas turbine engines burn fuel more efficiently than most mobile sources. Because most fuel is consumed at higher power settings and most operational time is spent at cruise, greater than 99 percent of fuel undergoes complete combustion and is efficiently converted to carbon dioxide (CO_2) and water. HAP emissions are greatest under idle conditions when the engines are operating in a less efficient cycle (FAA 2009). This condition would occur in the airfield environment and not within airspace; therefore, HAPs will not be addressed further in this EIS.

3.4.1.2 General Conformity Rule

The USEPA designates an area as in attainment when it complies with the NAAQS. Areas that violate these ambient air quality standards are designated as nonattainment areas. Areas that have improved air quality from nonattainment to attainment are designated as attainment/maintenance areas. Areas that lack monitoring data to demonstrate attainment or nonattainment status are designated as unclassified and are treated as attainment areas for regulatory purposes. When an area is designated in nonattainment and/or in maintenance, the CAA Section 176(c), General Conformity Rule, is applied. The intent of this rule is to ensure that Federal actions do not adversely affect the timely attainment of air quality standards in areas of nonattainment or maintenance.

3.4.1.3 Greenhouse Gas Emissions

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. Both natural processes and human activities generate these emissions. Each GHG is assigned a global warming potential, which is the ability to trap heat, and is standardized to CO_2, which has a global warming potential value of one. A GHG is multiplied by its global warming potential to calculate the total equivalent emissions of carbon dioxide (CO_2e). The accumulation of GHGs in the atmosphere regulates the earth's temperature. Observations show that warming of the climate is unequivocal. The global warming observed over the past 50 years is due primarily to human-induced emissions of heat-trapping gases. These emissions come mainly from the burning of fossil fuels (coal, oil, and gas), with contributions from forest clearing, agricultural practices, and other activities. To minimize GHG impacts, Federal agencies and installations are required to comply with Federal climate change policies.

The Air Force, in keeping with the mandate of EO 13834, *Efficient Federal Programs*, operates with the following goals to reduce energy consumption and as a result reduce GHG emissions:

- Achieve and maintain annual reductions in building energy use and implement energy efficiency measures that reduce costs.
- Meet statutory requirements relating to the consumption of renewable energy and electricity.
- Ensure that new construction and major renovations conform to applicable building energy efficiency requirements and sustainable design principles and annually assess and report on building conformance to sustainability metrics.
- Track and report on energy management activities, performance improvements, cost reductions, greenhouse gas emissions, energy and water savings, and other appropriate performance measures.

3.4.2 Affected Environment

Potential effects to air quality must consider a vertical dimension because the emissions occur in a volume of air. The vertical dimension depends upon climatic conditions, and is defined from ground level to a certain "mixing height". The mixing height is generally defined as between ground level and 3,000 feet AGL and is based on historic climatic data (USEPA 1972), though more specific mixing height data are available for specific locations. The default mixing height of 3,000 feet AGL was used for this analysis. Criteria pollutant emissions generated above the mixing height are thus excluded from further analysis.

The affected environment for criteria pollutant emissions includes the area underlying the proposed low MOA components of Talon, Smitty, and Lobos MOAs since aircraft activities within these areas would occur below the 3,000 feet AGL mixing height. The affected environment for GHGs is the global atmosphere. **Table 3.4-2** shows the specific counties that underlie these areas and their current attainment status under the NAAQS. The areas where MOAs are located in New Mexico are in attainment for all criteria pollutants, though a small portion of Grant County is designated as a maintenance area for SO_2 (USEPA 2003). The area of Grant County that is a designated maintenance area includes land within a 3.5-mile radius of the now defunct Hurley Smelter in Hurley, New Mexico and surrounding land that is within an 8-mile radius and above 6,470 feet MSL. The small portion of the proposed Lobos MOA that would include Greenlee County in Arizona is also a maintenance area for SO_2 (USEPA 2004) due to the Phelps Dodge Morenci copper smelter, which ceased operation in 1984. Both of these maintenance area designations are due to emissions from copper smelting operations that are no longer operational. **Table 3.4-3** provides the annual emissions inventories for the counties that overlap the proposed low MOAs.

Table 3.4-2. Attainment Status for the Proposed Low MOAs for Criteria Pollutants

MOA	County	Status
Talon Low A and B	Chaves, Otero, Eddy* – New Mexico	Attainment or Unclassified for all pollutants
Smitty	Sierra, Catron, Socorro – New Mexico	Attainment or Unclassified for all pollutants
Lobos Low	Grant, Hidalgo, Sierra, Catron – New Mexico Graham, Greenlee - Arizona	Attainment or Unclassified for all pollutants in Hidalgo, Sierra, Catron, New Mexico and Graham, Arizona Grant County, New Mexico and Greenlee County, Arizona are maintenance areas for SO_2

Note: * Eddy County is in attainment but has not been meeting the National standard for ozone.
Legend: MOA-Military Operations Area; SO_2 – sulfur dioxide.

Table 3.4-3. 2014 Annual Emissions Inventory for Counties Underlying the Proposed MOAs (cont.)

Location	Total Annual Emissions in Tons						
	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
Talon Low A/ Low B MOAs							
Chaves County, New Mexico	75,290	27,411	4,709	72	15,833	2,134	476,433
Eddy County, New Mexico	122,786	34,407	10,767	1,798	16,350	2,696	523,939
Otero County, New Mexico	89,348	31,892	3,606	43	17,260	2,314	536,383
Smitty Low MOA							
Sierra County, New Mexico	60,137	17,207	1,706	10	3,835	537	199,655
Catron County, New Mexico	82,059	31,537	1,615	127	5,153	1,895	260,677
Socorro County, New Mexico	69,934	21,092	3,646	21	8,016	1,130	342,346
***Lobos Low MOA**							
Grant County, New Mexico	61,811	23,866	2,574	70	13,585	2,116	421,072
Hidalgo County, New Mexico	53,970	14,304	2,667	8	4,183	577	208,053
Graham County, Arizona	96,030	78,747	2,671	535	13,346	6,155	†1,165,748
Greenlee County, Arizona	39,305	33,919	1,075	219	23,102	4,319	252,678

Source: USEPA 2018.

Note: * Lobos Low MOA would also include Sierra and Catron Counties in New Mexico.

† GHG emissions (CO_2e) in Graham County were heavily influenced by wildfires in 2014.

Legend: CO-carbon monoxide; CO_2e-carbon dioxide equivalent; GHG-Greenhouse Gas; MOA-Military Operations Area; NO_x-nitrogen oxides; PM_{10}-paticulate matter less than or equal to 10 micrometers; $PM_{2.5}$- particulate matter less than or equal to 2.5 micrometers; SO_2-sulfur dioxide; VOC-Volatile Organic Compound.

The proposed Talon Low A MOA is located in proximity to two National Parks, Carlsbad Caverns National Park and Guadalupe Mountains National Park. The southeast corner of this MOA would lie within 2 to 7 miles from the northern perimeter of Carlsbad Caverns National Park and approximately 15 miles from the northern perimeter of Guadalupe Mountains National Park. The proposed Smitty Low and Lobos Low MOAs would be located above or near the Galiuro Wilderness in Graham County Arizona; Gila Wilderness in Catron and Grant Counties in New Mexico; and Bosque del Apache Wilderness in Socorro County. The National Parks and Wilderness Areas are categorized as Class I Areas identified in the Clean Air Act as protected from impairment of visibility resulting from manmade air pollution.

3.5 NATURAL RESOURCES

3.5.1 Resource Definition

For this analysis, natural resources are defined as wildlife and special-status species, those protected under Federal and state law, and the habitats within which they occur. Vegetation would not be affected by the Proposed Action, which involves only changes to airspace and no on-ground activities; therefore, vegetation will be discussed only in the context of the wildlife habitat.

Wildlife includes all animal species (invertebrates, fish, amphibians, reptiles, birds, and mammals) with the exception of those identified as special-status species. Due to the nature of the Proposed Action, and the fact that no ground disturbance would occur under the airspace, no effects to reptiles, small mammals (except bats), amphibians, fish, and invertebrates, or their associated habitats are anticipated. Most invertebrates hear poorly in the frequency range of aircraft noise. Little is known about the effects of noise on reptiles and amphibians because response is difficult to study since their heartrates are naturally variable and they do not demonstrate a startle response (Bowles et al. 1995). Snakes, turtles and tortoises hear poorly while amphibians are sensitive to vibration and hearing capacities vary more widely (Bowles 1995). Few field studies on small mammals have been conducted but those that have suggest no population level effects

from airport noise (Bowles et al 1995). Large mammals, bats, and birds are potentially affected by noise; therefore, the wildlife section will focus on those species.

Special-Status species include animal species: (1) listed as endangered, threatened, or proposed for listing by the USFWS under the ESA and their designated critical habitats; (2) protected by the Federal MBTA; (3) protected under the BGEPA; or (4) listed under state ESAs or similar conservation laws.

Under the ESA, it is the responsibility of the action proponent to determine whether a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat. If the action proponent determines it may affect a listed species, they must consult with the USFWS. If the action proponent determines their proposed action would have "no effect" on listed species or their habitat, they do not need to consult further with USFWS. Species proposed for listing under ESA (candidate species) are not protected under law. However, these species could become federally-listed in the near-term; and therefore, they are considered in this analysis in order to avoid future conflicts if they were to be listed during the preparation of this EIS. Under Section 10(j) of the ESA, the USFWS can designate reintroduced populations established outside of the species' current range, but within its historical range, as "experimental". The experimental population can be designated as "essential" or "non-essential" to the continued existence of the species. The regulatory restrictions are considerably reduced for a species with a Non-essential Experimental Population designation. Critical habitat is designated by USFWS through a formal process to provide protection for those habitat areas believed to be essential to the species' conservation.

The MBTA prohibits the intentional take of migratory birds, nests, and eggs, except as permitted by the USFWS Migratory Bird Office. Assessment of a project's effect on migratory birds places an emphasis on "species of concern" as defined by EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.

The bald eagle (*Haliaeetus leucocephalus)* was removed from the list of Federal threatened and endangered species on August 9, 2007. Both the bald eagle and golden eagle (*Aquila chrysaetos)* are protected under the MBTA and the BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, making it unlawful to disturb eagles.

In addition to federally-protected species, the states of Arizona and New Mexico maintain lists of species that are considered important for conservation. Federal agencies are not required to consult with state agencies on potential impacts to these protected species; however, this analysis considers the potential impacts to these species. The New Mexico Department of Game and Fish (NMDGF) is directed under the New Mexico Wildlife Conservation Act to develop recovery plans for species listed as threatened or endangered. The listed species are maintained in a database called the Biota Information System of New Mexico. The Arizona Game and Fish Department (AZGFD) has developed a State Wildlife Action Plan that defines a wildlife conservation strategy for the state and identifies Arizona's Species of Greatest Conservation Need (SGCN) (AZGFD 2012). The AZGFD maintains an online tool to provide SGCN species and habitat information for the state called HabiMap Arizona.

3.5.2 Affected Environment

The affected environment for natural resources includes the wildlife and special-status species that occur or potentially occur beneath the proposed airspace. The natural resources analysis focuses on the land beneath the proposed MOAs since the proposed Christa and Kendra ATCAAs would only be used as temporary bridges to connect the proposed MOAs to WSMR for transport purposes and the ATCAAs would

be established at an altitude which would have limited noise or no change from existing noise already experienced from commercial aircraft activity at ground level (see **Sections 3.3 and 4.3**, *Acoustic Environment*); therefore, the land beneath the Christa and Kendra ATCAAs was not addressed for natural resources.

3.5.2.1 Talon MOA

Wildlife

Ecoregions associated with the land beneath the proposed Talon MOA are provided in **Table 3.5-1**. As shown, most of the land beneath the MOA consists of Chihuahuan Basins and Playas. Outside the major river drainages, such as the Pecos River, the landscape is largely internally drained. Vegetative cover is predominantly desert grassland and arid shrubland, except for high elevation islands of woodland.

Table 3.5-1. Ecoregions beneath Proposed Talon MOA

Ecoregion Name	Acres	Percentage of MOA
Chihuahuan Desert Slopes	168,449	6.32
Madrean Lower Montane Woodlands	152,649	5.73
Chihuahuan Basins and Playas, Desert Grasslands	2,067,574	77.62
Shinnery Sands	146,201	5.49
Arid Llano Estacado	22,229	0.83
Southern New Mexico Dissected Plains	108,376	4.07

Legend: MOA-Military Operations Area.

Common mammals found in these communities include pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), kangaroo rats (*Dipodomys* spp.), woodrats (*Neotoma* spp.), desert pocket gopher (*Geomys arenarius*), coyote (*Canis latrans*), and bobcat (*Lynx rufus*). Common birds include the black-throated sparrow (*Amphispiza bilineata*), greater roadrunner (*Geococcyx californianus*), curve-billed thrasher (*Toxostoma curvirostre*), Chihuahuan raven (*Corvus cryptoleucus*), scaled quail (*Callipepla squamata*), Gambel's quail (*Callipepla gambelii*), western burrowing owl (*Athene cunicularia hypugaea*), golden eagle (*Aquila chrysaetos*), great horned owl (*Bubo virginianus*), red-tailed hawk (*Buteo jamaicensis*), and ferruginous hawk (*Buteo regalis*) (Bailey 1995; Brown 1994).

The Brazilian free-tailed bat is a wildlife species of particular interest because it roosts in great numbers at Carlsbad Caverns National Park, just south of the existing and proposed Talon MOA. These bats are migratory, using the cave from March through October where their coordinated nightly flights attract tourists to the park. Summer foraging ranges are large, averaging 41 kilometers in diameter (Best and Geluso 2003). The species can forage up to 3,000 meters (m) above ground (approximately 9,800 feet), though most foraging occurs between 200 and 1,000 m (656 to 3,280 feet) (McCracken 1996). Annual population estimates vary widely, likely due in part to differences in estimation methodologies, however recent study suggests that there is a large daily variation within a single season. Using thermal infrared imaging and computer vision analysis, Hristov et al. (2010) observed bat flights that ranged from less than 70,000 to more than 793,000 individuals in a single season, with fluctuations of up to 291,000 individuals over a few days. The authors suggest such fluctuations represent natural responses of the colony to factors such as seasonal food availability and local and large-scale weather patterns. They conclude that the size of a count on any given night does not necessarily reflect a population estimate, and the pattern of decline widely reported may not be as severe as thought.

William S. Huey Wildlife Area is a designated area of 2,880 acres on both sides of the Pecos River between Artesia and Carlsbad. The area was purchased by NMDGF to mitigate habitat loss by the Brantley Dam and contains flat farm land, grazing land, and a river bosque. Common wildlife in the area includes deer and turkey, various songbirds, quail, and waterfowl year round (NMDGF 2018a).

Special-Status Species

ESA-listed Species

There are 24 federally threatened, endangered, proposed, or candidate species with the potential to occur beneath the proposed Talon MOA (USFWS 2018a). Because the Proposed Action would not involve any ground disturbance, no effect to the 18 federally-listed mammals, fish, invertebrate, or plant species in **Table 3.5-2** would result from the Proposed Action; therefore, these species will not be discussed further.

Table 3.5-2. Federally-Listed Species for Which a No Effect Determination is Made

Common Name	Scientific Name	Status
Mammals		
New Mexico meadow jumping mouse	*Zapus hudsonius luteus*	E
Penasco least chipmunk	*Tamias minimus atristriatus*	C
Fish		
Pecos bluntnose shiner	*Notropis simus pecosensis*	T
Pecos gambusia	*Gambusia nobilis*	E
Invertebrates		
Texas hornshell	*Popenaias popeii*	E
Koster's springsnail	*Juturnia kosteri*	E
Pecos assiminea snail	*Assiminea pecos*	E
Roswell springsnail	*Pyrgulopsis roswellensis*	E
Noel's amphipod	*Gammarus desperatus*	E
Plants		
Gypsum wild-buckwheat	*Eriogonum gypsophilum*	T
Kuenzler hedgehog cactus	*Echinocereus fendleri var. kuenzleri*	T
Lee pincushion cactus	*Coryphantha sneedii var. leei*	T
Pecos sunflower	*Helianthus paradoxus*	T
Sacramento mountains thistle	*Cirsium cinaceum*	T
Sacramento prickly poppy	*Argemone pleiacantha spp. pinnatisecta*	E
Sneed's pincushion cactus	*Coryphantha sneedii var. sneedii*	E
Todsen's pennyroyal	*Hedeoma todsenii*	E
Wright's marsh thistle	*Cirsium wrightii*	C

Legend: C-candidate; E-endangered; PE-proposed endangered; T-threatened.

There are six federally-listed bird species that could potentially be impacted by the noise associated with proposed aircraft operations within the proposed Talon MOA. No critical habitat for these species has been designated beneath the Talon MOA. **Table 3.5-3** contains a list of those species, their Federal listing status, and their potential to occur beneath the airspace. A description of each species, to include habitat and range, follows the table.

Table 3.5-3. Federally-Listed Species With Potential to Occur Beneath Proposed Talon MOA			
Common Name	**Scientific Name**	**Status**	**Counties Beneath Airspace Where Species May Occur**
Birds			
Interior least tern	*Sterna antillarum*	E	Chaves, Eddy, Otero
Mexican Spotted Owl	*Strix occidentalis lucida*	T	Eddy, Otero
Northern aplomado falcon	*Falco femoralis septentrionalis*	EXPN, XN	Chaves, Eddy, Otero, Lea
Piping plover	*Charadrius melodus*	T	Chaves, Eddy
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	Eddy
Yellow-billed cuckoo	*Coccyzus americanus*	T	Chaves, Eddy, Otero

Source: USFWS 2019a, 2019b, 2019c, 2019d, 2019e, 2019f
Legend: E-endangered; EXPN, XN -Experimental Population, Non-Essential; MOA-Military Operations Area; T-threatened.

Interior Least Tern. The Interior Least Tern was listed as endangered in 1985. No critical habitat has been designated for this species beneath the proposed Talon MOA. It is the smallest tern in North America and nests on barren to sparsely vegetated sandbars along rivers, sand and gravel pits, lake and reservoir shorelines, and occasionally gravel rooftops. The Interior Least Tern breeds from April through August in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems and winters along coastal areas of Central and South America and the Caribbean Islands. The least tern is primarily endangered due to habitat loss and degradation as well as disturbance from recreation activities within their nesting habitat (USFWS 2014a). There have been occurrences within counties that underlie the proposed Talon MOA (USFWS 2019a). The terns' only known breeding population is in Chaves County along the Pecos River. It breeds at Bitter Lake National Wildlife Refuge near Roswell (outside the boundaries of the proposed Talon MOA). Occurrences in other areas have been rare (NMDGF 2017a).

Mexican Spotted Owl. The Mexican Spotted Owl was listed as threatened in 1993. Critical habitat for the Mexican Spotted Owl was designated in 2004, comprising approximately 3.5 million hectares on Federal lands in Arizona, Colorado, New Mexico, and Utah. No critical habitat is located under the existing or proposed Talon MOA. The Mexican Spotted Owl occurs in forested mountains and canyonlands throughout the southwestern U.S. and Mexico, ranging from Utah, Colorado, Arizona, New Mexico, western portions of Texas south into Mexico. The Mexican Spotted Owl was primarily listed due to alteration of habitat from timber management practices. Primary threats currently are from increased risk of stand-replacing wildland fire (USFWS 2012a). The Mexican Spotted Owl has been recorded year round in Eddy County in the southern portion of the Lincoln National Forest outside of the southern boundary of the proposed Talon MOA and may be present in Eddy and Otero Counties (USFWS 2019b).

Northern Aplomado Falcon. The northern aplomado falcons that occur in Arizona and New Mexico were designated as an experimental, non-essential population in 2006. It is one of three subspecies of the aplomado falcon and the only subspecies recorded in the U.S. No critical habitat has been designated for this species. The falcon occurs throughout the coastal prairie habitat along the southern Gulf coast of Texas, and in savanna and grassland habitat along both sides of the Texas-Mexico border, southern New Mexico, southeastern Arizona, and Mexico. The causes of decline for this subspecies include widespread shrub encroachment due to fire suppression and overgrazing and agricultural development in grassland habitats. Significant use of pesticides (such as DDT) may also have contributed to the decline of the species in the past (USFWS 2006). The historical range and the experimental population of the northern aplomado falcon

has limited occurrences in counties that underlie the Talon MOA (Eddy, Lea, and Otero Counties) (NMDGF 2017b, USFWS 2019c).

Piping Plover. The Northern Great Plains and Atlantic Coast populations of piping plover were listed as federally threatened in 1986. No critical habitat has been designated for this species. Piping plovers use wide, flat, open, sandy beaches with very little grass or other vegetation. Their nesting habitat often includes small creeks or wetlands. Piping plovers breed in the northern U.S. and Canada, including the shorelines of the Great Lakes, shores of rivers and lakes in the Northern Great Plains, and along the Atlantic Coast. In the fall they migrate south to the Gulf Coast and other southern locations. The piping plover is threatened due to habitat loss and degradation, as well as nest disturbance and predation (USFWS 2016). The piping plover has only been known as a rare migrant in New Mexico. There is a single unsubstantiated report from Lake Avalon in Eddy County beneath the Talon MOA; and, it may also occur in Chaves County (NMDGF 2017c, USFWS 2019d).

Southwestern Willow Flycatcher. The southwestern willow flycatcher was listed as federally endangered in 1995. The southwestern willow flycatcher is known to breed in riparian areas in southern California, southern Nevada, southern Utah, southern Colorado, Arizona, New Mexico, western Texas, and extreme northwestern Mexico. Critical habitat for this species occurs along designated rivers throughout its range; but, none is located under the proposed Talon MOA airspace. They nest within the southwestern U.S. from May to September. The southwestern willow flycatcher breeds in areas near sea level to over 8,500 feet in riparian vegetation alongside rivers, streams, or other wetlands (USFWS 2013). The southwestern willow flycatcher populations have declined primarily due to extensive loss and degradation of breeding habitat from water diversion, groundwater pumping, changes in flood and fire regimes, clearing and controlling of vegetation, livestock grazing, and invasive non-native plants. In addition, brood parasitism by the brown-headed cowbird (*Molothrus ater*) has led to further decline in populations (USFWS 2002). The southwestern willow flycatcher may occur in Eddy County (NMDGF 2018b, USFWS 2019e).

Yellow-Billed Cuckoo. The western distinct population segment of the yellow-billed cuckoo was listed as federally threatened in 2014. The yellow-billed cuckoo breeds in riparian habitat along low-gradient rivers and streams and in open riverine valleys with wide floodplain conditions. The yellow-billed cuckoo requires large tracts of willow-cottonwood or mesquite forest or woodland for their nesting habitat. This species is found throughout the Western U.S. including Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Texas, Utah, Washington, and Wyoming. Proposed critical habitat for this species is found throughout its range with some critical habitat units located beneath the proposed Lobos MOA (USFWS 2014b). In the west, the decline of the yellow-billed cuckoo has been attributed primarily to conversion of riparian habitat to farmland and housing (USFWS 2014b). The yellow-billed cuckoo may occur in Chaves, Eddy, and Otero Counties (NMDGF 2018c, USFWS 2019f).

MBTA and BGEPA

There are 24 migratory bird species (to include the bald eagle and golden eagle) that have the potential to be located beneath the Talon MOA area (USFWS 2018a). **Table 3.5-4** provides the species names and their breeding season within the Talon MOA area.

Table 3.5-4. MBTA and BGEPA Species With Potential to Occur Beneath Proposed Talon MOA

Common Name	Scientific Name	Breeding Season
Baird's Sparrow	*Ammodramus bairdii*	Breeds elsewhere
Bald eagle	*Haliaeetus leucocephalus*	October 15 to July 31
Black-throated sparrow	*Spizella atrogularis*	March 15 to September 5
Black-chinned sparrow	*Spizella atrogularis*	April 15 to July 31
Burrowing owl	*Athene cunicularia*	March 15 to August 31
Cassin's sparrow	*Aimophila cassinii*	August 1 to October 10
Chestnut-collared longspur	*Calcarius ornatus*	May 1 to August 10
Elf owl	*Micrathene whitneyi*	May 1 to July 15
Golden eagle	*Aquila chrysaetos*	January 1 to August 31
Grace's warbler	*Dendroica graciae*	May 20 to July 20
Gray vireo	*Vireo vicinior*	May 10 to August 20
Hudsonian godwit	*Limosa haemastica*	Breeds elsewhere
Lark bunting	*Calamospiza melanocorys*	May 10 to August 15
Lesser yellowlegs	*Tringa flavipes*	Breeds elsewhere
Long-billed curlew	*Numenius americanus*	April 1 to July 31
Mccown's longspur	*Calcarius mccownii*	May 1 to August 15
Mexican Whip-poor-will	*Antrostomus arizonae*	May 1 to August 20
Semipalmated sandpiper	*Calidris pusilla*	Breeds elsewhere
Sprague's pipit	*Anthus spragueii*	Breeds elsewhere
Varied bunting	*Passerina versicolor*	April 25 to September 30
Virginia's warbler	*Vermivora viriniae*	May 1 to July 31
Whimbrel	*Numenius phaeopus*	Breeds elsewhere
Willet	*Tringa semipalmata*	April 20 to August 5
Willow flycatcher	*Empidonax traillii*	May 20 to August 31

Legend: BGEPA-Bald and Golden Eagle Protection Act; MBTA-Migratory Bird Treaty Act; MOA-Military Operations Area.

State-listed species

The NMDGF has identified numerous species as threatened or endangered within the counties associated with the Talon MOA (Chaves, Eddy, Lea, and Otero Counties). A full list of these species (birds, amphibians and reptiles, mammals, fish, invertebrates, and plants) can be found in **Appendix E** (Special-Status Species). Given the nature of the Proposed Action, no impact would be expected to amphibians and reptiles, small mammals (other than bats), fish, invertebrates, or plants; therefore, these species were not considered further in this EIS. Counties are large geographic areas and in most cases only partially overlap with the proposed airspace boundaries. Since sensitive species usually have extremely specific habitat requirements, the potential for a species listed in the county to occur within the airspace area is low in most cases. The state-listed bird and bat species that may occur beneath or near the Talon MOA that could potentially be affected by noise are provided in **Table 3.5-5**.

Table 3.5-5. State-listed Bird and Bat Species With Potential to Occur Beneath Proposed Talon MOA

Common Name	Scientific Name	New Mexico Status
Birds		
Abert's towhee	*Melozone aberti*	T
Arizona grasshopper sparrow	*Ammodramus savannarum ammolegus*	E
Arctic peregrine falcon	*Falco peregrinus tundrius*	T
Baird's sparrow	*Ammondramus bairdii*	T
Bald eagle	*Haliaeetus leucocephalus*	T
Bell's vireo	*Vireo bellii*	T
Broad-billed hummingbird	*Cynanthus latirostris*	T
Brown pelican	*Pelecanus occidentalis*	E
Buff-collared nightjar	*Antrostomus ridgwayi*	E
Common black hawk	*Buteogallus anthracinus*	T
Common ground dove	*Columbina passerine*	E
Costa's hummingbird	*Calypte costae*	T
Elegant Trogon	*Trogon elegans*	E
Gila woodpecker	*Melanerpes uropygialis*	T
Gould's wild turkey	*Melagris gallopavo Mexicana*	T
Gray vireo	*Vireo vicinior*	T
Interior least tern	*Sterna antillarum*	E
Lucifer hummingbird	*Calothorax lucifer*	T
Neotropic cormorant	*Phalacrocorax brasilianus*	T
Northern aplomado falcon	*Falco femoralis septentrionalis*	E
Northern beardless-tyrannulet	*Camptostoma imberbe*	E
Peregrine falcon	*Falco peregrinus*	T
Piping Plover	*Charadrius melodus*	T
Southwestern willow flycatcher	*Empidonax traillii extimus*	E
Thick-billed kingbird	*Tyrannus crassirostris*	E
Varied bunting	*Passerina versicolor*	T
Violet-crowned hummingbird	*Amazilia violiceps*	T
Whiskered screech-owl	*Megascops trichopsis*	T
White-eared hummingbird	*Hylocharis leucotis*	T
Yellow-eyed junco	*Junco phaeonotus*	T
Bats		
Mexican long-nosed bat	*Leptonycteris nivalis*	E
Spotted bat	*Euderma maculatum*	T
Western yellow bat	*Lasiurus xanthinus*	T

Legend: E-endangered; MOA-Military Operations Area; T-threatened.

3.5.2.2 Cato, Smitty, and Lobos MOAs

Wildlife

The ecoregions associated with the proposed Cato, Smitty, and Lobos MOAs are provided in **Table 3.5-6**. Since these MOAs cover such a large and varied area, the ecoregion information has been provided separately. Beneath the Cato and Smitty MOAs the primary ecoregions are Conifer Woodlands and Savannas, Montane Conifer Forests, and Plains of San Agustin. Wildlife habitat beneath the proposed Cato, Smitty, and Lobos MOAs consists of vegetation characteristic of Bailey's Chihuahuan Desert Province (Bailey 1995). Lands beneath the Cato and Smitty MOAs are characterized largely by Conifer Woodlands

and Savannas, and lands beneath the proposed Lobos MOA are primarily montaine forests (Dick-Peddie 1993). Common wildlife found in these habitat types are similar to those described above for the Talon MOA area.

Table 3.5-6. Ecoregions Beneath Proposed Cato, Smitty and Lobos MOAs

	Cato and Smitty MOAs		Lobos MOA	
Ecoregion Name	**Acres**	**Percentage**	**Acres**	**Percentage**
Albuquerque Basin	44	0	0	0
Apachian Valleys and Low Hills	0	0	9,467	<1
Arizona/New Mexico Subalpine Forests	16,714	<1	34,141	2
Chihuahuan Basins and Playas	112,371	4	40,700	2
Chihuahuan Desert Grasslands	0	0	106,474	6
Conifer Woodlands and Savannas	1,204,203	47	185,298	11
Low Mountains and Bajadas	0	0	244,855	14
Lower Madrean Woodlands	0	0	31,653	2
Madrean Lower Montane Woodlands	0	0	628,435	36
Montane Conifer Forests	628,196	25	484,824	27
Plains of San Agustin	589,575	23	0	0

Legend: MOA-Military Operations Area; <-less than.

Several Wildlife Management Areas managed by NMDGF are located throughout the land beneath the proposed Cato, Smitty, and Lobos MOAs (**Table 3.5-7**). These areas provide wildlife habitat for numerous species as well as public access for wildlife viewing, fishing, and hunting.

Table 3.5-7. Wildlife Management Areas beneath Proposed Cato, Smitty, and Lobos MOAs

Name	Location	Area
Bear Canyon Wildlife Area	Bear Canyon Reservoir, northeast of Silver City	75 acres
Bill Evans Wildlife Area	Between Cliff and Silver City	300 acres
Heart Bar Wildlife Area	36 miles north of Silver City	797 acres
Lake Roberts Wildlife Area	35 miles north of Silver City	79 acres
Mimbres Wildlife Area	2 miles north of San Lorenzo	23 acres
Red Rock Wildlife Area	26 miles north of Lordsburg	1,530 acres
Socorro-Escondida Wildlife Management Area	2 miles east of Socorro	94 acres

Legend: MOA-Military Operations Area.

Special-Status Species

ESA-listed Species

Thirty-two candidate or federally-listed species potentially occur under the proposed airspace (USFWS 2018a, 2018b). Because the Proposed Action would not involve any ground disturbance, no effect to the 23 federally-listed small mammals, reptiles, fish, invertebrate, or plant species in **Table 3.5-8** would result; therefore, these species will not be discussed further.

Table 3.5-8. Federally-Listed Species for Which a No Effect Determination is Made		
Common Name	**Scientific Name**	**Status**
Mammals		
New Mexico meadow jumping mouse	*Zapus hudsonius luteus*	E
Reptiles		
Narrow-headed gartersnake	*Thamnophis rufipunctatus*	T
New Mexican ridge-nosed rattlesnake	*Crotalus willardi obscurus*	T
Northern Mexican gartersnake	*Thamnophis eques megalops*	T
Chiricahua leopard frog	*Rana chiricahuensis*	T

Table 3.5-8. Federally-Listed Species for Which a No Effect Determination is Made (cont.)		
Common Name	**Scientific Name**	**Status**
Fish		
Beautiful shiner	*Cyprinella Formosa*	T
Chihuahua chub	*Gila nigrescens*	T
Gila chub	*Gila intermedia*	E
Gila topminnow	*Poeciliopsis occiendentalis*	E
Gila trout	*Oncorhynchus gilae*	T
Loach minnow	*Tiaroga cobitis*	E
Razorback sucker	*Xyrauchen texanus*	E
Rio Grande silvery minnow	*Hybognathus amarus*	E
Spikedace	*Meda fulgida*	E
Woundfin	*Plagopterus argentissiumus*	EXPN, XN
Invertebrates		
Alamosa springsnail	*Tyronia alamosae*	E
Chupadera springsnail	*Pyrgulopsis chupaderae*	E
Socorro springsnail	*Pyrgulopsis neomexicana*	E
Socorro isopod	*Thermosphaeroma thermophiles*	E
Plants		
Pecos sunflower	*Helianthus paradoxus*	T
Todsen's pennyroyal	*Hedeoma todsenii*	E
Wright's marsh thistle	*Cirsium wrightii*	C
Zuni fleabane	*Erigeron rhizomatus*	T

Legend: C-candidate; E-endangered; EXPN, XN -experimental population, non-essential; T-threatened.

There are nine federally-listed bird and mammal species that could potentially be impacted by the noise associated with proposed aircraft operations within the Cato, Smitty, and Lobos MOAs and are analyzed in this EIS. **Table 3.5-9** contains a list of those species, their Federal listing status, the potential to occur beneath airspace, and whether critical habitat has been designated beneath the airspace. A description of these species, to include habitat and range, follows the table. Species distribution information was derived from Biota Information System of New Mexico and from lists of threatened and endangered species provided by the USFWS.

Table 3.5-9. Federally-Listed Species with Potential to Occur Beneath Proposed Cato, Smitty and Lobos MOAs

Common Name	Scientific Name	Status	Counties Beneath Airspace Where Species May Occur	Critical Habitat Beneath Airspace
Birds				
Interior least tern	*Sterna antillarum*	E	New Mexico: Catron, Socorro	No
Mexican Spotted Owl	*Strix occidentalis lucida*	T	New Mexico: Catron, Grant, Hidalgo, Socorro, Sierra	Yes
Northern aplomado falcon	*Falco femoralis septentrionalis*	EXPN, XN	New Mexico: Grant, Hidalgo, Socorro, Sierra	No
Piping plover	*Charadrius melodus*	T	New Mexico: Socorro	No
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	New Mexico: Catron, Grant, Hidalgo, Socorro, Sierra Arizona: Graham, Greenlee	Yes
Yellow-billed cuckoo (Western Distinct Population)	*Coccyzus americanus occidentalis*	T	New Mexico: Catron, Grant, Hidalgo, Socorro, Sierra Arizona: Graham, Greenlee	Yes
Mammals				
Mexican wolf	*Canis lupus baileyi*	EXPN, XN	New Mexico: Catron, Grant, Hidalgo, Sierra Arizona: Graham, Greenlee	No
Jaguar	*Panthera onca*	E	New Mexico: Hidalgo	No
Mexican long-nosed bat	*Leptonycteris nivalis*	E	New Mexico: Grant, Hidalgo	No

Sources: USFWS 2019a, 2019b, 2019c, 2019d, 2019e, 2019f, 2019g, 2019h, 2019i.
Legend: E-endangered; EXPN, XN -experimental population, non-essential; T-threatened; MOA-Military Operations Area.

Species descriptions and habitats of the Interior Least Tern, Mexican Spotted Owl, northern aplomado falcon, piping plover, southwestern willow flycatcher, and yellow-billed cuckoo were provided in **Section 3.5.2.1** (Talon MOA). The counties where these species have occurrences that overlap with the proposed Cato, Smitty, and Lobos MOAs are provided in **Table 3.5-9**. The Interior Least Tern, northern aplomado falcon, and piping plover are all considered rare in New Mexico. The least tern has only been reliably reported at Bosque del Apache National Wildlife Refuge outside the proposed MOAs (NMDGF 2017a). The southwestern willow flycatcher population in Gila/Cliff Valley, New Mexico was thought to be the largest known nesting concentration of flycatchers in this region (NMDGF 2018b).

Mexican Wolf. The Mexican wolf, a subspecies of the gray wolf, was listed as endangered in 1976 and was designated with experimental population status in 2015. The Mexican wolf is the smallest and rarest subspecies of gray wolf in North America. Mexican wolves are found in a variety of southwestern habitats but prefer mountain woodlands. Historically, the wolves ranged throughout the mountainous regions from central Mexico, through southeastern Arizona, southern New Mexico, and southwestern Texas. However, by the mid-1900s, the wolves were effectively eliminated from the U.S. due to intensive efforts to eradicate them due to the wolves preying on livestock. After lengthy recovery efforts, captive-reared Mexican gray wolves were released into the wild in the Blue Range Wolf Recovery Area in eastern Arizona and western New Mexico. At the end of 2015 at least 97 wolves occupied the Mexican Wolf Recovery Area (USFWS 2014c). Rare occurrences of the Mexican wolf have been reported in Catron County and it may also occur in Grant, Hidalgo, and Sierra Counties in New Mexico and Graham and Greenlee Counties in Arizona (NMDGF 2018d, USFWS 2019g).

Jaguar. The jaguar was listed as endangered under the ESA in 1997. Critical habitat for this species has been designated in southeastern and southwestern New Mexico. However, critical habitat is not located under the proposed airspace. Jaguars occur in a variety of vegetation communities, but tend to prefer lowland wet communities. In the southwestern U.S. they have been observed in arid areas. Currently, jaguars range from southwestern U.S. (primarily south-central Arizona and extreme southwestern New Mexico) to northern Argentina (USFWS 2012b). The jaguar has been recorded beneath the proposed Lobos MOA airspace (Hidalgo County); and, its historic range is beneath proposed airspace (Catron and Socorro Counties) (NMDGF 2018e, USFWS 2019h).

Mexican long-nosed bat. The Mexican long-nosed bat was federally-listed as endangered in 1988. Critical habitat for this species has not been designated. Mexican long-nosed bats occur in subtropical dry habitats in central and northern Mexico, the Big Bend area of Texas, and southwestern New Mexico and are known to migrate seasonally from Mexico. The Mexican long-nosed bat roosts in caves, abandoned mines, culverts, and hollow trees. Its diet consists primarily of nectar, pollen, and flowers of cacti and agaves (USFWS 1994; Texas Parks and Wildlife 2016). The Mexican long-nosed bat may occur in Grant and Hidalgo Counties in New Mexico (NMDGF 2018f, USFWS 2019i).

MBTA and BGEPA

There are 30 migratory bird species (to include the bald eagle and golden eagle) that have the potential to be located beneath the proposed Cato, Smitty, and Lobos MOAs (USFWS 2018a). **Table 3.5-10** provides the species names and their breeding season.

Table 3.5-10. MBTA and BGEPA Species With Potential to Occur Beneath Proposed Cato, Smitty, and Lobos MOAs

Common Name	Scientific Name	Breeding Season
Bald eagle	*Haliaeetus leucocephalus*	October 15 to July 31
Bendire's thrasher	*Toxostoma bendirei*	March 15 to July 31
Black-throated sparrow	*Spizella atrogularis*	March 15 to September 5
Black-chinned sparrow	*Spizella atrogularis*	April 15 to July 31
Black-throated gray warbler	*Dendroica nigrescens*	May 1 to July 20
Blue-throated hummingbird	*Lampornis clemenciae*	February 15 to October 10
Brewer's sparrow	*Spizella breweri*	May 15 to August 10
Burrowing owl	*Athene cunicularia*	March 15 to August 31
Chestnut-collared longspur	*Calcarius ornatus*	Breeds elsewhere
Clark's grebe	*Aechmophorus clarkia*	January 1 to December 31
Common black hawk	*Buteogallus anthracinus*	April 1 to September 20
Elf owl	*Micrathene whitneyi*	May 1 to July 15
Golden eagle	*Aquila chrysaetos*	January 1 to August 31
Grace's warbler	*Dendroica graciae*	May 20 to July 20
Grasshopper sparrow	*Ammodramus savannarum ammolegus*	June 1 to August 20
Gray vireo	*Vireo vicinior*	May 10 to August 20
Lark bunting	*Calamospiza melanocorys*	Breeds elsewhere
Lesser yellowlegs	*Tringa flavipes*	Breeds elsewhere
Lewis's woodpecker	*Melanerpes lewis*	April 20 to September 30
Long-eared owl	*Asio otus*	March 1 to July 15
Mexican whip-poor-will	*Antrostomus arizonae*	May 1 to August 20
Olive-sided flycatcher	*Contopus cooperi*	May 20 to August 31
Pinyon Jay	*Gymnorhinus cyanocephalus*	February 15 to July 15
Phainopepla	*Phainopepla nitens*	March 1 to August 20

Table 3.5-10. MBTA and BGEPA Species With Potential to Occur Beneath Proposed Cato, Smitty, and Lobos MOAs (cont.)		
Common Name	**Scientific Name**	**Breeding Season**
Red-faced warbler	*Cardellina rubrifons*	May 10 to July 15
Rufus hummingbird	*Selasphorus rufus*	Breeds elsewhere
Rufus-winged sparrow	*Aimophila carpalis*	June 15 to September 30
Virginia's warbler	*Vermivora viriniae*	May 1 to July 31
Willet	*Tringa semipalmata*	Breeds elsewhere
Willow flycatcher	*Empidonax traillii*	May 20 to August 31

Legend: BGEPA-Bald and Golden Eagle Protection Act; MBTA-Migratory Bird Treaty Act; MOA-Military Operations Area.

State-listed Species

The NMDGF has identified numerous species as threatened or endangered within the counties associated with the Cato, Smitty, and Lobos MOAs (Catron, Grant, Hidalgo, Sierra, and Socorro Counties). AZGFD has identified numerous species as SGCN within the counties associated with Lobos MOA (Graham and Greenlee Counties). A full list of these species (birds, amphibians and reptiles, mammals, fish, invertebrates, and plants) can be found in **Appendix E** (Special-Status species list). Given the nature of the Proposed Action, no impact would be expected to amphibians and reptiles, small mammals (other than bats), fish, invertebrates, or plants; therefore, these species were not considered further in this EIS. The Mexican wolf is discussed under the federally-listed species, but it is also listed as endangered by New Mexico and as SGCN by Arizona. Since counties are large and sensitive species usually have extremely specific habitat requirements, the potential for a species listed in the county to occur within the airspace area is low in most cases. The state-listed bird and bat species that may occur within or near the Cato, Smitty, and Lobos MOAs that could potentially be affected by noise are provided in **Table 3.5-11**.

Table 3.5-11. State-listed Bird and Bat Species with Potential to Occur Beneath Proposed Cato, Smitty, and Lobos MOAs			
Common Name	**Scientific Name**	**New Mexico Status**	**Arizona Status**
Birds			
Abert's towhee	*Melozone aberti*	T	SGCN
Arizona Bell's vireo	*Vireo bellii arizonae*	-	SGCN
American bittern	*Botaurus lentiginosus*	-	SGCN
Arizona Boterri's sparrow	*Peucaea botterii arizonae*	-	SGCN
Arizona grasshopper sparrow	*Ammodramus savannarum ammolegus*	E	-
Arctic peregrine falcon	*Falco peregrinus tundrius*	T	-
Baird's sparrow	*Ammondramus bairdii*	T	-
Bald eagle	*Haliaeetus leucocephalus*	T	SGCN
Bell's vireo	*Vireo bellii*	T	-
Blue-throated hummingbird	*Lampornis clemenciae*	-	SGCN
Broad-billed hummingbird	*Cynanthus latirostris*	T	SGCN
Brown pelican	*Pelecanus occidentalis*	E	-
Buff-collared nightjar	*Antrostomus ridgwayi*	E	-
Common black hawk	*Buteogallus anthracinus*	T	-
Common ground dove	*Columbina passerine*	E	-
Costa's hummingbird	*Calypte costae*	T	-
Dusky-capped flycatcher	*Myiarchus tuberculifer*	-	SGCN
Elegant trogon	*Trogon elegans*	E	SGCN
Evening grosbeak	*Coccothraustes vespertinus*	-	SGCN

Table 3.5-11. State-listed Bird and Bat Species Potentially Beneath Proposed Cato, Smitty, and Lobos MOAs (cont.)			
Common Name	**Scientific Name**	**New Mexico Status**	**Arizona Status**
Birds (cont.)			
Ferruginous hawk	*Buteo regalis*	-	SGCN
Gila woodpecker	*Melanerpes uropygialis*	T	SGCN
Golden eagle	*Aquila chrysaetos*	-	SGCN
Gould's wild turkey	*Melagris gallopavo Mexicana*	T	-
Gray vireo	*Vireo vicinior*	T	-
Interior least tern	*Sterna antillarum*	E	-
Lincoln's sparrow	*Melospiza lincolnii*	-	SGCN
Lucifer hummingbird	*Calothorax lucifer*	T	-
Mexican Spotted Owl	*Strix occidentalis lucida*	-	SGCN
Mountain pygmy owl	*Glaucidium gnoma gnoma*	-	SGCN
Neotropic cormorant	*Phalacrocorax brasilianus*	T	-
Northern aplomado falcon	*Falco femoralis septentrionalis*	E	SGCN
Northern beardless-tyrannulet	*Camptostoma imberbe*	E	-
Northern goshawk	*Accipiter gentilis*	-	SGCN
Pacific wren	*Troglodytes pacificus*	-	SGCN
Peregrine falcon	*Falco peregrinus*	T	SGCN
Piping plover	*Charadrius melodus*	T	-
Rivoli's hummingbird	*Eugenes fulgens*	-	SGCN
Savannah sparrow	*Passerculus sandwichensis*	-	SGCN
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	SGCN
Sprague's pipit	*Anthus spragueii*	-	SGCN
Sulfur-bellied flycatcher	*Myiodynastes luteiventris*	-	SGCN
Thick-billed kingbird	*Tyrannus crassirostris*	E	SGCN
Varied bunting	*Passerina versicolor*	T	-
Violet-crowned hummingbird	*Amazilia violiceps*	T	SGCN
Western burrowing owl	*Athene cunicularia hypugaea*	-	SGCN
Western grasshopper sparrow	*Ammodramus savannarum perpallidus*	-	SGCN
Whiskered screech-owl	*Megascops trichopsis*	T	-
White-eared hummingbird	*Hylocharis leucotis*	T	-
Wood duck	*Aix sponsa*	-	SGCN
Yellow-billed cuckoo	*Coccyzus americanus*	-	SGCN
Yellow-eyed junco	*Junco phaeonotus*	T	-
Bats			
Arizona myotis	*Myotis occultus*	-	SGCN
Brazilian free-tailed bat	*Tadarida brasiliensis*	-	SGCN
California leaf-nosed bat	*Macrotus californicus*	-	SGCN
Cave myotis	*Myotis velifer*	-	SGCN
Greater western bonneted bat	*Eumops perotis californicus*	-	SGCN
Lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	-	SGCN
Pale Townsend's big-eared bat	*Corynorhinus townsendii pallescens*	-	SGCN
Pocket free-tailed bat	*Nyctinomops macrotis*	-	SGCN
Spotted bat	*Euderma maculatum*	T	-
Western red bat	*Lasiurus blossevillii*	-	SGCN
Western yellow bat	*Lasiurus xanthinus*	T	SGCN
Yuma myotis	*Myotis yumanensis*	-	SGCN

Legend: E-endangered; MOA-Military Operations Area; SGCN- Species of Greatest Conservation Need; T-threatened.

3.6 LAND MANAGEMENT

3.6.1 Resource Definition

For this analysis, land use describes ownership and management of land that lies beneath the airspace affected by the Proposed Action and alternatives and examines any conflicts that may exist between the Proposed Action and land use plans and policies for the area potentially affected. The compatibility of existing and planned land use with aviation is usually associated with acoustic environment (noise), which is described in **Sections 3.3 and 4.3** (Acoustic Environment). Visitation data and visitor use are described in **Section 3.7 and 4.7** (Recreation Resources).

3.6.2 Affected Environment

The affected environment for land use is all lands underlying the existing and proposed SUA. The area beneath SUA in southern New Mexico is predominantly rural with areas of higher population density in Artesia, Carlsbad, Socorro, and Silver City. Extractive industries including oil production, forestry, and grazing operations are common in the region. Much of the land beneath the airspace is managed by Federal agencies, including the BLM, USFS, the Bureau of Reclamation (BOR), and the NPS.

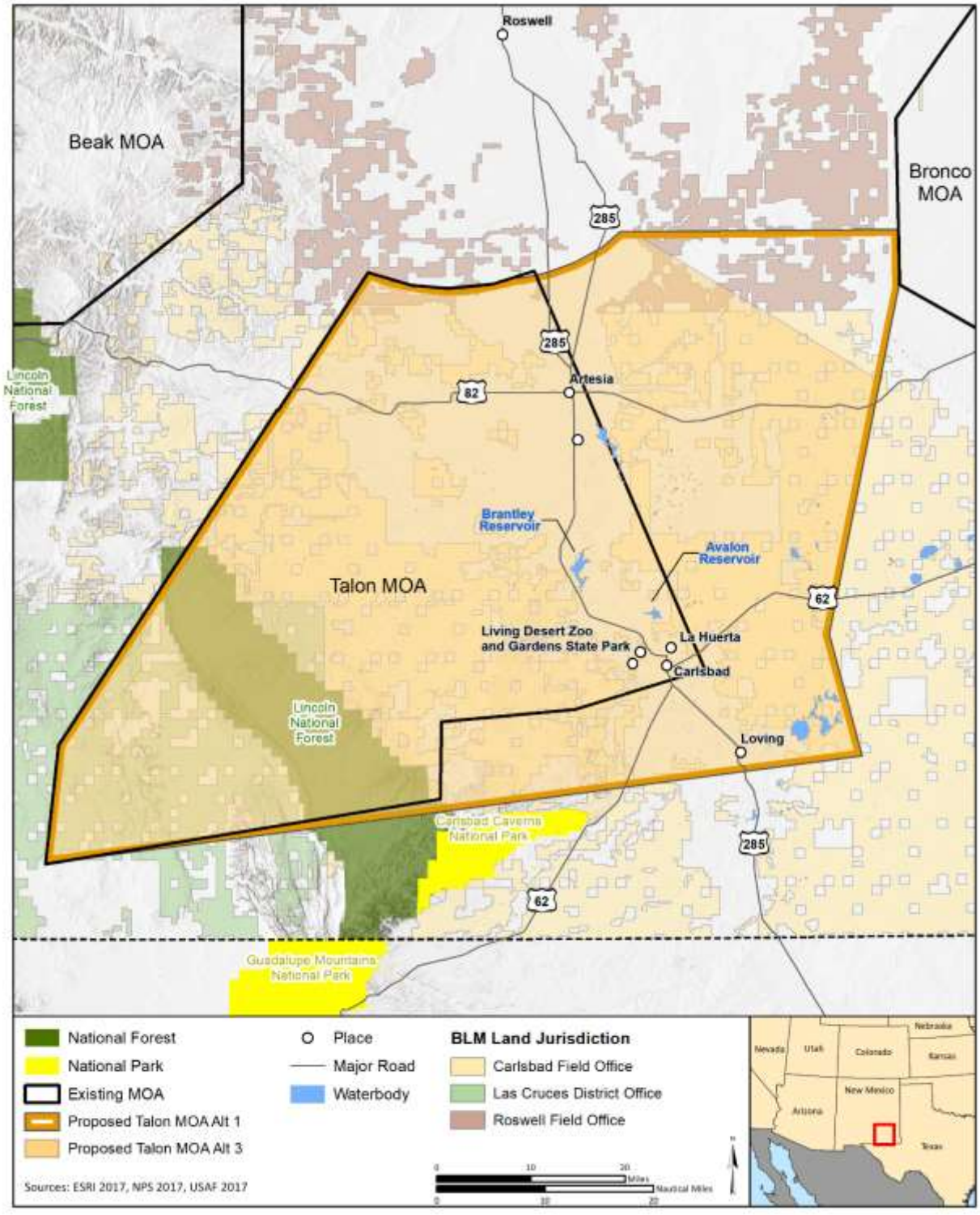
3.6.2.1 Talon MOA

Talon MOA lies above lands in Otero, Chavez, Eddy, and Lea Counties in southwestern New Mexico. Approximately 1,585,000 acres of land lie beneath the existing boundaries. The Talon MOA would be reconfigured under Alternatives 1 and 3. **Table 3.6-1** contains acreages of land, including land managed by the Federal government, beneath the existing and proposed configurations of the Talon MOA. This is also illustrated on **Figure 3.6-1**.

Table 3.6-1. Land Ownership and Management Beneath Existing and Proposed Talon MOA, in acres

Agency and Managed Land		Existing	Alternative 1		Alternative 3	
			Proposed	Change	Proposed	Change
Non-Federal Land		651,375	1,137,349	485,974	1,069,706	418,330
BLM	Carlsbad Field Office	486,929	983,945	497,016	960,478	473,549
	Las Cruces District	220,769	224,215	3,447	224,215	3,447
	Roswell Field Office	14,937	97,484	82,547	38,931	23,994
USFS	Lincoln National Forest	199,602	210,932	11,329	210,932	11,329
BOR	Brantley Reservoir	4,365	4,365	0	4,365	0
	Avalon Reservoir	1,579	1,579	0	1,579	0
New Mexico State Parks	Brantley Lake	2,660	2,660	0	2,660	0
	Living Desert Zoo and Gardens	1,150	1,150	0	1,150	0
Total		**1,585,366**	**2,663,678**	**1,080,312**	**2,514,015**	**930,649**

Note: Acreages are derived from multiple data sources and so are approximate.
Legend: BLM-Bureau of Land Management; BOR-Bureau of Reclamation; MOA-Military Operation Area; USFS-U.S. Forest Service.



Legend: BLM-Bureau of Land Management; MOA-Military Operations Area.

Figure 3.6-1. Land Ownership and Management Beneath Existing and Proposed Talon MOA

Bureau of Land Management

The largest area of land beneath the existing and proposed Talon MOA is managed by the BLM's Carlsbad Field Office, Las Cruces District, and Roswell Field Office. The BLM is responsible for managing public lands for a variety of uses, while ensuring natural, cultural, and historic resources are maintained for present and future use. The BLM develops Resource Management Plans (RMPs) for each district or field office. RMPs guide appropriate multiple uses of land, provide for management and protection of protected resources, and include goals and prescriptions for activities including:

- Minerals management – exploration, leasing, development, and production
- Land and realty activities – establishment of rights-of-way and transportation and utility corridors, land acquisition, and disposal
- Livestock grazing
- Vegetation management
- Wildlife management
- Pest management
- Fire management
- Soil, water, and air quality maintenance and improvement
- Cultural and paleontological resources management
- Outdoor recreation

The Carlsbad Field Office is currently preparing a revision to its RMP to reflect the marked increase in oil and gas development and use of new technologies in the Permian Basin since its 1988 RMP and 1997 and 2008 RMP Amendments were prepared. The Las Cruces District Office issued an RMP in 2013 that covers lands it manages in Sierra, Otero, and Doña Ana Counties, including those BLM lands in Otero County that lie beneath the Talon MOA. The BLM Roswell Field Office RMP was prepared in 1997.

U.S. Forest Service

The Guadalupe Ranger District of the Lincoln National Forest lies under the existing Talon MOA, and approximately 11,000 additional acres would lie beneath the proposed reconfigured and expanded Talon MOA. The Lincoln National Forest 1986 Forest Land and RMP has been amended multiple times to reflect changes in protected species, recreation, fire, and timber management and is currently being revised. The plan outlines management prescriptions for recreation, wilderness, visual resources, cultural resources, wildlife and fish, range, and timber within the forest. The Guadalupe Ranger District is characterized by rolling hills in the north and deep canyons in the south. Land within the District is used for grazing and recreation including dispersed camping, hiking and backpacking, hunting, horse riding, and caving. No off road vehicle use is permitted in the district and there are no developed campgrounds.

Other Managed Lands

The BOR manages and develops water resources through oversight and operation of diversion, delivery, and storage projects throughout the western U.S. Beneath the Talon MOA on the Pecos River are the BOR-managed Avalon and Brantley dams. The Avalon and Brantley dams are located approximately 3 and 13 miles north of Carlsbad. The Avalon Reservoir is open for recreation including fishing, canoeing, and kayaking. The Brantley Dam impounds Brantley Lake, the southernmost lake in New Mexico. The land surrounding Brantley Lake is managed as a state park.

Two New Mexico State Parks underlie the existing configuration of Talon MOA. Brantley Lake State Park encompasses the land surrounding the Brantley Reservoir. The lake is the southernmost lake in New Mexico, and it is popular for boating and fishing. The park has 51 developed campsites with electricity, shower facilities, a playground, a visitor center, and other amenities. Living Desert Zoo and Gardens State Park, west of Carlsbad, provides exhibits of native wildlife and plants accessed by hiking trails.

Carlsbad Caverns National Park is located in Eddy County adjacent to the southern boundary of the existing and proposed Talon MOA. The park borders the Guadalupe District of the Lincoln National Forest to its east. The park is designated as a World Heritage Site and contains the deepest limestone cave, Lechuguilla Cave, in the U.S. The mission of the park is to preserve and protect cave resources, the Chihuahuan Desert ecosystem, and the Capitan Reef and the associated natural and cultural resources, while providing opportunities for public use. More than 33,000 of the park's nearly 47,000 acres is designated as the Carlsbad Caverns Wilderness. Recreation in the park includes caving and cave tours, hiking and backpacking, and backcountry camping.

Population Centers

The existing configuration of the Talon MOA overlies the cities of Carlsbad and Artesia and a number of towns and unincorporated small communities with more than 500 residents including La Huerta, Atoka, Happy Valley, and Livingston Wheeler. In addition to these, the proposed reconfigured and expanded Talon MOA would overlie the village of Loving.

3.6.2.2 Cato, Smitty, and Lobos MOAs and Christa and Kendra ATCAAs

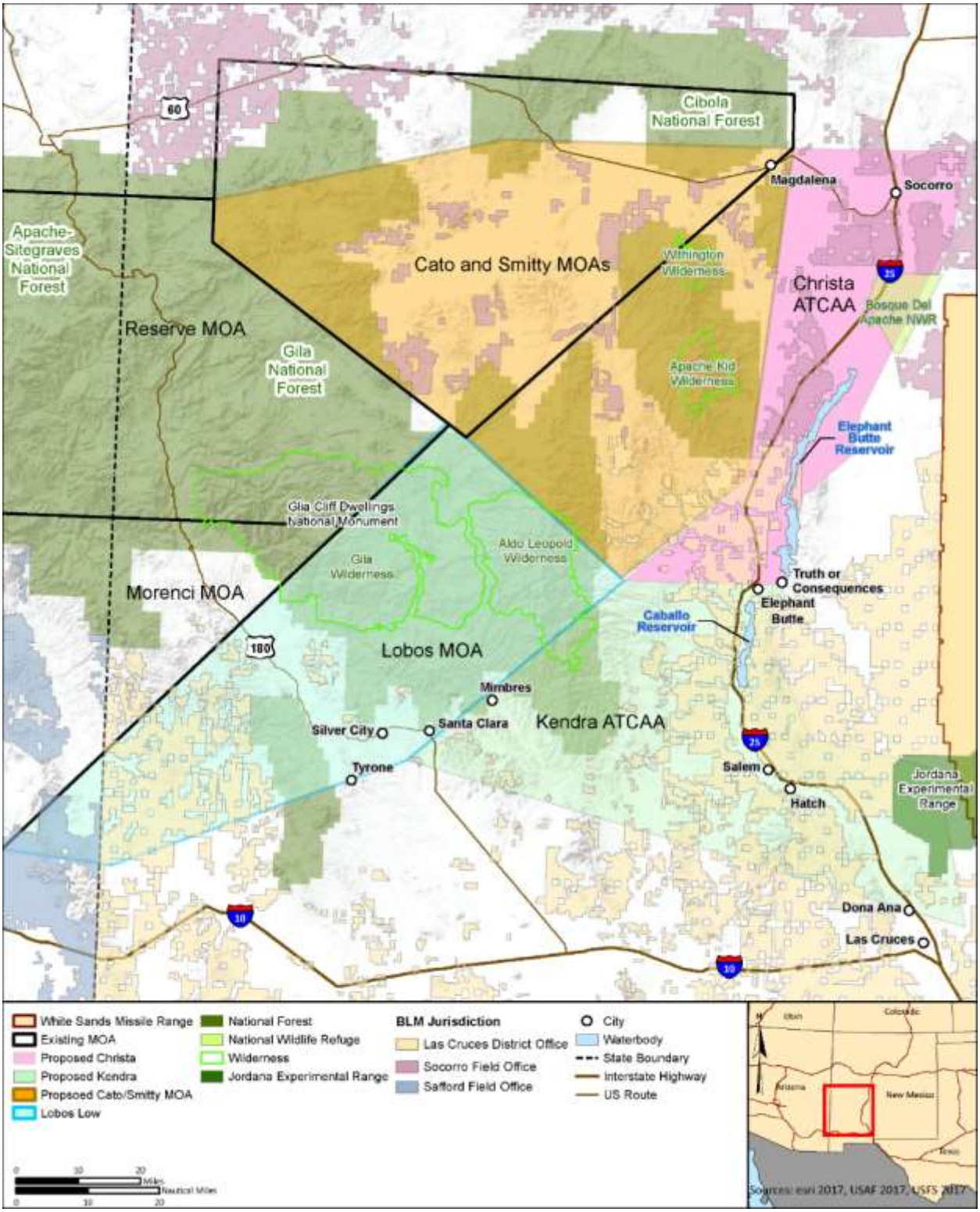
The Cato and Smitty MOAs are located in southwestern New Mexico. The existing configuration of the MOAs lies above lands in Catron and Socorro Counties. Under Alternatives 2 and 3, the Cato and Smitty MOAs would be reconfigured and expanded and Lobos MOA and the Christa and Kendra ATCAAs would be established. The proposed reconfiguration of the Cato and Smitty MOAs would extend south over land in Sierra County. The Lobos MOA would overlie land in Catron, Grant, Sierra, and Hildago Counties in New Mexico and Greenlee and Graham Counties in Arizona. The Christa and Kendra ATCAAs would overlie land in Grant, Sierra, Luna, Doña Ana, and Socorro Counties, New Mexico. **Table 3.6-2** contains land acreages, including that managed by the Federal government, beneath the existing and proposed reconfiguration and expansion of the Cato and Smitty MOAs, the proposed Lobos MOA, and the proposed Christa and Kendra ATCAAs. This is also illustrated on **Figure 3.6-2**.

Table 3.6-2. Land Ownership and Management beneath Cato, Smitty, and Lobos MOAs and Christa and Kendra ATCAAs, in acres

		Cato and Smitty MOAs			Proposed Lobos MOA	Proposed Christa and Kendra ATCAAs	Total Change
		Existing	Proposed	Change			
Non-Federal Land		890,990	1,062,328	171,338	1,151,976	387,812	1,711,126
USFS	Cibola National Forest	389,230	456,612	67,382	0	70,699	138,081
	Withington Wilderness (within Cibola National Forest)	1,406	18,815	17,409	0	0	17,409
	Apache Kid Wilderness (within Cibola National Forest)	0	44,671	44,671	0	0	44,671
	Gila National Forest	214,579	440,991	226, 412	476,038	138,761	841,211
	Aldo Leopold Wilderness (within Gila National Forest)	0	3,657	3,657	177,228	20,826	201,712
	Gila Wilderness (within Gila National Forest)	0	0	0	325,086	0	325,086
	Apache-Sitgreaves National Forest	374,257	193,957	-180,300	0	0	-180,300
BLM	Socorro Field Office	384,242	321,230	-63,012	0	233,519	170,507
	Las Cruces District	0	9,885	9,885	304,065	740,862	1,054,812
	Safford Field Office	0	0	0	62,340	0	62,340
USDA	Jornada Experimental Station	0	0	0	0	64,442	64,442
USFWS	Bosque del Apache National Wildlife Refuge	0	0	0	0	41,763	41,763
BOR	Elephant Butte and Caballo Reservoirs	0	0	0	0	37,596	37,596
NPS	Gila Cliff Dwellings National Monument	0	0	0	463	0	463
Total		**2,254,704**	**2,552,146**	**297,442**	**2,497,197**	**1,736,280**	**4,530,919**

Note: Acreages are derived from multiple data sources and so are approximate.

Legend: ATCAA-Air Traffic Control Assigned Airspace; BLM-Bureau of Land Management; BOR-Bureau of Reclamation; MOA-Military Operations Area; NPS-National Park Service; USDA-U.S. Department of Agriculture; USFS-U.S. Forest Service; USFWS-U.S. Fish and Wildlife Service.



Legend: ATCAA-Air Traffic Control Assigned Airspace; BLM-Bureau of Land Management; MOA-Military Operation Area.

Figure 3.6-2. Land Ownership and Management Beneath Existing and Proposed Cato, Smitty, and Lobos MOAs

U.S. Forest Service

The majority of federally-managed land beneath the existing and proposed configurations of the Cato and Smitty MOAs is managed by the USFS as the Cibola, Gila, and Apache-Sitgreaves National Forests. There are approximately 390,000 acres of Cibola National Forest (Magdalena Ranger District), and an additional 1,400 acres of the Withington Wilderness beneath the current configuration of the Cato and Smitty MOAs. The proposed Cato and Smitty MOAs would add more than 67,000 acres of Cibola National Forest and more than 62,000 acres of the Withington and Apache Kid Wilderness. The proposed Christa and Kendra ATCAAs would lie over an additional 70,000 acres of the Cibola National Forest. The Cibola National Forest Mountain Ranger Districts Preliminary Draft Land and Resource Management Plan (USFS 2016) states that the Magdalena Ranger District supports continued historical multiple uses including grazing, hunting, recreation, mining, and harvest of forest products through responsible resource management. The Apache Kid Wilderness is characterized by narrow steep canyons of the southern San Mateo Mountains. There are no roads into the area; but, it does encompass a number of trails and a developed campground. The Withington Wilderness is located on the northern San Mateo Mountains and includes the 10,100 foot Mount Withington and supports an extensive but seldom used trail system.

More than 214,000 acres of the Gila National Forest lie beneath the existing Cato and Smitty MOAs. The proposed reconfigured and expanded Cato and Smitty MOAs and the establishment of Lobos MOA would add approximately 702,450 acres, and more than 665,000 acres of the Gila and Aldo Leopold Wilderness, to the total of USFS land beneath airspace. The Gila National Forest Management Plan is in the early stages of revision. Its 1986 plan has been amended eleven times, most recently in 2006 to reflect changes to resources management. A portion of the Aldo Leopold Wilderness lies beneath the proposed boundaries of the reconfigured and expanded Cato and Smitty MOAs. Additionally, the proposed Lobos MOA and the Christa and Kendra ATCAAs would overlay more than 660,000 acres of the Aldo Leopold and Gila Wilderness. The Aldo Leopold Wilderness covers the rugged Black Range, including part of the continental divide. The Gila Wilderness is the first wilderness established in the U.S., advocated by Aldo Leopold, then a USFS employee. The Gila Wilderness is an area of rich biological diversity, being the terminus of the Rocky and Sierra Madre mountain ranges and encompassing parts of the Chihuahuan and Sonoran deserts.

The Apache-Sitgreaves National Forest land in New Mexico is managed and administered by the Gila National Forest as the Quemado Ranger District. The proposed reconfiguration and expansion of the Cato and Smitty MOAs would overlie nearly 180,000 fewer acres of the Quemado Ranger District than the current configuration.

Bureau of Land Management

As described above in **Section 3.6.2.1** (Talon MOA), the BLM manages land for multiple uses, including minerals management, grazing, fire management, and recreation, while providing for protection of natural resources. The existing Cato and Smitty MOAs overlies approximately 384,000 acres of BLM lands managed by the Socorro Field Office. The proposed reconfiguration and expansion of the Cato and Smitty MOAs, proposed Lobos MOA, and Christa and Kendra ATCAAs would overlie more than 1.2 million additional acres of BLM lands managed by the Socorro and Safford Field Offices and the Las Cruces District Office. The Socorro Field Office RMP was prepared in 2010 to reflect the changing resource demands that have resulted from population growth. In response, there is increase policy emphasis on control of noxious weeds and invasive species, fire management, and protecting unique areas (BLM 2010). The BLM Las Cruces District's Tri-County RMP (BLM 2013) was issued in response to new policies

related to recreation management, renewable energy project siting, and special-status species habitats, and to address changing management needs resulting from a use of lands by a growing population. BLM lands in the Arizona portion of the project area are managed by the Safford Field Office whose 1991 RMP has been amended several times to reflect changes in rangeland and wildfire management, as well as land tenure issues and renewable energy projects.

Other Managed Lands

The NPS manages Gila Cliff Dwellings National Monument, all of which lies under the proposed Lobos MOA. The monument was established in 1907 and expanded in 1962. Today it incorporates 45 Mogollon cultural sites, which are the only examples in the National Park system (Russel 1992). A General Management Plan for the monument is planned.

Along the Rio Grande, Bosque del Apache National Wildlife Refuge, managed by the USFWS, and the Elephant Butte and Caballo Dams and Reservoirs, managed by the BOR, lie beneath the proposed Christa and Kendra ATCAAs. Bosque del Apache National Wildlife Refuge was established in 1939 to provide a stopover site for migrating waterfowl and is known for the large flocks of cranes and waterfowl that winter there annually. Both Elephant Butte and Caballo Dams and Reservoirs store water for irrigation and power generation. Recreation, including boating, fishing, wildlife viewing, picnicking, and camping, at both reservoirs is managed by New Mexico State Parks.

The USDA Agricultural Research Service's Jornada Experimental Range, located just north of Las Cruces beneath the proposed Kendra ATCAA, is a field research laboratory established in 1912 with a mission of carrying out research on ecosystem processes and sustainable agriculture in dryland systems, particularly arid and semiarid rangelands. Researchers include the National Science Foundation, Department of Interior, USDA, non-government organizations, producer groups, and universities.

The National Science Foundation National Radio Astronomy Observatory's Very Large Array Radio Telescope facility lies beneath existing and proposed reconfigured and expanded Cato and Smitty MOAs. The array consists of 28 antennae mounted on rails, located on the Plains of San Agustin in New Mexico, northwest of Socorro.

Population Centers

The existing and proposed configurations of the Cato and Smitty MOAs overlie the village of Magdalena, with a population of more than 900. The proposed Lobos MOA would overlie the following towns with populations of more than 500: Silver City, Santa Clara, Arenas Valley, and Tyrone. The proposed Christa ATCAA would overlie the cities of Elephant Butte and Socorro. The proposed Kendra ATCAA would overlie the following locations with populations greater than 500: Hurley, Bayard, Mimbres, Hatch, Doña Ana, Radium Springs, Salem, Placitas, Las Cruces, and Truth or Consequences.

3.7 RECREATION RESOURCES

3.7.1 Resource Definition

Recreation includes indoor and outdoor activities that take place away from the residence of the participant. For this analysis, recreation includes outdoor activities that occur on land that lies beneath the airspace affected by alternatives under the Proposed Action.

3.7.2 Affected Environment

Common types of recreation that occur on the land beneath all the proposed airspace areas include hiking; viewing natural features, wildlife, and historic sites; camping; fishing; hunting; driving for pleasure; bicycling; horseback riding; water activities; and skiing. Recreational activities can occur on both public and private lands. The majority of lands under the proposed airspace are public. Land management is undertaken by multiple Federal and state agencies, including the USFS, BLM, NPS, USFWS, USDA, BOR, and New Mexico State Parks. See **Section 3.6** (Land Management), for specific information regarding land management under the existing and proposed airspace areas.

The vast majority of public lands under the proposed airspace are managed by the BLM and USFS. Both agencies provide access and recreational opportunities to the public on these lands. The recreation analysis will focus on public lands and major areas of outdoor recreation beneath the affected airspace.

3.7.2.1 Talon MOA

The Lincoln National Forest is under the existing and proposed Talon MOA (See **Figure 3.6-1**). The USFS conducts National Visitor Use Monitoring to maintain estimates of forest visitation, use, and socioeconomic impact. For the Lincoln National Forest, there were an estimated 696,180 visitors in fiscal year 2009, which increased to an estimated 766,723 visitors in FY 2014. The most common recreational activities that occur in the forest are viewing natural features, viewing wildlife, hiking, relaxing, and driving for pleasure (USFS 2018a). Within the Lincoln National Forest, no designated Wilderness Areas exist beneath the existing or proposed Talon MOA.

The Carlsbad Caverns National Park is adjacent to the proposed Talon High MOA, the floor of which would be 12,500 feet. In 2018 there were 465,912 visitors including 184 backcountry campers. Average visitation over the last 10 years (2009-2018) was 429,153 (NPS 2019). Recreational opportunities at the Carlsbad Caverns National Park include touring the caverns; the bat flight program, which runs from late May to October each year; the night sky program; and hiking along surface trails (NPS 2018).

Two New Mexico State Parks, Brantley Lake State Park and the Living Desert Zoo and Gardens State Park, are located beneath the existing and proposed Talon MOA. Brantley Lake State Park offers boating, kayaking, canoeing, fishing, hiking, bird watching, and camping (New Mexico EMNRD 2018a). Recent visitation statistics for Brantley Lake State Park are not available, but the park averaged 127,040 visitors annually between FY 1997 and FY 2001 (New Mexico EMNRD no date). The Living Desert Zoo and Gardens State Park is a native wildlife zoo that also offers hiking and picnicking (New Mexico EMNRD 2018b). In 2009, the Park had 51,568 visitors (New Mexico EMNRD 2011). Additionally, the William S Huey Wildlife Area, managed by NMDGF is located beneath the proposed Talon MOA. While primarily managed for wildlife habitat, such areas also are accessible to the public for wildlife viewing, fishing, and hunting.

The Avalon Reservoir is also located under the existing and proposed Talon MOA. The reservoir is managed by the BOR; however, recreation at the reservoir is managed by the Carlsbad Irrigation District. Recreational opportunities at the Avalon Reservoir include canoeing, kayaking, and fishing (New Mexico EMNRD 2018c). There are no visitation statistics available for the Avalon Reservoir.

3.7.2.2 Cato, Smitty, and Lobos MOAs and Christa and Kendra ATCAAs

The National Forests under the existing and proposed Cato and Smitty MOAs and the proposed Lobos MOA include the Gila National Forest, Cibola National Forest, and Apache-Sitgreaves National Forest (See **Figure 3.6-2**).

As stated above, the USFS conducts National Visitor Use Monitoring to maintain estimates of forest visitation, use, and socioeconomic impact. For the Gila National Forest, there were an estimated 513,861 visitors in FY 2011, but visitation decreased to an estimated 389,530 in FY 2016. The most common recreational activities that occur in the forest are hiking, viewing natural features, viewing wildlife, relaxing, visiting historic sites, and driving for pleasure (USFS 2018a). There are designated Wilderness Areas within the Gila National Forest that have been preserved in their natural condition. Beneath proposed airspace, these areas include the Aldo Leopold and Gila Wilderness. Travel into the Wilderness Areas is only permitted by foot or horseback, and no motorized vehicles or mechanized vehicles (including mountain bikes) are permitted. Hunting and fishing are allowed in the Wilderness Areas under New Mexico game laws (USFS 2018b). There were approximately 34,134 visits to Wilderness Areas in the Gila National Forest during FY 2016 (USFS 2018a).

There are six airstrips located within the Gila National Forest that can be used to access the forest for recreation. Two of these airstrips, Beaverhead and Me-Own, are located under the proposed Lobos MOA. The Jewett Mesa airstrip is located under the proposed Cato and Smitty MOAs. These airstrips are all part of the New Mexico Airstrip Network, which was created to enhance access to New Mexico recreational destinations through backcountry flying (New Mexico Pilots Association 2020).

For the Cibola National Forest, there were an estimated 1,426,285 visitors in FY 2011, which increased to an estimated 1,590,919 visitors in FY 2016. The most common recreational activities that occur in the forest are viewing natural features, hiking, relaxing, and viewing wildlife (USFS 2018a). There are designated Wilderness Areas within the Cibola National Forest that have been preserved in their natural condition. Beneath existing and proposed airspace, these areas include the Apache Kid and Withington Wilderness Area. Recreational opportunities in the Cibola National Forest's Wilderness Areas include hiking and camping. No mechanized vehicles are allowed in the Wilderness Areas (USFS 2018c). There were approximately 161,470 visits to Wilderness Areas in the Cibola National Forest during FY 2016 (USFS 2018a).

For the Apache-Sitgreaves National Forest, there were an estimated 1,172,729 visitors in FY 2007, which decreased to an estimated 520,473 visitors in FY 2014. The most common recreational activities that occur in the forest are hiking, relaxing, viewing wildlife, viewing natural features, fishing, picnicking, and camping (USFS 2018a). There are no designated Wilderness Areas within the Apache-Sitgreaves National Forest beneath existing or proposed airspace.

Portions of the Continental Divide Trail are located under the existing and proposed Cato and Smitty MOAs and the proposed Lobos MOA. The Continental Divide Trail is a National Scenic Trail that is managed by USFS and stretches approximately 3,100 miles through the U.S. between the borders of Mexico and Canada. Approximately 820 miles of the Continental Divide Trail are located in New Mexico offering hiking, wildlife viewing, and horseback riding opportunities (USFS 2020). There are no visitation statistics available for the Continental Divide Trail.

The Gila Cliff Dwellings National Monument is beneath the proposed Lobos MOA, surrounded by the Gila National Forest. Recreational opportunities at the Gila Cliff Dwellings National Monument include bird watching, hiking, interpretive programs, nature walks, wildlife viewing, and tours of the cliff dwellings. There is no backcountry use (NPS 2016). In 2018 there were 79,108 visitors. Average visitation over the last 10 years (2009-2018) was 42,460 (NPS 2019).

The Bosque del Apache National Wildlife Refuge is located beneath the proposed Christa and Kendra ATCAAs. Recreational opportunities within the refuge include guided tours, wildlife watching, hiking nature trails, bicycling, hunting, and fishing (USFWS 2017). There are approximately 160,000 visitors to the Bosque del Apache National Wildlife Refuge each year (USFWS 2012).

Elephant Butte and Caballo Reservoirs are located under the proposed Christa and Kendra ATCAAs. These areas offer recreational opportunities such as wildlife viewing, camping, hiking, fishing, and water-related activities such as swimming, boating, and kayaking (New Mexico EMNRD 2018d, 2018e). There are no visitation statistics available for the Elephant Butte and Caballo Reservoirs. Additionally, several Wildlife Areas and Wildlife Management Areas, managed by NMDGF, are located beneath airspace (see **Table 3.5-7**). These areas provide wildlife habitat for numerous species as well as public access for wildlife viewing, fishing, and hunting.

3.8 SOCIOECONOMICS

3.8.1 Resource Definition

The CEQ regulations implementing NEPA state that when economic or social effects and natural or physical environmental effects are interrelated, these effects on the human environment should be discussed (40 CFR 1508.14). The CEQ regulations further state that the "human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment." In addition, 40 CFR 1508.8 states that agencies need to assess not only direct effects, but also "aesthetic, historic, cultural, economic, social, or health" effects. Following from these regulations, the socioeconomic analysis evaluates how elements of the human environment might be affected.

3.8.2 Affected Environment

The affected environment for socioeconomics, as described in this section, includes the counties located under the existing and proposed airspace that could be potentially impacted by the change in the acoustic environment from the pilot training activities. This analysis focuses on the MOAs only since the proposed use of Christa and Kendra ATCAAs would be at an altitude which would have minimal to no noise contributions at ground level. Additionally, information on New Mexico and Arizona overall is provided for purposes of context when reviewing the county-level data.

A description of the population, housing, and economic characteristics of the affected environment is provided for the MOAs. In addition to those characteristics, this analysis also looks at local spending activity associated with National Forest visitation since National Forests comprise a large land area below the airspace and contribute to the local economy. While there are other recreational opportunities beneath the airspace, the National Forests are the most likely to attract out of town visitors that generate revenue in the local economy (see **Section 3.7,** Recreation Resources).

3.8.2.1 Talon MOA

Population

Table 3.8-1 presents population information for New Mexico, and the counties that are associated with the existing and proposed Talon MOA for the years 2000, 2010, and 2016, as well as annual rates of population change in each county during the 2000-2010 and 2010-2016 periods. The proposed Talon MOA overlies portions Otero, Lea, Chaves, and Eddy Counties. Lea County was the fastest growing county over both the 2000 to 2010 and 2010 to 2016 periods, growing at annual rates of 1.5 percent and 1.1 percent, respectively. From 2000 to 2010 all other counties in the Talon MOA grew at a slower rate than New Mexico (1.0 percent per year), with Otero County only growing at 0.1 percent per year and Eddy and Chaves Counties growing at 0.4 percent and 0 percent per year, respectively. As of 2016, populations in Eddy, Otero, and Lea Counties increased, while Chaves County showed a slight population decline.

Table 3.8-1. Talon MOA Population and Population Trends, 2000-2016

	2000	2010	2016	Annual Rate of Change 2000-2010	Annual Rate of Change 2010-2016
New Mexico	1,819,046	2,013,122	2,082,669	1.0%	0.6%
Otero County	62,298	62,782	65,333	0.1%	0.7%
Lea County	55,511	64,727	68,930	1.5%	1.1%
Chaves County	61,382	65,645	65,610	0.7%	0.0%
Eddy County	51,658	53,829	56,369	0.4%	0.8%

Sources: U.S. Census Bureau 2000, 2010, 2016.
Legend: %-percent; MOA-Military Operations Area.

Housing Characteristics

Table 3.8-2 presents information on housing characteristics for New Mexico, Otero, Lea, Chaves, and Eddy Counties for the year 2016. Otero County had the largest number of housing units (30,976) and Eddy had the fewest (23,428). Lea and Chaves Counties had the highest vacancy rates (12.1 percent and 11.0 percent respectively), while Eddy County had the lowest (4.4 percent). Median housing values for all counties in the Talon MOA were lower than New Mexico overall, with the highest values under the Talon MOA being $134,100 compared to New Mexico's $161,600. Otero County had the highest median gross rent under the Talon MOA ($827 per month), and was the only county with higher rent than New Mexico overall ($792 per month).

Table 3.8-2. Talon MOA Housing Characteristics, 2016					
	New Mexico	Otero County	Lea County	Chaves County	Eddy County
Total housing units[1]	912,445	30,976	25,340	26,710	23,428
Occupied housing units	762,551	23,043	21,542	23,153	20,941
Vacant housing units	149,894	7,933	3,798	3,557	2,487
Rental vacancy rate	8.8%	7.6%	12.1%	11.0%	4.4%
Median housing value	$161,600	$105,000	$111,400	$102,400	$134,100
Median gross rent	$792	$827	$797	$706	$780

Sources: U.S. Census Bureau 2010, 2016, [1]2019.
Note: [1]A housing unit is a house, apartment, mobile home, group of rooms, single room occupied as a separate living quarter, or vacant units intended for occupancy.
Legend: %-percent; MOA-Military Operations Area.

Economic Characteristics

Table 3.8-3 presents information on economic characteristics for New Mexico, Otero, Lea, Chaves, and Eddy Counties. As of 2016, with the exception of Otero County (11.0 percent), all of the counties beneath Talon MOA had lower unemployment rates than New Mexico overall (8.5 percent). Lea and Eddy Counties had higher median household incomes and lower poverty rates than New Mexico, while Otero and Chaves Counties had lower median incomes and higher rates of poverty than the state as a whole.

Table 3.8-3. Talon MOA Economic Characteristics, 2016					
	New Mexico	Otero County	Lea County	Chaves County	Eddy County
Number Employed	876,210	22,856	28,847	26,687	26,343
Number Unemployed	81,175	2,822	2,041	2,026	1,539
Unemployment Rate	8.5%	11.0%	6.5%	7.0%	5.5%
Median household income	$45,674	$41,502	$58,152	$41,356	$59,625
Families with incomes below the poverty line	15.9%	19.4%	12.8%	17.6%	10.1%

Source: U.S. Census Bureau 2016.
Legend: %-percent; MOA-Military Operations Area.

The existing and proposed Talon MOA overlies the Eastern Workforce Investment Region, which includes 12 counties: Chaves, Curry, De Baca, Eddy, Guadalupe, Harding, Lea, Lincoln, Otero, Quay, Roosevelt, and Union. Agriculture, including beef and dairy cattle ranching, is an important economic activity in this area. DoD expenditures (captured under public administration) at Cannon AFB, Holloman AFB, and WSMR also play a large role in the economy. Other important industries are oil, gas, manufacturing, education, research, banking, and medical services. This region has 1.5 candidates per job opening and the average annual wage is $43,992 (New Mexico Workforce Connection 2018a).

Table 3.8-4 provides the top employment industries in 2016 for the counties associated with the existing and proposed Talon MOA. Primary employment industries in these counties includes: retail trade; education services, and health care and social assistance; and agriculture.

Table 3.8-4. Talon MOA Percentage of Total Employees by Industry, 2016				
Industry	**Otero**	**Lea**	**Chaves**	**Eddy**
Agriculture, forestry, fishing and hunting, and mining	2.8	20.3	9.8	17.7
Construction	8.7	8.3	5.5	7.0
Manufacturing	1.9	3.3	5.3	5.1
Wholesale trade	1.0	5.7	2.0	3.5
Retail trade	11.9	10.0	12.8	11.3
Transportation and warehousing, utilities	4.0	8.1	6.9	7.7
Information	1.3	0.8	0.7	1.2
Finance and insurance, and real estate and rental and leasing	4.1	3.4	4.0	3.8
Professional, scientific, and management, and administrative and waste management services	7.4	6.1	5.9	5.4
Educational services, and health care and social assistance	23.5	16.4	26.3	17.4
Arts, entertainment, and recreation, and accommodation and food services	14.0	9.1	10.3	7.6
Other services, except public administration	4.1	4.7	4.8	5.5
Public administration[1]	15.3	3.7	5.7	6.8

Source: U.S. Census Bureau 2016.
Note: [1] Includes DoD expenditures.
Legend: MOA-Military Operations Area.

3.8.2.2 Cato, Smitty, and Lobos MOAs

Population

Table 3.8-5 presents population information for New Mexico, Arizona, and the counties that underlie the existing and proposed Cato, Smitty, and Lobos MOAs for the years 2000, 2010, and 2016, as well as annual rates of population change in each municipality during the 2000-2010 and 2010-2016 periods. The counties associated with the Cato, Smitty, and Lobos MOAs include: Graham and Greenlee (Arizona), and Hidalgo, Grant, Catron, Sierra, and Socorro (New Mexico). Population in many of the counties under the Cato, Smitty, and Lobos MOAs declined from 2000 to 2016, with Hidalgo and Sierra Counties showing the largest declines. Graham County grew most quickly from 2000 to 2010 (1.1 percent per year), while Greenlee County grew at the quickest rate from 2010 to 2016 (1.5 percent per year).

Table 3.8-5. Cato, Smitty, and Lobos MOAs Population and Population Trends, 2000-2016					
	2000	**2010**	**2016**	**Annual Rate of Change 2000-2010**	**Annual Rate of Change 2010-2016**
Arizona	**5,130,632**	**6,392,017**	**6,728,577**	**2.2%**	**0.9%**
Graham County	33,489	37,220	37,529	1.1%	0.1%
Greenlee County	8,547	8,437	9,224	-0.1%	1.5%
New Mexico	**1,819,046**	**2,013,122**	**2,082,669**	**1.0%**	**0.6%**
Hidalgo County	5,932	4,894	4,531	-1.9%	-1.3%
Grant County	31,002	29,514	28,879	-0.5%	-0.4%
Sierra County	13,270	11,988	11,442	-1.0%	-0.8%
Catron County	3,543	3,725	3,547	0.5%	-0.8%
Socorro County	18,078	17,866	17,324	-0.1%	-0.5%

Sources: U.S. Census Bureau 2000, 2010, 2016.
Legend: %-percent; MOA-Military Operations Area.

Housing Characteristics

Table 3.8-6 presents information on housing characteristics for the years 2010 and 2016 for New Mexico and Arizona as a whole, and for the counties under the Cato, Smitty, and Lobos MOAs: Graham and Greenlee (Arizona), and Hidalgo, Grant, Catron, Sierra, and Socorro (New Mexico). All of the counties under the Cato, Smitty, and Lobos MOAs had lower median housing values than either Arizona or New Mexico overall, with Catron having a higher median value ($161,200) than any other county, which was on par with the state. Similarly, median rents in both Arizona counties were below those of Arizona overall, and median rents in all four New Mexico counties were lower than New Mexico overall.

Economic Characteristics

Table 3.8-7 presents information on economic characteristics for New Mexico and Arizona and the counties of Graham, Greenlee, Hidalgo, Grant, Catron, Sierra, and Socorro. As of 2016, of the counties under the Cato, Smitty, and Lobos MOAs, Graham County had the highest unemployment rate (14.4 percent) and Catron County had the lowest (4.0 percent). Greenlee County had the highest median income ($51,801) and Sierra County had the lowest ($29,679). Hidalgo County had the highest percentage of families living below the poverty line (20.2 percent), while Catron and Greenlee Counties had the lowest rate (10.3 percent in both counties).

Table 3.8-6. Cato, Smitty, and Lobos MOAs Housing Characteristics, 2016									
	Arizona	Graham County	Greenlee County	**New Mexico**	Hidalgo County	Grant County	Catron County	Sierra County	Socorro County
Total housing units[1]	**2,913,541**	13,268	4,424	**912,445**	2,399	14,678	3,930	8,289	8,004
Occupied housing units	**2,448,919**	10,915	3,295	**762,551**	1,763	11,941	1,425	5,341	4,786
Vacant housing units	**464,622**	2,353	1,129	**149,894**	636	2,737	2,505	2,948	3,218
Rental vacancy rate	**7.9%**	9.0%	8.0%	**8.8%**	6.2%	5.9%	21.1%	16.5%	23.3%
Median housing value	**$176,900**	$121,400	$81,600	**$161,600**	$77,800	$135,000	$161,200	$89,900	$120,200
Median gross rent	**$937**	$794	$421	**$792**	$524	$668	$663	$582	$607

Source: U.S. Census Bureau 2016.
Note: [1]A housing unit is a house, apartment, mobile home, group of rooms, single room occupied as a separate living quarter, or vacant units intended for occupancy.
Legend: %-percent; MOA-Military Operations Area.

Table 3.8-7. Cato, Smitty, and Lobos MOAs Economic Characteristics, 2016									
	Arizona	Graham County	Greenlee County	**New Mexico**	Hidalgo County	Grant County	Catron County	Sierra County	Socorro County
Number Employed	**2,879,372**	12,014	3,561	**876,210**	1,721	10,638	1,078	3,969	5,744
Number Unemployed	**249,972**	2,025	347	**81,175**	221	1,092	45	442	351
Unemployment Rate	**8.0%**	14.4%	8.9%	**8.5%**	11.4%	9.3%	4.0%	10.0%	5.8%
Median household income	**$51,340**	$47,422	$51,801	**$45,674**	$34,528	$38,890	$38,142	$29,679	$34,542
Families with incomes below the poverty line	**12.9%**	17.2%	10.3%	**15.9%**	20.2%	14.8%	10.3%	14.6%	14.7%

Source: U.S. Census Bureau 2016.
Legend: %-percent; MOA-Military Operations Area.

The existing and proposed Cato, Smitty, and Lobos MOAs overlie the Southwestern Workforce Investment Region, which includes seven counties: Catron, Doña Ana, Grant, Hidalgo, Luna, Sierra, and Socorro. Agriculture and copper mining provide many jobs in this area. The New Mexico Institute of Mining and Technology, New Mexico State University, and Western New Mexico University are also important sources of employment in the region (New Mexico Workforce Connection 2018b).

Table 3.8-8 provides the top employment industries in 2016 for the counties associated with the Cato, Smitty, and Lobos MOAs. The primary employment industries for the Cato, Smitty, and Lobos MOAs counties include: educational services, and health care and social assistance; agriculture; and public administration.

Table 3.8-8. Cato, Smitty, and Lobos MOAs Percentage of Total Employees by Industry, 2016							
Industry	**Graham County (Arizona)**	**Greenlee County (Arizona)**	**Hidalgo County**	**Grant County**	**Catron County**	**Sierra County**	**Socorro County**
Agriculture, forestry, fishing and hunting, and mining	13.2%	44.5%	14.7%	14.4%	20.6%	7.1%	5.5%
Construction	5.9%	9.2%	6.7%	6.7%	2.6%	8.1%	4.6%
Manufacturing	3.4%	1.1%	1.7%	1.6%	1.5%	1.7%	3.7%
Wholesale trade	1.3%	1.2%	0.9%	1.6%	0.0%	1.2%	0.9%
Retail trade	14.2%	6.2%	11.6%	11.4%	5.8%	11.3%	8.0%
Transportation and warehousing, utilities	3.0%	3.2%	5.5%	2.7%	10.9%	5.6%	3.3%
Information	1.2%	0.4%	1.1%	0.4%	1.5%	1.2%	0.8%
Finance and insurance, and real estate and rental and leasing	3.3%	1.4%	2.2%	4.9%	0.4%	4.0%	4.3%
Professional, scientific, and management, and administrative and waste management services	5.7%	2.8%	4.0%	4.9%	9.2%	5.5%	7.8%
Educational services, and health care and social assistance	25.5%	14.9%	25.2%	30.1%	17.4%	27.9%	43.1%
Arts, entertainment, and recreation, and accommodation and food services	9.0%	7.8%	11.7%	11.3%	8.2%	11.8%	10.8%
Other services, except public administration	4.9%	2.0%	1.3%	4.8%	5.2%	4.0%	1.5%
Public administration	9.4%	5.3%	13.4%	5.1%	16.8%	10.6%	5.6%

Source: U.S. Census Bureau 2016.
Legend: %-percent; MOA-Military Operations Area.

3.8.2.3 National Forest Visitor Spending

Table 3.8-9 presents information on visitor spending related to visits at all of the National Forests below the existing and proposed airspace to include: Gila National Forest, Lincoln National Forest, Apache-Sitgreaves National Forest, and Cibola National Forest. Cibola National Forest received the most visits (1.6 million) and had the most visitor spending ($48 million). Apache-Sitgreaves National Forest had the second most visits (1.4 million), and Lincoln National Forest had the second highest visitor spending ($41 million).

Table 3.8-9. National Forest Visitor Spending, FY 2014 and FY 2016

	Gila National Forest (FY 2016)	Lincoln National Forest (FY 2014)	Apache-Sitgreaves National Forest (FY 2014)	Cibola National Forest (FY 2016)
Annual National Forest Visits	696,180	1,172,729	1,426,285	1,590,919
Average Trip Duration (Nights)	5.7	4.3	6.4	5.3
Average Party Size	2.5	2.9	2.7	2.3
Number of Party Trips	49,427	93,408	82,053	130,561
Average Total Trip Spending per Party	$525	$438	$388	$369
Total Annual Visitor Spending	**$25,949,054**	**$40,912,514**	**$31,836,439**	**$48,176,900**

Sources: USFS 2016a, 2016b, 2014a, 2014b.
Legend: FY-fiscal year.

3.8.2.4 National Park Visitor Spending

Two NPS sites are located in the vicinity of the existing and proposed airspace, Carlsbad Caverns National Park (adjacent to proposed Talon MOA) and the Gila Cliff Dwellings National Monument (beneath the proposed Lobos MOA). In 2018, Carlsbad Caverns National Park had 465,912 recreational visitors that spent a total of $30,238,000, and the Gila Cliff Dwellings National Monument had 79,107 recreational visitors that spent a total of $4,671,000 (NPS 2019).

3.9 ENVIRONMENTAL JUSTICE

3.9.1 Resource Definition

In 1994, President Clinton signed EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. The general purposes of the EO are to 1) focus the attention of Federal agencies on the human health and environmental conditions in minority communities and low-income communities with the goal of achieving environmental justice; 2) foster nondiscrimination in Federal programs that substantially affect human health or the environment; and 3) give minority communities and low-income communities greater opportunities for public participation in and access to public information on matters relating to human health and the environment.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, was issued in 1997 to identify and address issues that affect the protection of children. Children may suffer disproportionately more environmental health and safety risks than adults because of various factors: children's neurological, digestive, immunological, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weight than adults; children's behavior patterns may make them more susceptible to accidents because they are less able to protect themselves; and children's size and weight may diminish the protection they receive from standard safety features.

3.9.2 Affected Environment

3.9.2.1 Minority and Low-Income Populations

This section identifies minority or low-income populations that could potentially be affected by the Proposed Action. For the purpose of this evaluation, minority refers to people who identified themselves in the U.S. Census as Black or African American, Asian, or Pacific Islander, American Indian or Alaskan Native, other non-White races, or as being of Hispanic or Latino origin. Persons of Hispanic and Latino origin may be of any race (CEQ 1997). The CEQ identifies these groups as minority populations when either 1) the minority population of the affected area exceeds 50 percent or 2) the minority population percentage in the affected area is meaningfully greater than the minority population percentage in the general population or appropriate unit of geographical analysis. While not defined by the CEQ, the term "meaningfully greater" for the purposes of this EIS has been interpreted to mean that the total minority population is 20 percent or more than the minority population of the geographic region of comparison. Poverty (i.e., low-income) status is determined by dollar-value thresholds that vary by family size and composition. If a family's total income is less than the dollar-value of the appropriate threshold, then that family and every individual in it are considered to be in poverty.

Changes in the noise environment were the primary consideration in the analysis, and as such, determinations are made as to whether changes in the noise environment would adversely affect the health or environment of populations living in the affected areas.

Table 3.9-1 provides the total population, total minority, percentage minority, total low-income population, and low-income percentage for the counties affected by the Proposed Action. Minority and low-income populations are then compared to their respective state.

The minority population within the ROI exceeds 50 percent in seven of the eleven counties. Five of the eleven counties have low-income populations that exceed 20 percent.

Table 3.9-1. Minority and Low-Income Populations under the Talon, Cato, Smitty, and Lobos MOAs

	Total Population	Minority Population[1]	Percent Minority	Low-Income Population	Percent Low-Income
State of Arizona	6,728,577	2,950,701	43.9	1,165,636	17.3
Graham County	37,529	18,216	48.5	7,419	19.8
Greenlee County	9,224	4,817	52.2	1,216	13.2
State of New Mexico	2,082,669	1,277,066	61.3	426,814	20.5
Catron County	3,547	759	21.4	809	22.8
Chaves County	65,610	38,731	59.0	14,196	21.6
Eddy County	56,369	28,552	50.7	7,638	13.6
Grant County	28,879	15,297	53.0	6,086	21.1
Hidalgo County	4,531	2,640	58.3	1,075	23.7
Lea County	68,930	42,585	61.8	10,549	15.3
Otero County	65,333	32,330	49.5	1,165,636	17.3
Sierra County	11,442	3,856	33.7%	2,471	21.6%
Socorro County	17,324	11,151	64.4	7,419	19.8

Source: U.S. Census Bureau 2016.
Note: [1]Minority population calculated by subtracting the non-Hispanic white only population total from total population values.
Legend: MOA-Military Operations Area.

3.9.2.2 Protection of Children

This section identifies populations under the age of 18 that could potentially be affected by the Proposed Action. As shown in **Table 3.9-2**, the percentage of the population estimated to be under age 18 was 24.1 percent in Arizona and New Mexico with Greenlee County and Lea County having the largest percentages, respectively.

Table 3.9-2. Percentage of Residents under Age 18 under the Talon, Cato, Smitty, and Lobos MOAs

	Total Population	Percentage Under Age 18[1]
State of Arizona	6,728,577	24.1
Graham County	37,529	27.8
Greenlee County	9,224	28.3
State of New Mexico	2,082,669	24.1
Catron County	3,547	15.7
Chaves County	65,610	27.1
Eddy County	56,369	26.2
Grant County	28,879	20.9
Hidalgo County	4,531	23.2
Lea County	68,930	30.2
Otero County	65,333	23.8
Socorro County	17,324	26.1

Source: U.S. Census Bureau 2016.
Note: [1] Calculated by subtracting percentage of population 18 years and older from 100.

3.10 SAFETY

This section addresses ground and flight safety associated with activities conducted by units operating within the existing Talon, Cato, and Smitty MOAs. Ground safety includes activities associated with crash response and fire risk and management. Flight safety considers aircraft flight risks such as aircraft mishaps and bird/wildlife-aircraft strikes.

3.10.1 Resource Definition

The Air Force practices Operational Risk Management as outlined in AFI 90-901, *Operational Risk Management* (Air Force 2011). Requirements outlined in this document provide for a process to maintain readiness in peacetime and achieve success in combat while safeguarding people and resources. The safety analysis contained in the following sections addresses issues related to the health and well-being of both military personnel and civilians under the training airspace. Specifically, this section provides information on aircraft mishaps, Bird/Wildlife-Aircraft Strike Hazard (BASH), and chaff and flares.

The FAA is responsible for ensuring safe and efficient use of U.S. airspace by military and civilian aircraft and for supporting national defense requirements. To fulfill these requirements, the FAA has established safety regulations, airspace management guidelines, a civil-military common system, and cooperative activities with the DoD. The primary safety concern with regard to military training flights is the potential for aircraft mishaps (i.e., crashes) to occur, which could be caused by mid-air collisions with other aircraft or objects, weather difficulties, mechanical failures, pilot error, or bird/wildlife-aircraft strikes.

3.10.2 Affected Environment

3.10.2.1 Ground Safety

Crash Response

Holloman AFB maintains detailed emergency and mishap response plans to react to an aircraft accident, should one occur. These plans assign agency responsibilities and prescribe functional activities necessary to react to major mishaps, whether on or off base. Response would normally occur in two phases. The initial response focuses on rescue, evacuation, fire suppression, safety, elimination of explosive devices, ensuring security of the area, and other actions immediately necessary to prevent loss of life or further property damage. This consists of those personnel and agencies primarily responsible to initiate the initial phase. This element will include the Fire Chief, who will normally be the first On-scene Commander, fire-fighting and crash-rescue personnel, medical personnel, security police, and crash-recovery personnel. A subsequent response team will be comprised of an array of organizations whose participation will be governed by the circumstances associated with the mishap and actions required to be performed. Subsequently, the second, or investigation phase, is accomplished.

Holloman AFB also maintains Mutual Aid Agreements with the City of Albuquerque and Otero County's 20 fire departments. These Mutual Aid Agreements agree to provide fire protection and hazardous materials response to the city or county if requested of Holloman AFB. Holloman AFB Fire Emergency Service responds to any Air Force aircraft incident within a 25 mile radius of Holloman AFB. If an incident occurs outside of the 25 mile radius, Holloman AFB Fire Emergency Service would establish a convoy and respond to the incident if warranted.

Regardless of the agency initially responding to the accident, efforts are directed at stabilizing the situation and minimizing further damage. If the accident has occurred on non-Federal property, a National Defense Area would be established around the accident scene and the site would be secured to protect classified information or DoD equipment and/or material for the investigation phase.

After all required investigations and related actions on the site are complete, the aircraft would be removed. The Base Civil Engineer accomplishes cleanup of the site or contracts to an outside agency to accomplish the cleanup. Overall, the purpose of response planning is to:

- save lives, property, and material by timely and correct response to mishaps;
- quickly and accurately report mishaps to higher Headquarters; and
- investigate the mishap to preclude the reoccurrence of the same or a similar mishap.

Fire Risk Management

The land area under the existing and proposed MOAs/ATCAAs airspace is managed by a variety of separate entities, including BLM, NPS, and USFS. Fire suppression of wildland fires on Federal lands is the responsibility of the entity that owns/manages that land and is geared toward protecting lives and suppressing wildfire.

The USFS maintains fire incident data back to 1992. From 1992 to 2015, there were 1,674 recorded fire incidents within the existing airspace for the Talon, Cato, and Smitty MOAs (Short 2017). Of the 1,674 incidents, 1,124 occurred within the Cato and Smitty MOAs, and of those 973 (87 percent) were caused by lightning. Within the Talon MOA, 550 fire incidents occurred. Of that 550, 29 percent were classified as

"miscellaneous", and 26 percent were caused by lightning. No recorded incident was directly related to aircraft mishaps or training activities.

3.10.2.2 Flight Safety

Aircraft flight operations in the existing and proposed MOAs and ATCAAs are governed by standard rules of flight. Additionally, specific procedures applicable to local operations are contained in detailed Standard Operation Procedures (SOPs) that must be followed by all aircrews operating from the installation (Holloman AFB Instruction 11-250).

The primary public concern with regard to flight safety is the potential for aircraft accidents. Such mishaps may occur as a result of mid-air collisions, collisions with manmade structures or terrain, weather-related accidents, mechanical failure, pilot error, or bird/wildlife-aircraft collisions. Flight risks apply to all aircraft; they are not limited to the military. Flight safety considerations addressed include aircraft mishaps and bird/wildlife-aircraft strikes.

Aircraft Mishaps

Aircraft mishaps and their prevention represent a paramount concern of the Air Force. The Air Force defines four categories of aircraft mishaps: Classes A, B, C, and D (DoD 2011), as shown in **Table 3.10-1**. Class A mishaps are of primary concern because of their potentially catastrophic results.

Table 3.10-1. Aircraft Class Mishaps

Mishap Class	Total Property Damage	Fatality/Injury
A	$2,000,000 or more and/or aircraft destroyed	Fatality or permanent total disability
B	$500,000 or more but less than $2,000,000	Permanent partial disability or three or more persons hospitalized as inpatients
C	$50,000 or more but less than $500,000	Nonfatal injury resulting in loss of one or more days from work beyond day/shift when injury occurred
D	$20,000 or more but less than $50,000	Recordable injury or illness not otherwise classified as A, B, or C

Source: DoD 2011.

Class A mishaps, the most severe, provide an indicator of aircraft safety. Based on historical data on mishaps at all installations and under all conditions of flight, the military services calculate Class A mishap rates per 100,000 flying hours for each type of aircraft in the inventory to provide the basis for evaluating risks among different aircraft and levels of operations. These mishap rates do not consider combat losses due to enemy action. The predominant aircraft operating at Holloman AFB, F-16 (all models) aircraft have flown more than 10,889,000 hours since the aircraft entered the Air Force inventory during 1975. Over that period, 378 Class A mishaps have occurred and 338 aircraft have been destroyed. This results in a Class A mishap rate of 3.35 per 100,000 flight hours, and an aircraft destroyed rate of 3.00 (AFSEC 2019).

Bird/Wildlife-Aircraft Strike Hazard

Bird aircraft strikes constitute a safety concern because they can result in damage to aircraft or injury to aircrews or local populations if an aircraft crashes. Aircraft may encounter birds at altitudes up to FL300 or higher. However, most birds fly close to the ground. Over 98 percent of reported bird-strikes occur below 5,000 feet AGL (AFSEC 2018a). Approximately 49 percent of bird-strikes happen in the airport

environment (climb-out, traffic pattern, approach and landing); and, about 42 percent occur during low altitude flight training (AFSEC 2018b).

Migratory waterfowl (e.g., ducks, geese, and swans) are the most hazardous birds to low-flying aircraft because of their size and their propensity for migrating in large flocks at a variety of elevations and times of day. Waterfowl vary considerably in size, from 1 to 2 pounds for ducks, 5 to 8 pounds for geese, and up to 20 pounds for most swans. There are two normal migratory seasons, fall and spring. Waterfowl are usually only a hazard during migratory seasons. These birds typically migrate at night and generally fly between 1,500 to 3,000 feet AGL during the fall migration; and, from 1,000 to 3,000 feet AGL during the spring migration.

In addition to waterfowl, raptors, shorebirds, gulls, herons, songbirds, and other birds also pose a hazard. In considering severity, the results of bird aircraft strikes in restricted areas show that strikes involving raptors result in the majority of Class A and Class B mishaps related to bird aircraft strikes. Areas of significant bird of prey activity within training airspace used by Holloman AFB aircrews include the Guadalupe Mountains, Black Range, and the western escarpment of the Sacramento Mountains. Peak migration periods for raptors, especially eagles, are from October to mid-December and from mid-January to the beginning of March. In general, flights above 1,500 feet AGL would be above most migrating and wintering raptors.

Songbirds are small birds, usually less than one pound. During nocturnal migration periods, they navigate along major rivers, typically between 500 to 3,000 feet AGL. The potential for bird aircraft strikes is greatest in areas used as migration corridors (flyways) or where birds congregate for foraging or resting (e.g., open water bodies, rivers, and wetlands).

While any bird aircraft strike has the potential to be serious, many result in little or no damage to the aircraft, and only a minute portion result in a Class A mishap. During the years 1985 to 2014, the Air Force BASH Team documented 108,670 bird-strikes worldwide (AFSEC 2018c). Of these, 16 resulted in Class A mishaps where the aircraft was destroyed (AFSEC 2018d). Bird aircraft strike data from 2004 to 2016 indicate that Holloman-based aircraft experienced a total of 58 bird-strikes, or an average of less than 5 per year (Holloman AFB 2016).

3.10.2.3 Chaff and Flares

Chaff

The primary airspace safety issue related to chaff deployment is the potential to interfere with air traffic control radar. During a 10-year period (1983 to 1993) evaluated for a 1997 analysis, the entire Air Force experienced only 53 high accident potential events associated with chaff system malfunctions during flight operations involving a variety of aircraft (Air Force 1997). Twenty-nine of the 53 events (approximately 55 percent) occurred in 1985 to 1986. During this timeframe, the Air Force experienced a mechanical problem with a particular type of dispensing system resulting in a high incidence of inadvertent releases. The system was repaired in 1987 and high accident potential incidents for chaff systems during flight operations occurred at a rate of less than three per year (Air Force 1997). During this same 10-year period, there were no chaff system-related Class A, B, or C mishaps, and only five Class D mishaps and 42 high accident potential occurrences during non-aircraft related, ground operations (Air Force 1997). In the *Environmental Effects of Self –Protection Chaff and Flares Final Report*, the Air Force determined that

potential radar conflicts could be avoided if prior to chaff use, a frequency clearance was obtained from the Air Force Frequency Management Center and Headquarters FAA (Air Force 1997).

The RR188 chaff used for training is currently authorized for use by Holloman AFB aircraft in numerous airspace units. Chaff may be deployed in applicable airspace but not within 60 nm of radar facilities for El Paso Approach or Albuquerque Center (Holloman AFB Instruction 11-250).

Flares

The effective use of flares in combat requires training and frequent use by aircrews to master the timing of deployment, the capabilities of the devices, and to ensure safe and efficient handling by ground crews. Under this proposal, aircrews would use M206 defensive flares, the same type the F-16s currently use.

When threatened by "enemy" radar, pilots must take evasive action to avoid detection and/or attack by adversary air defense systems, including the discharging of pyrotechnic flares. Flares consist of highly flammable material that burns rapidly at extremely high temperatures. Their purpose is to provide a heat source other than the aircraft's engine exhaust as a target for a threatening heat seeking missile. The current and proposed use of flares would be performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Occupational Safety and Health requirements. The handling, processing, and storage of products for these activities are accomplished in accordance with all Federal and state requirements applicable to the substance generated.

Flare deployment in authorized airspace is governed by a series of regulations that are based on safety and environmental considerations and limitations. Among these regulations are the following:

- AFI 13-201 establishes practices to decrease disturbances from flight operations and protect the public from the hazards and effects associated with flight operations.
- AFI 13-212 outlines procedures governing weapons range use of flares.
- AFI 11-214 delineates procedures for flare employment.

Fire risk associated with flares stems from an unlikely, but possible, scenario of a flare reaching the ground or vegetation while still burning. If a flare struck the ground while still burning, it could ignite surface material and cause a fire. The approved altitude from which flares are dropped is regulated by the airspace manager and is based on a number of factors including flare burnout rate. Defensive flares typically burn out in 3.5 to 5 seconds, during which time the flare will fall between 200 and 400 feet (**Table 3.10-2).** The best way to reduce the risk of fires caused by flares is to establish and enforce minimum altitudes for flare release. Under this proposal, the minimum altitude for flare release would be 2,000 feet AGL which would result in flare burnout by 1,600 feet AGL.

Table 3.10-2. Flare Burnout Rate and Distance[1]	
Time (in seconds)	**Distance (in feet)**
0.5	4.025
1.0	16.100
1.5	36.225
2.0	64.400
2.5	100.625
3.0	144.900
3.5	197.225
4.0	257.600
4.5	326.025
5.0[2]	402.500
5.5	487.025
6.0	579.600
6.5	680.225
7.0	788.900
7.5	905.625
8.0	1030.400
8.5	1163.225
9.0	1304.100
9.5	1453.025
10.0	1610.000

Source: Air Force 2011.
Notes: [1] Assumes zero aerodynamic drag and a constant acceleration rate of 32.2 feet per second.
[2] Defensive flares burn out within 3.5 to 5.0 seconds which would be within 400 feet of the flare release.

Holloman AFB restricts flare use during "Very High" or "Extreme" fire danger and this restriction would apply to the F-16 mission in proposed new airspace units. In addition to restricting flare use during times of elevated fire danger, flares may not be dropped below an altitude of 2,000 feet AGL within the existing or proposed airspace. This ensures that the flare has had ample time to exhaust itself and further prevents the chances of fires from flare use. There have been no reported flare caused fires beneath the MOAs or ATCAAs as a result of Holloman AFB pilot training.

3.11 CULTURAL RESOURCES

3.11.1 Resource Definition

Cultural resources include, but are not limited to, buildings, structures, objects, prehistoric and historical archaeological resources, or any other physical evidence of human activity considered important to a culture for scientific value, traditional use, or other reasons. Cultural resources determined to be on or eligible for the National Register of Historic Places (NRHP) are considered under Section 106 of the NHPA.

Significant cultural resources are those generally over 50 years of age that are listed in, or determined eligible for listing in, NRHP based on having met one or more of the following criteria for significance defined in 36 CFR 60.4:

- Association with events that have made a significant contribution to the broad patterns of history or prehistory;
- Association with the lives of persons significant in our past;

- Represent unique or distinctive architectural characteristics of a type, period, method of construction, or possess high artistic values or the work of a master; or
- Have yielded, or may be likely to yield, information important in history or prehistory.

In addition to historic significance, a cultural resource must also retain integrity, which is the ability to convey historic significance. The NRHP criteria recognizes seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. A resource must retain several, if not all of these aspects, to be considered eligible for listing in the NRHP. For archaeological resources, eligibility is generally determined under Criterion D for the ability to provide important information in prehistory and/or history. The assessment of integrity for archaeological properties depends on the data requirements of an applicable research design. This includes the identification of appropriate physical remains in an intact depositional (horizontal or vertical) context.

Section 106 of the NHPA requires all Federal agencies to take into account the effects of their undertakings on historic properties and seek to avoid, minimize, or mitigate adverse effects to these properties (36 CFR 800.1(a)). Section 106 also requires agencies to consult with federally-recognized Indian tribes that attach religious and cultural significance to historic properties that may be affected by an undertaking. In addition, agencies must involve stakeholders including representatives of local governments, individuals and organizations with a demonstrated interest in the undertaking, and the public. Holloman AFB consults with federally-recognized tribes on a recurring basis, to include non-scheduled consultations when required.

3.11.2 Affected Environment

The affected environment for cultural resources is the area within which the Proposed Action has the potential to affect known cultural resources. For the Proposed Action, the affected environment is defined as the proposed boundaries of the airspace that would be used by F-16 aircraft.

Information on cultural resources within the affected environment was derived from conducting background research to identify National Register and the State Register of Historic Places properties beneath the affected airspace; national historic landmarks; national battlefields; national historic trails; any cultural landscapes, historic forts, or historic ranches recorded or known within the same area; and American Indian Reservations, sacred areas, or traditional use areas. Aircraft operations are most likely to affect historic buildings, structures, and districts where setting is an important aspect of a property's significance and where overpressures from sonic booms pose potential effects to those types of resources. In general, archaeological sites would not incur any effects as a result of the Proposed Action. However, archaeological sites listed in the NRHP were included in the analysis, as some are standing structures and rock art sites. Other sites of historic significance and interest, namely ghost towns, are located within the affected environment; however, these areas are not included on the NRHP and will not be further addressed (Ghost Towns 2018). Potential impacts to these areas would be the same as potential impacts to architectural sites from sonic boom overpressures.

The Air Force has consulted with the Arizona and New Mexico SHPOs and the Bureau of Indian Affairs. Government-to-government consultation also occurred with the Tribes and Pueblos that are located beneath or near the affected airspace or may have traditional ties to these lands to include: The Navajo Nation, San Carlos Apache Tribe, Zuni Tribe, Mescalero Apache Tribe, Apache Tribe of Oklahoma, The Hopi Tribe, White Mountain Apache Tribe, Ysleta del Sur Pueblo, Fort Sill Apache Tribe of Oklahoma, Kiowa Tribe of Oklahoma, Comanche Nation of Oklahoma, Pueblo of Acoma, Pueblo of Cochiti, Pueblo of Isleta, Pueblo of Jemez, Pueblo of Laguna, Pueblo of Nambe, Ohkay Owingeh, Pueblo of Picuris, Pueblo of

Pojoaque, Pueblo of San Felipe, Pueblo of San Ildefonso, Pueblo of Sandia, Pueblo of Santa Ana, Pueblo of Santa Clara, Pueblo of Santo Domingo, Pueblo of Taos, Pueblo of Tesuque, Pueblo of Zia, and Pueblo of Zuni. See **Appendix J** for all Section 106 and Government-to-government Correspondence.

3.11.2.1 Talon MOA

Archaeological and Architectural Resources

There are ten archaeological sites and 17 architectural sites listed in the NRHP beneath the existing and proposed Talon MOA (**Table 3.11-2**). No historic trails, national monuments, or historic battlefields are located under the existing and proposed Talon MOA (NPS 2018a, 2018b, 2018c). The archaeological sites primarily consist of ruins, artifact scatters, and historic ranches. The architectural sites consist of one trail marker, one historic district, one bank, and multiple houses.

Table 3.11-2. NRHP-listed Archaeological and Architectural Sites beneath Existing and Proposed Talon MOA

Resource Identification	County	City/Town
Archaeological		
AR-03-08-03-128	Eddy	Queen
AR-03-08-03-195	Eddy	Queen
AR-03-08-03-232	Eddy	Queen
LA 157206- White Oaks Pictograph Site	Eddy	Queen
LA 162411- Lost Again Shelter	Eddy	Queen
LA 64908- Ambush Two Hands Shelter	Eddy	Queen
LA 71921- Horse Well Shelter	Eddy	Queen
LA158783- Ambush Site	Eddy	Queen
Last Chance Canyon Apache/Calvary Battle Site	Eddy	Queen
Painted Grotto*	Eddy	Carlsbad
Architectural		
Armandine*	Eddy	Carlsbad
Baskin Building*	Eddy	Artesia
Carlsbad Irrigation District/National Historic Landmark*	Eddy	Carlsbad
Dr. Robert M. Ross, House*	Eddy	Artesia
Edward R. Gesler, House*	Eddy	Artesia
F.L. Lukins, House*	Eddy	Artesia
First National Bank of Eddy*	Eddy	Carlsbad
Hodges-Runyan-Brainard House*	Eddy	Artesia
Hodges-Sipple House*	Eddy	Artesia
John Acord, House*	Eddy	Artesia
Mauldin-Hall House*	Eddy	Artesia
Moore-Ward Cobblestone House*	Eddy	Artesia
Ozark Trails Marker at Lake Arthur	Chaves	Lake Arthur
Rober Weems & Mary E. Tansill House*	Eddy	Carlsbad
Sallie Chisum Robert, House*	Eddy	Artesia
William Baskin, House*	Eddy	Artesia
Willie D. Atkeson, House*	Eddy	Artesia

Note: * Resource located beneath existing MOA.
Legend: MOA-Military Operations Area; NRHP-National Register of Historic Places.

Traditional Cultural Properties

Government-to-government consultation with federally-recognized Tribes and Pueblos did not identify any traditional cultural properties associated with the lands under the proposed Talon MOA (consultation correspondence is located in **Appendix J)**.

3.11.2.2 Cato, Smitty, and Lobos MOAs

Archaeological and Architectural Resources

There are nine archaeological sites and 35 architectural sites listed in the NRHP beneath the proposed Cato, Smitty, and Lobos MOAs. The archaeological sites primarily consist of pueblo ruins, artifact scatters, village sites, and a National Monument. The architectural sites primarily consist of historic districts, ranches, a fire lookout cabin, one fire lookout tower, and many buildings located on the Western New Mexico University campus in Silver City. All of these resources are within Catron, Grant, and Socorro Counties. No historic trails, national monuments, or historic battlefields are located under the Cato and Smitty MOAs (NPS 2018b, 2018c). No national historic trails or national battlefields are located under the proposed Lobos MOA (NPS 2018a, 2018c).

One National Monument, the Gila Cliff Dwellings National Monument, is under the proposed Lobos MOA near Silver City, New Mexico (NPS 2018b). It consists of 553 acres of remains of the Mogollon Culture, including multi-room cliff dwellings (NPS 2018d). See **Section 3.7,** *Recreation Resources*, for additional information about the Gila Cliff Dwellings National Monument.

One National Historic Landmark, the Fort Bayard Historic District, is located under the proposed Lobos MOA near the town of Santa Clara in Grant County, New Mexico (NPS 2002). The Fort was in use as a medical center until very recently, when modern replacement facilities were built across the street.

Table 3.11-3. NRHP-listed Archaeological and Architectural Sites beneath Cato, Smitty, and Lobos MOAs

Resource Identification	County	City/Town
Archaeological		
Ake Site (VLA-1)*	Catron	Datil
Bat Cave*	Catron	Horse Springs
Bat Cave; boundary increase (SR 93); LA 4935; (LA 44182/North Shelter, LA 56988, NM-02-194. NM-02-439)*	Catron	Horse Springs
Gila Cliff Dwellings National Monument	Catron	Silver City
Burro Springs Site	Grant	Tyrone
Woodrow Ruin	Grant	Cliff
Janss Site	Grant	San Lorenzo
Mattocks Site	Grant	Mimbres
Wheaton-Smith Site	Grant	San Juan
Architectural		
Clemens Ranchhouse	Socorro	Magdalena
MacTavish House*	Socorro	Magdalena
Aragon House*	Socorro	Magdalena
Salome Store*	Socorro	Magdalena
MacDonald Merchandise Building*	Socorro	Magdalena
Salome Warehouse*	Socorro	Magdalena
Hall Hotel*	Socorro	Magdalena
Gutierrez House*	Socorro	Magdalena
Magdaline House*	Socorro	Magdalena

Table 3.11-3. NRHP-listed Archaeological and Architectural Sites beneath Cato, Smitty, and Lobos MOAs (cont.)

Resource Identification	County	City/Town
Architectural (cont.)		
Bank of Magdalena*	Socorro	Magdalena
Lewellen House*	Socorro	Magdalena
Main Street Commercial Building*	Socorro	Magdalena
Atchison, Topeka and Santa Fe Railway Depot*	Socorro	Magdalena
Ilfeld Warehouse*	Socorro	Magdalena
Mangas Mountain Lookout Complex*	Catron	Mangas
El Caso Lookout Complex*	Catron	El Caso Lake
Fort Bayard Historic District/National Historic Landmark	Grant	near Santa Clara
Pinos Altos Historic District	Grant	Pinos Altos
Pinos Altos Historic District	Grant	Pinos Altos
L.C. Ranch Headquarters	Grant	Gila
Hilton House*	Socorro	Magdalena
Black Mountain Lookout Cabin	Catron	Black Mountain
Reeds Peak Lookout Tower	Grant	Reeds Peak
St. Mary's Academy Historic District	Grant	Silver City
Silver City Water Works Building	Grant	Silver City
Silver City Historic District North Addition	Grant	Silver City
Silver City Historic District	Grant	Silver City
Chihuahua Hill Historic District	Grant	Silver City
H.B. Ailman House	Grant	Silver City
Bullard Hotel	Grant	Silver City
Light Hall, Western New Mexico University	Grant	Silver City
Fleming Hall, Western New Mexico University	Grant	Silver City
Ritch Hall, Western New Mexico University	Grant	Silver City
Bowden Hall, Western New Mexico University	Grant	Silver City
Heating Plant, Western New Mexico University	Grant	Silver City
Graham Gymnasium	Grant	Silver City

Note: * Resource located beneath existing MOA.
Legend: MOA-Military Operations Area; NRHP-National Register of Historic Places.

Traditional Cultural Properties

Government-to-government consultation with federally-recognized Tribes and Pueblos did not identify any traditional cultural properties associated with the lands under the proposed Cato, Smitty, or Lobos MOAs (consultation correspondence is located in **Appendix J**).

3.12 HAZARDOUS MATERIALS

3.12.1 Resource Definition

Hazardous materials are identified and regulated under the Comprehensive Environmental Response, Compensation and Liability Act; the Occupational Safety and Health Act; and the Emergency Planning and Community Right-to-Know-Act. Hazardous materials analysis typically consider the use and disposal of hazardous materials at a particular facility and discusses the total amount of material on the installation, environmental cleanup sites, and SOPs in processing hazardous materials. For this proposal, however, the analysis will consider the potential introduction of hazardous materials within existing or proposed SUA. The introduction of hazardous materials into the environment could occur by an aircraft mishap or crash.

While aircraft mishaps are rare (refer to **Section 3.10,** Safety, for mishaps statistics), this section focuses on the hazardous materials that could be released and the emergency response procedures that would be followed in the unlikely event of an aircraft mishap or crash.

Chaff and flare and their associated residual materials are not considered hazardous materials or waste (Air Force 1997; USEPA 1997); however, a discussion of the components and toxicity of chaff and flare is provided in this section.

3.12.2 Affected Environment

The affected environment for hazardous materials includes the existing and proposed MOAs and ATCAAs. These airspace units would be used by Holloman AFB aircrews during F-16 pilot training. Operational aircraft consist of various components and fluids that may be hazardous if inadvertently released to the environment.

3.12.2.1 Aircraft Hazardous Materials Management

A Hazardous Aerospace Material Mishap Emergency Response Integrated Process Team was chartered in 2000 by the Deputy Assistant Secretary of the Air Force for Environmental, Safety, and Occupational Health. The goals of the Hazardous Aerospace Material Mishap Emergency Response project were to identify and inventory all hazardous aerospace materials on Air Force weapon systems and ensure procedures were in place to protect personnel from safety/health hazards associated with aerospace vehicle mishaps. The Air Force has developed specific emergency response procedures for aircraft mishaps involving hazardous materials contained in Technical Order 00-105E-9, *Aerospace Emergency Rescue and Mishap Response Information* (Air Force 2006). The Technical Order identifies the hazards associated with the parts and equipment on an aircraft including the potential changes to health and safety characteristics after a fire resulting from an aircraft mishap.

Emergency procedures include how to respond to known solid, liquid, and gaseous products; radioactive materials; composite materials; radar absorbing and conventional coatings materials; and other materials and situations that can pose health and safety hazards. Hazardous materials associated with most aircraft include jet fuels, ethylene glycol, and hydraulic fluid. In addition to these common materials, the emergency power unit for the single engine F-16 fighter jet uses hydrazine, a highly volatile propellant, to restart the engine in case of emergency. Hydrazine is also used in agricultural chemicals, chemical blowing agents, pharmaceuticals, photography chemicals, boiler water treatment, and textile dyes. Acute (short-term) exposure to high levels of hydrazine may include irritation of the eyes, nose, and throat, dizziness, headache, nausea, pulmonary edema, seizures, and coma in humans (USEPA 2000). Hydrazine rapidly degrades in the environment (USEPA 2000).

Radioactive materials are used in small quantities for navigation systems, instruments, and some coatings. Composite materials are used in most aircraft in some form. Newer aircraft such as the F-22 and F-35 use extensive amounts of composite materials for the fuselage and the equipment. Older aircraft still have aluminum frames and skins but some equipment is made from composite materials to save weight. Once composite materials are put into use, they have fully hardened and are inert; however, the materials turn into hazardous materials when burned at high temperatures typical of an aircraft crash. The emergency procedures take into consideration the burning effects performed during tests on composite materials. The test program included full-scale fire testing of composite materials for toxicology and expected exposure to response personnel.

Some general conclusions included (Wright et al. 2003):

- Burn data suggest that the combustion characteristics of composite materials are roughly equivalent to other combustible materials. Combustion products released by burning composite materials are similar to those released from other solid combustibles.
- Burning of composite materials can release fibers that are respirable.
- Respirable fibers released from burning composite materials can penetrate into the lungs, causing respiratory irritation. Factors known to affect the toxicity of these inhaled fibers include dosage, physical dimensions, retention time in the lung, location of deposition in the lung, and solubility of the fibers in the lung.
- Exposed fibers along the edges of fragmented composite debris present a dermal puncture hazard. The skin can be irritated and sensitized if punctured by exposed fibers.
- The toxicity of combustion products from burning aircraft composite materials currently used does not appear to be exceptional. Types and quantities of combustion products from burning composite materials fall within the same spectrum as other burning combustibles at an aircraft mishap site.
- No additional smoke toxicity hazards created by burning composite materials were identified.
- Personal protective equipment recommendations for firefighters responding to composite aircraft mishaps include a self-contained breathing apparatus, standard firefighter protective clothing and/or proximity suits, and steel-tipped/shanked boots.

Conventional coating materials include a variety of materials that are applied to aircraft similar to paint designed to protect critical parts from extreme weather and temperature. Radar absorbing materials are also applied similar to paint to help aircraft from being detected by enemy radar.

The Air Force follows a set of SOPs during aircraft mishaps to identify potential hazardous materials and situations, protect responding personnel and the environment from immediate hazards, and to provide guidelines for the ultimate cleanup and disposal of crash residues.

3.12.2.2 Chaff and Flares

Chaff

Chaff strands are primarily silica (60 percent) and aluminum (40 percent) with a Neofat coating (stearic acid). Trace amounts of iron, copper, magnesium, and zinc have also been detected in the controlled combustion of chaff (Air Force 1997). Silica (silicon dioxide) belongs to the most common mineral group, silicate minerals. Silica is inert in the environment and does not present an environmental concern with respect to soil chemistry. Aluminum is the third most abundant element in earth's crust, forming some of the most common minerals, such as feldspars, micas, and clays. Natural background soil concentrations of aluminum ranging from 10,000 to 300,000 parts per million have been documented. The solubility of aluminum is greater in acidic and highly alkaline soils than in neutral pH conditions. The chaff fibers' anti-clumping agent, Neofat (90 percent stearic acid and 10 percent palmitic acid), assists with rapid dispersal of the fibers during deployment (Air Force 1997). Stearic acid is a saturated fatty acid derived from animal and vegetable fats and oils and degrades when exposed to light and air (Air Force 2011).

Flares

Chemical flares comprise magnesium pellets ejected from tubes that either ignite within the tube (for parasitic flares such as the proposed M206 flare) or in the wake behind the aircraft. Flares are designed to

burn out in three to five seconds, fully consuming the magnesium pellet. The primary components of flare combustion are magnesium oxide, magnesium chloride, and magnesium fluoride. Magnesium oxide produces moderate toxic effects if directly ingested in large doses. The lethal oral dose in humans is estimated to be between one once and one pound. Additionally, occupational exposure studies have shown that magnesium oxide dust may cause metal fume fever (Air Force 1997). Magnesium chloride, another component of flare combustion, is a naturally occurring salt and normally functioning kidneys can readily excrete magnesium ions after oral ingestion. The Occupational Safety and Health Administration standard for worker exposure for an hour time weighted average is 2.5 milligrams per cubic meter of air (Air Force 1997).

Another component of flares is oxygen difluorine. This compound is used in general as an oxidant in missile propellant systems. It is usually in a gaseous phase and is incompatible with numerous materials including metal oxides and moist air. Potential routes of exposure to humans and wildlife include inhalation and dermal contact. Toxic health effects as a result of direct exposure to large quantities of oxygen difluorine may include pulmonary edema, respiratory system irritation, and skin and eye burns (Air Force 1997). However, due to the altitude of flare usage these gases would be diluted and would not come into contact with residents or wildlife below the proposed airspace.

In the rare case of a dud flare reaching the ground, the components that have any potential to affect soil and water chemistry are minute quantities of chromium, magnesium, aluminum, boron, and barium (Air Force 2011). Only magnesium and boron showed levels in sufficient concentrations for further evaluation in field and laboratory tests on flares (Air Force 1997). Magnesium is an essential nutrient often found in nuts, seafood, and cereals and is a principal component of chlorophyll. Further laboratory and field tests found that only in extremely large quantities can magnesium affect water properties. Boron is both an essential and toxic element for plants. While large quantities of boron can be toxic under certain conditions, the quantities from flare combustion are too small to have a toxic effect (Air Force 1997).

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter presents an assessment of the potential environmental consequences of the Proposed Action and alternatives, including the No Action Alternative, involving the relevant resources and significant issues identified in comments from the public and Federal and state agencies during scoping. Each of the environmental resources described in Chapter 3 is affected to a different degree and has a different method of analysis. In compliance with NEPA and CEQ guidelines, the discussion of the affected environment (i.e., existing conditions) focuses only on those resource areas potentially subject to impacts. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact.

"Significantly," as used in NEPA, requires considerations of both context and intensity. Context means that the significance of an action must be analyzed in several contexts such as society as a whole (e.g., human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of a Proposed Action. For instance, in the case of a site-specific action, significance would usually depend on the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant. Intensity refers to the severity or extent of the potential environmental impact, which can be thought of in terms of the potential amount of the likely change. In general, the more sensitive the context, the less intense a potential impact needs to be in order to be considered significant. Likewise, the less sensitive the context, a more intense potential impact would be expected to be significant.

This section describes the potential impacts to the following resources: airspace management and operations; acoustic environment; air quality; natural resources; land management; recreation resources; socioeconomics; environmental justice; safety; cultural resources; and hazardous materials.

4.2 AIRSPACE MANAGEMENT AND OPERATIONS

The airspace management and operations analysis presents the potential effects to civilian air traffic and airports when compared to the existing environment presented in **Section 3.2** (Airspace Management and Operations). It takes into consideration the proposed changes in airspace configuration and airspace use, and relates those changes to existing and ten-year forecast civil flight operations within the ROI. The 10-year forecast was determined by using the FAA Terminal Area Forecast, the official FAA forecast of aviation activity for U.S. airports (Air Force 2017). This section is a summary of the detailed data and analyses provided in **Appendix D1** (Airports in region of influence), and **Appendix D2,** which contains a detailed analysis of the impacts to routing of aircraft through the ROI for the various alternatives.

Elements Common to All Action Alternatives

Under all of the proposed Alternatives except for the No Action Alternative, the reconfigured and proposed MOAs would be charted for use from 7:00 a.m. to 10:00 p.m., Monday through Friday, with use at other times by NOTAM. Each alternative involves an increase in military flight operations, the specifics of which are detailed in **Tables 2.8-2, 2.8-6, and 2.8-9**.

General aviation pilots operating under VFR can fly in an activated MOA using see and avoid rules. As stated in **Section 2.2.1,** *Training Airspace*, life flights and medivac flights are always given priority in the airspace.

Use of expendable flares and chaff is proposed under each alternative. Flare use does not impact airspace management or air traffic. As part of the Proposed Action the FAA would approve the use of chaff in accordance with the FAA Order 6050.32B, *Spectrum Management Regulations and Procedures Manual*. The FAA's Frequency Management Office is responsible for coordinating with DoD organizations to ensure that chaff operations do not impact the NAS (FAA 2005). Use of chaff in accordance with these regulations would ensure that there would be no impact to airspace management or operations.

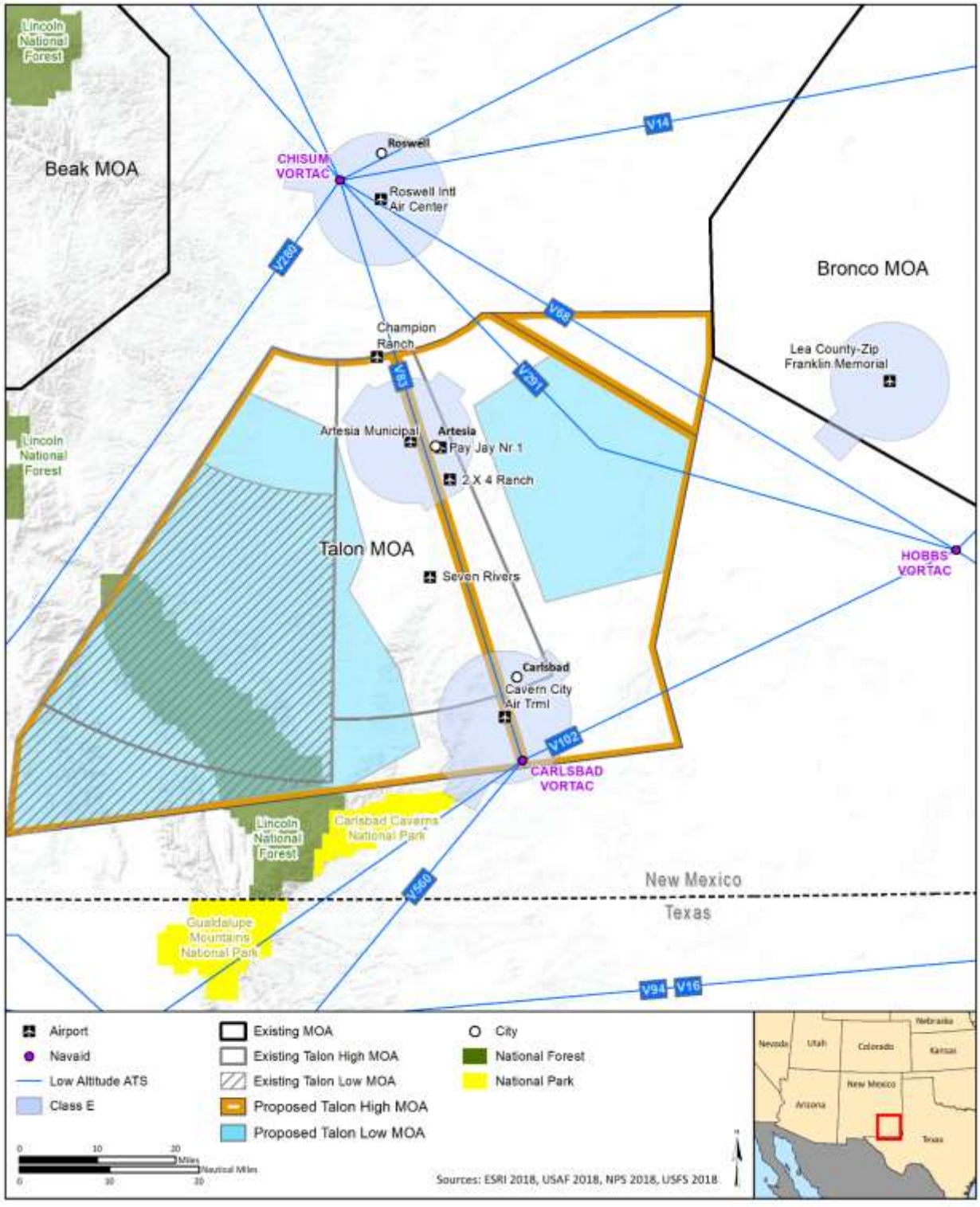
The establishment and rules of use for the new ATCAAs would be documented in a Letter of Agreement between the Albuquerque Center and the Air Force. The process for establishing and modifying this airspace would be in compliance with AFI 13-201, *Air Force Airspace Management* (Air Force 2012), and FAA Order JO 7400.2M, *Procedures for Handling Airspace Matters* (FAA 2019).

Each of the alternatives includes returning all or portions of existing MOAs to the NAS (see **Sections 2.8.1.1, 2.8.2.1, and 2.8.3.1**). These areas have not been used by the Air Force in recent years and are no longer needed for training purposes. Returning these areas back to the NAS would have no or slightly positive impacts to airspace management. There are currently no Air Force operations in the northern portion of the Cato and Smitty MOAs, Bronco 1 MOA, Bronco 2 MOA, or Valentine MOA. The current operations that occur within the lower portion of the existing Talon Low MOA (300 to 500 feet AGL) would be shifted to the new proposed Talon Low A and B MOAs and are accounted for in that analysis. The lower altitude of the existing Talon MOA was primarily used by the German Air Force which has now departed Holloman AFB. Returning the northern portion of the Cato and Smitty MOAs to the NAS would eliminate any potential conflict with users of R-5123, as it would no longer be located within the same airspace. Additionally, it would make additional airspace available for Albuquerque Center to support air traffic flying east and west between major airports. Releasing Bronco 1 and 2 MOAs would also provide a positive benefit to air traffic management in these areas.

There are MTRs in the ROI which are not part of the Proposed Action. MTR usage is included in the noise analysis since aircraft activity on MTRs contributes to the acoustic environment, but management of those aircraft operations in the MTRs would not change or be affected with any of the Action Alternatives. Use of the MTRs would continue as it does currently under all the alternatives.

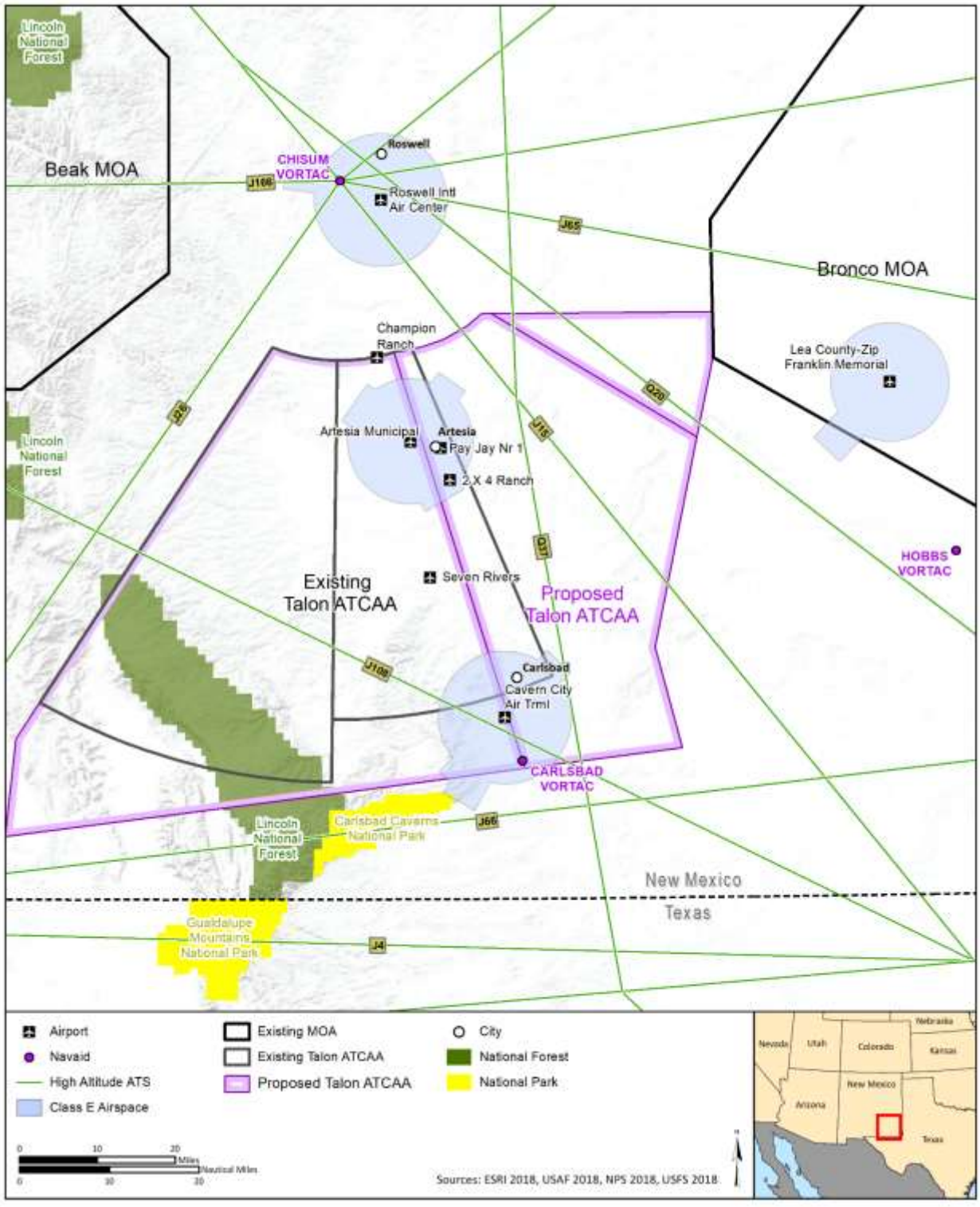
4.2.1 Alternative 1: Talon MOA

As shown in **Figures 4.2-1 and 4.2-2**, there are some ATS routes that go through the existing Talon MOA/ATCAA and would continue to do so. **Table 4.2-1** provides a summary of FY16 and projected civilian operations along these ATS routes in the Talon MOA.



Legend: ATS-Air Traffic Service; MOA-Military Operations Area.

Figure 4.2-1. Airspace Components in Talon MOA ROI below 18,000 feet MSL



Legend: ATS-Air Traffic Service; ATCAA- Air Traffic Control Assigned Airspace; MOA-Military Operations Area.

Figure 4.2-2. Airspace Components in Talon MOA ROI above 18,000 feet MSL

Table 4.2-1. Alternative 1 - Current and Projected Civilian Operations in Proposed Talon MOA/ATCAA		
Airspace	Civilian Operations[1]	
	FY16[2]	10 Year Forecast
Proposed Talon Low A MOA	2,184	2,184
Proposed Talon Low B MOA	2,100	2,091
Proposed Talon High A MOA	2,262	2,223
Proposed Talon High B MOA	2,724	2,709
Proposed Talon High C MOA	1,020	966
Proposed Talon A and B ATCAA	16,803	20,495
Proposed Talon C ATCAA	2,155	2,637

Source: Air Force 2017, 2018.

Notes: [1] Operations can occur across multiple segments of the MOA, so these operations should not be totaled.

[2] FY16 civilian operations reported here are total operations for a full day. It should be noted that Appendix D2 focuses the analysis on the civilian operations that occurred during the proposed times of operation for the MOA: Monday through Friday, 7:00 a.m. to 10:00 p.m.

Legend: ATCAA-Air Traffic Control Assigned Airspace; FY-fiscal year; MOA-Military Operations Area.

4.2.1.1 Impacts to Civil Aviation

Appendix D2: *Impacts to Civil Aviation,* provides a detailed evaluation of the potential impacts to civil aviation from the Proposed Action. A summary of that analysis is provided here.

Talon Low A and B MOAs – Under this alternative, there would be two low MOAs within the new Talon MOA designated as Low A and B (see **Figure 4.2-1)**.

The only ATS route that intersects either of these areas is V-291, which goes through the proposed Talon Low B MOA. As shown in **Table 4.2-1**, about 2,100 annual civil flights intersect this block of airspace currently. Under Alternative 1, the IFR aircraft among them would be re-routed by Albuquerque Center during times when the Talon Low B MOA was active. Under Alternative 1, the Air Force would use the Talon Low B MOA for approximately 2,035 sorties per year (including transients), or about four times per weekday on average (for two aircraft), for up to 40 minutes per sortie. These re-routed flights could cover the shorter distance along the route defined by V-68, or pass to the west side of the Talon Low B. VFR aircraft could go through the MOA during these times, or also deviate around on either side. The existing low altitude air traffic associated with patrolling oil fields in this area would be VFR and would continue to be able to fly through this area. Given the expected frequency of their use (daily) and that these aircraft would be patrolling (i.e., focusing their attention downward and operating at lower altitudes), the F-16 pilots operating above at higher altitudes would remain vigilant and instill "see and avoid" procedures to ensure safe operation of both users.

Traffic on some more common routes (such as Lubbock, Texas to El Paso, Texas) would have the same deviation as they would for the existing Talon Low MOA. **Appendix D2** shows that the time to deviate for common routes would range from 1 to 9 minutes additional transit time, depending on origin and destination. The deviation would only occur during the time when the Talon Low B MOA was active (Monday through Friday, 7:00 a.m to 10:00 p.m.) which would be about 2.6 hours per training day on average. If the Talon Low B MOA was active, and the Talon High B was not, the traffic on V-291 would also have the option to stay on the route at altitudes above 12,500 feet MSL.

Talon High A, B and C MOAs– Under this alternative, the existing Talon High East and West MOAs would be expanded eastward, and renamed Talon High A, B, and C (see **Figure 4.2-1)**. A number of ATS routes intersect the existing Talon High MOAs. The V-83 goes through the existing Talon High East MOA and would lie exactly on the seam between the proposed Talon High A and Talon High B. If either one is being used, the traffic on that route (above 12,500 feet MSL) would be re-routed slightly toward the unused side with negligible impact. Any traffic on the route below 12,500 feet MSL would be unaffected. When Talon High A and B were both in use simultaneously, IFR traffic above 12,500 feet would have to be routed around, either in the vicinity of the Talon High C (in the east), or around the west. **Table 4.2-1** shows about 2,700 annual civil flights that intersect this airspace, which would be used by military aircraft for approximately 6,930 (including transients) sorties under Alternative 1, or about 13 times per weekday (for two aircraft) for about 40 minutes (approximately 8.9 hours per training day). During those times, the IFR civil aircraft would have to be re-routed by Albuquerque Center. VFR aircraft could transit the MOA, or could go around it as well. **Appendix D2** shows that many of the possible conflicting civil flights would either originate from or arrive to local airports, and it is likely that simply remaining below 12,500 feet MSL for the initial or latter portions of the flight would allow the aircraft to stay on their course and remain below the Talon High A/B/C MOAs. Many of the aircraft using the local airports would be lighter aircraft that operate below these altitudes anyway. For aircraft with the capability to climb higher than 12,500 feet MSL, re-routing to the lower altitude may cause a small increase in fuel consumption, but would not cost any significant time.

The V-291 route also intersects the Talon High B (see **Figure 4.2-1**). When Talon High B would be in use, traffic would be re-routed, likely to the east through Talon High C if it was not active. If the Talon High C is active the traffic could remain below 12,500 feet MSL.

The V-68 transits the proposed Talon High C airspace. The Talon High C would be anticipated to be used for approximately 300 sorties per year under Alternative 1, and would be in conjunction with both the Talon High A and B. This would occur less than once per week, for approximately 40 minutes. When the Talon A, B, and C are activated together, IFR civil traffic (including that on the V-83 and V-68) above 12,500 feet MSL would have to be routed either around the west side of the Talon MOA complex, or descend below 12,500 feet MSL. During times that the Talon High C was active, the Air Force would not activate the Bronco 3 MOA, so it would also be possible to route traffic around the east side of the Talon MOAs. **Appendix D2** shows that when the Talon High C MOA would be active, the flights that would be routed around the east side would see flight times increase between one and three minutes.

Traffic on the V-102 would have to be shifted a few miles to the south when the proposed Talon High A or B would be active, as it touches the corner of both proposed areas. This would be a minimal impact.

Talon ATCAAs – Under Alternative 1, the ATCAAs over the MOAs (also labeled A, B, and C) would interfere with civil air traffic already passing through that airspace. **Table 4.2-1** shows that the ATCCA airspace is used about 16,000 times per year, with a growth expected to just over 20,000 in the next ten years. None of this traffic is VFR. It is all IFR traffic, under control of Albuquerque Center. The majority of the traffic is east-west, (some on J-108, and some on vectors) passing from somewhere well west of the ROI (Phoenix, Los Angeles, etc.) to places well east (Dallas/Ft. Worth, Houston, etc.). This traffic (which is bi-directional) already passes south of the WSMR airspace in the vicinity of El Paso, Texas, and runs along the southern edge of the proposed Talon ATCAAs. When the ATCAAs would be active, these flights would have to stay south of the proposed ATCAAs. **Appendix D2** shows that for the most frequently used routes that touch this airspace, the deviation required under the Proposed Action would average less than

one minute. Also in this space are the ATS routes Q-20, Q-37, and J-15, which would have to be routed around the Talon ATCAAs, or have altitude separation provided by Albuquerque Center.

4.2.1.2 Impacts to Airports

As described in **Section 3.2.2.1**, *Talon MOA* and **Appendix D1**: *Airports in the Region of Influence*, there are four public airports in the ROI for the Talon MOA: Artesia Municipal Airport, Lea County-Zip Franklin Memorial Airport, Roswell International Air Center Airport, and Cavern City Air Terminal Airport. There are four private airports within the ROI: Seven Rivers Airport, 2 X 4 Ranch Airport, Champion Ranch Airport, and Pay Jay Nr 1/2. Potential impacts to each of these airports are discussed below.

The Artesia Municipal Airport is currently located beneath the existing Talon High East MOA. Under Alternative 1, this airport would be located beneath the proposed Talon High A MOA. The existing and proposed MOAs have the same floor (12,500 feet MSL); therefore, there would be no change to the overlying SUA or the approach and departure procedures at this airport.

The Lea County-Zip Franklin Memorial Airport is currently located beneath the Bronco 3 MOA. Alternative 1 would not change the dimensions or altitudes of SUA above this airport. The proposed Talon High C MOA would be approximately 20 miles from the airport and approximately 15 miles from the southwest extension of the Class E airspace around this airport. Bronco 3 would be deactivated when the Talon High C MOA was activated and would not affect approach or departure procedures at this airport.

The Roswell International Air Center Airport would continue to be located approximately 20 miles north of the northern boundary of the existing and proposed Talon MOAs. The northern boundary of the existing and proposed Talon MOA was created by an 18 mile arc centered on the CME VORTAC navigational aid. The airport's Class E airspace would also be located outside of the proposed Talon MOA. Alternative 1 would not affect the airport or its approach or departure procedures. Civilian traffic approaching this airport along V-68 may be re-routed approximately 10 miles to the north through Bronco 3 MOA when Talon High C MOA would be active, or could begin a descent below 12,500 feet MSL (to get into Roswell) before reaching the lateral limits of the proposed Talon High C MOA with no time deviation. Aircraft remaining above 12,500 feet MSL would have a deviation of less than two minutes. The relative rarity of the Talon High C MOA being active (approximately 40 minutes per weekday) means that this deviation would be rarely required.

The Cavern City Air Terminal Airport is currently located about three miles south of the existing Talon High East MOA. Under Alternative 1, this airport would lie beneath the border of the proposed Talon High A and B MOAs. The proposed floor of these MOAs would be 12,500 feet MSL, which is more than 9,000 feet above the airport. The proposed Talon Low A and B MOAs are well clear of the Cavern City Airport, and its Class D surface areas. Therefore, there would be no adverse impacts to airport operations due to the Proposed Action.

The four private airports are all located beneath the existing Talon High East MOA. Under Alternative 1, these airports would be located beneath the proposed Talon High A and B MOAs. The proposed ceiling of the Talon High A and B MOAs is the same as the current Talon High East MOA; therefore, the SUA above these airports would not change. Alternative 1 would not affect airport operations at any of these private airports.

As discussed in Section 4.2.1.1, many civilian flights transit the ROI. These flights originate from a number of airports, as indicated in **Appendix D2**. Under Alternative 1, the portion of these flights that are under

IFR would be re-routed while the proposed MOA was active (VFR traffic would be allowed to transit the MOAs at the pilot's discretion). The re-routing, however, would be minimal (see **Appendix D2**) and would not affect airport operations at the origination or destination airports.

4.2.2 Alternative 2: Cato, Smitty, and Lobos MOAs, and Christa and Kendra ATCAAs

Under Alternative 2, the published days of use in the Cato and Smitty MOAs would change from 8:00 a.m. to 10:00 p.m. Monday through Saturday (an average of 14 hours per day, 6 days each week) to 7:00 a.m. to 10:00 p.m. Monday through Friday (an average of 15 hours per day, 5 days per week). This would reduce the overall scheduled times of use from 84 to 75 hours per week and from six to five days per week. Activation at other times by NOTAM would remain in place. **Figures 4.2-3 and 4.2-4** show the airspace management components for Alternative 2 below and above 18,000 feet. **Table 4.2-2** provides a summary of the FY16 and projected civilian operations along the ATS routes in the proposed Smitty, Cato, and Lobos MOAs and the proposed ATCAAs.

Table 4.2-2. Current and Projected Civilian Operations in Area of Proposed Airspace Alternative 2

Airspace	Civilian Operations[1]	
	FY16[2]	10 year Forecast
Proposed Smitty MOA	1,572	1,963
Proposed Cato MOA	1,572	1,545
Proposed Cato ATCAA	43,296	51,565
Proposed Lobos Low MOA	2,706	3,383
Proposed Lobos High MOA	2,760	3,450
Proposed Lobos ATCAA	123,837	145,880
Proposed Christa ATCAA	37,251	45,781
Proposed Kendra ATCAA	47,490	58,365

Source: Air Force 2017, 2018.

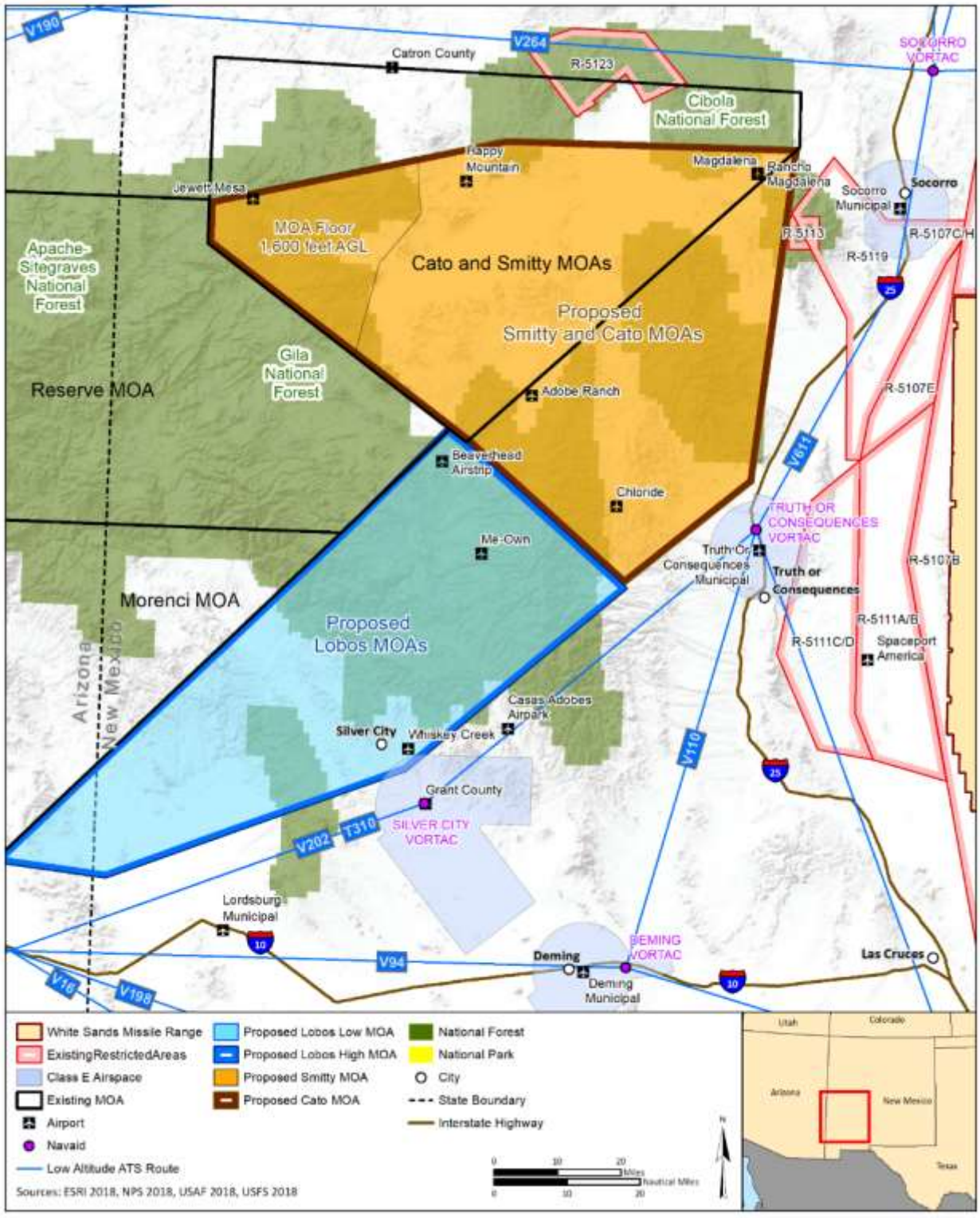
Notes: [1] Operations can occur across multiple segments of the MOA, so these operations should not be totaled.

[2] FY16 civilian operations reported here are total operations for a full day. It should be noted that Appendix D2 focuses the analysis on the civilian operations that occurred during the proposed times of operation for the MOA: Monday through Friday, 7:00 a.m. to 10:00 p.m.

Legend: ATCAA-Air Traffic Control Assigned Airspace; FY-fiscal year; MOA-Military Operations Area.

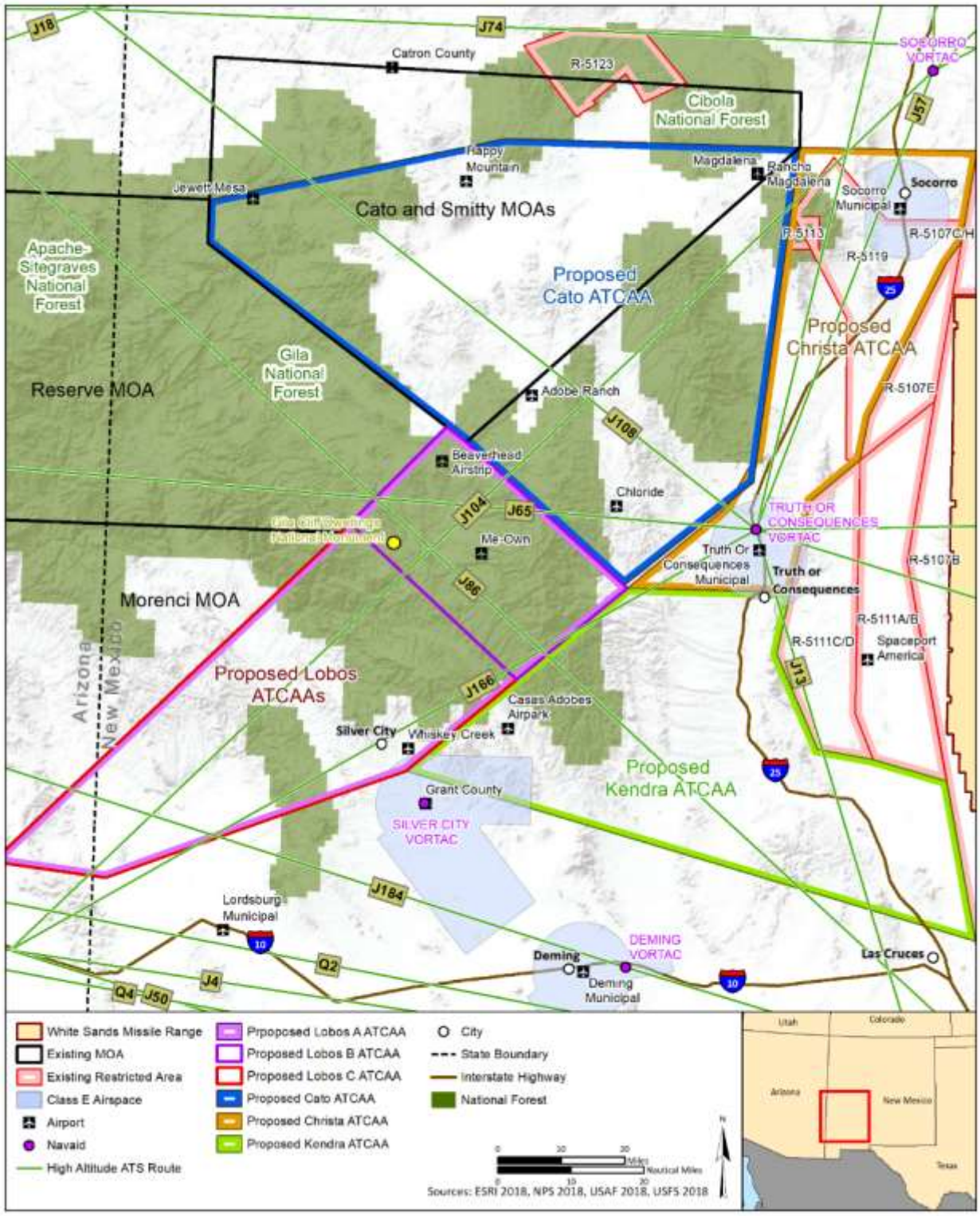
4.2.2.1 Impacts to Civil Aviation

Smitty MOA – Under Alternative 2, the proposed Smitty MOA would be shifted south and east (see **Figure 4.2-3)**. There are no ATS routes through the existing or proposed Smitty MOA. **Table 4.2-2** shows about 1,600 civil operations in 2016 in this area, and that number is projected to grow to nearly 2,000 over the next ten years. Civil traffic operating under IFR would be routed around the Smitty MOA by Albuquerque Center when the MOA is active under this alternative. This MOA would be used by military aircraft approximately 3,190 times per year under Alternative 2 (including transients), or about six times per weekday (with two aircraft at a time) for about 30 minutes per use. As is currently the case, under FAA rules, civil traffic operating under VFR would still be able to transit this area without restriction.



Legend: ATS-Air Traffic Service; MOA-Military Operations Area.

Figure 4.2-3. Airspace Components in Cato, Smitty, and Lobos MOAs ROI below 18,000 feet MSL



Legend: ATS-Air Traffic Service; ATCAA- Air Traffic Control Assigned Airspace; MOA-Military Operations Area.

Figure 4.2-4. Airspace Components in Cato, Smitty, and Lobos MOAs ROI above 18,000 feet MSL

As explained in **Appendix D2**, some of this traffic would not be affected, as it would already route itself around this area due to aircraft performance considerations with the high terrain in the area.

Cato MOA – Under Alternative 2, the proposed Cato MOA would also shift to the south and east (see **Figure 4.2-3)**. There are no ATS routes through the existing or proposed Cato MOA. **Table 4.2-2** shows civil use for the area of the proposed Cato MOA, about 1,600 civil operations in 2016, with little change forecast for the next ten years. Under Alternative 2, the Cato MOA would be used approximately 4,400 times by military aircraft (including transients). Assuming use by two aircraft at a time, that would result in use during about 8-9 periods of 30 minutes per weekday. During this use, IFR civil traffic would have to be routed around the Cato MOA by Albuquerque Center.

Lobos Low MOA – Under Alternative 2, the proposed Lobos Low MOA would be established. This airspace block was designed so that no ATS routes would go through this airspace. **Table 4.2-2** shows that this airspace was used for about 2,700 civil operations in 2016. Additionally, that airspace use would be expected to grow to about 3,400 in the next ten years. When the proposed Lobos Low MOA would be active, the civil aircraft operating under IFR below 13,500 feet MSL would be routed around the airspace by Albuquerque Center. It is highly likely that IFR traffic at those altitudes would already be routed around most of this proposed MOA due to terrain restrictions, as detailed in **Appendix D2**, making this a very small impact. VFR traffic could still enter an active MOA. Under Alternative 2, the proposed Lobos Low MOA would be used approximately 770 times per year by military aircraft, including transients. With two aircraft at a time, that would mean that the MOA would be activated less than two times per weekday on average, for 30 minutes per period. Use of smaller, private airstrips beneath this MOA to access the Gila National Forest for recreational purposes (see **Section 3.7.2.2**, *Recreation Resources: Cato, Smitty, and Lobos MOAs and Christa and Kendra ATCAAs*) are not expected to be significantly impacted given the limited predicted use by military aircraft. The New Mexico Airport Association estimates these small airstrips have about 300 operations per year throughout the forest. These operations are likely VFR and could access the MOA.

Lobos High MOA - Under Alternative 2, the proposed Lobos High MOA would be established. This airspace block was designed so that no ATS routes would go through this airspace. **Table 4.2-2** shows that this airspace was used for about 2,800 civil operations in 2016. Additionally, that airspace use would be expected to grow to about 3,500 in the next ten years. When the proposed Lobos High MOA would be active, the civil aircraft operating under IFR above 13,500 feet MSL would be routed around the airspace by Albuquerque Center. VFR traffic could still enter an active MOA. Under Alternative 2, the proposed Lobos High MOA would be used by military aircraft approximately 4,530 times per year. With two aircraft at a time, that would mean that the MOA would be activated about 8-9 times per weekday on average, for 30 minutes per period.

Cato ATCAA – The proposed Cato ATCAA established under Alternative 2 would be intersected by two ATS routes: the J-104 that goes roughly southwest-northeast, and the J-108 that goes roughly northwest to southeast (see **Figure 4.2-4**). Both of these routes would be affected when the Cato ATCAA would be active, requiring aircraft to be routed around the ATCAA by Albuquerque Center. **Table 4.2-2** shows this airspace being used about 43,000 times in 2016, with that number projected to grow to about 53,000 per year in the next ten years. This civil traffic is spread out across all hours of the day and some of this traffic is during "red-eye" hours when the ATCAA would not often be activated. The PDARS data also shows a great deal of traffic not on either of these routes (J-104 or J-108) mainly going east-west. An investigation of the origin and destination airports shows that many of these crossings are on long distance routes

connecting airports well west (e.g. Los Angeles or San Diego) with airports well East (e.g. Dallas-Ft. Worth or Atlanta). This east-west traffic would have to be routed around the activated ATCAA; but, the impact would be minimal since the avoidance requirement would be communicated a great distance away from this area. Under Alternative 2, the proposed Cato ATCAA would be used by military aircraft approximately 4,400 times, including transients. Assuming use by two aircraft at a time, that would result in use during about 8-9 periods of 30 minutes per weekday. During this use IFR civil traffic would have to be routed around the Cato ATCAA by Albuquerque Center. **Appendix D2** shows that the deviations required of civil airliners on their typical routes to avoid all of the ATCAAs under this alternative are minimal, adding an average of less than one minute to the trip.

Lobos ATCAA – Under Alternative 2, the proposed Lobos ATCAA would be created. The proposed Lobos ATCAA would be intersected by five ATS routes: J-104, J-166, J-65, J-184, and J-86 (see **Figure 4.2-4**). **Table 4.2-2** shows the civil use for the area of the proposed Lobos ATCAA, about 124,000 civil operations in 2016 with forecast growth to about 144,000 operations for the next ten years. The PDARS data shows that the majority of the civil operations going through this area are either on the J-86 or in the vicinity of the J-184. All of the J-184 traffic could easily be re-routed slightly south to remain clear of the proposed Lobos ATCAA when it would be active. The Air Force and FAA have coordinated an airspace proposal to have the northern part of the proposed Lobos ATCAA split in altitude, with a proposed ATCAA ceiling at FL260, so that the J-86 traffic could use that space from FL270 and up when they are on that route. This would allow civil traffic to proceed without re-routing while the other segments of the proposed ATCAA would still be in use by the Air Force. The other ATS routes mentioned (J-104, J-166, and J-65) would be re-routed by Albuquerque Center when the proposed Lobos ATCAA would be activated. This ATCAA would be used by military aircraft (including transients) approximately 6,050 times per year under Alternative 2. With two aircraft operating at a time the ATCAA would be active about 12 times per weekday for about 30 minutes. **Appendix D2** shows that the deviations required of civil airliners on their typical routes to avoid all of the ATCAAs under this alternative are minimal, adding an average of less than one minute to the trip.

Christa ATCAA – The proposed Christa ATCAA created under Alternative 2 would be intersected by multiple ATS routes at the southern end of the proposed airspace: J-13 and J-57 which go roughly north-south; and J-65, J-108, and J-166 which go roughly east-west (see **Figure 4.2-4**). **Table 4.2-2** shows the civil use for the area of the proposed Christa ATCAA was about 37,000 operations in 2016, with forecast growth to about 46,000 operations for the next ten years. The PDARS data shows that the majority of that traffic is east-west, and not really on the published routes, but very much the same as the long distance traffic that affects the Cato ATCAA discussed above. The Christa ATCAA is proposed for use at the same rate as the Cato ATCAA, about 8-9 periods of 30 minutes per weekday. During this use IFR civil traffic would have to be routed around the proposed Christa ATCAA by Albuquerque Center. The majority of the east-west traffic would be adjusted slightly north or south to avoid the active airspace. **Appendix D2** shows that the deviations required of civil airliners on their typical routes to avoid all of the ATCAAs under this alternative are minimal, adding an average of less than one minute to the trip. The smaller amount of north-south traffic would likely get either routed east of the WSMR or west of the active ATCAAs, depending on their origin and destination. **Appendix D2** shows that these deviations average less than one minute for the majority of the flights.

Kendra ATCAA – Under Alternative 2, the Kendra ATCAA would be created. The Kendra ATCAA would be intersected by three ATS routes: J-166, J-86, and J-13 (see **Figure 4.2-4**). **Table 4.2-2** shows the civil

use for the area of the proposed Kendra ATCAA, about 47,000 civil operations in 2016, with forecast growth to about 58,000 operations for the next ten years. The PDARS data shows that the civil operations going through this area are a mix of north-south and east-west traffic, with the overwhelming majority being east-west. The potential impact of establishing the Kendra ATCAA would be similar to that of the proposed Christa ATCAA discussed above. When the ATCAA would be active, the north-south traffic would have to be re-routed by Albuquerque Center either to the east of WSMR, or to the west of the active ATCAAs, depending on the flight's origin and destination. These flights are a small portion of the traffic in the area, as noted in **Appendix D2**. The east-west traffic would be handled similarly to that re-routed for the proposed Cato and Christa ATCAAs, deflecting the flights either slightly north or slightly south of the active ATCAAs. **Appendix D2** shows that these deviations average less than one minute for the majority of the flights. This ATCAA would be used approximately 4,400 times per year under this alternative. With two aircraft operating at a time the ATCAA would be active about 8-9 times per weekday for about 30 minutes.

4.2.2.2 Impacts to Airports

As described in **Section 3.2.2.**, *Cato, Smitty, and Lobos MOAs and Christa and Kendra ATCAAs,* and **Appendix D1**: *Airports in the Region of Influence*, there are 18 airports within the ROI. The potential impacts to each of these airports is discussed below.

The Lordsburg Municipal Airport and the Deming Municipal Airport are not currently located beneath any type of training airspace. Under Alternative 2, these airports would continue to be outside of the proposed training airspace by at least 10 miles. Operations at these airports would not be affected by the Proposed Action.

The Jewett Mesa Airport, Happy Mountain Airport, Magdalena Airport, and the Rancho Magdalena Airport are all currently located beneath the Cato and Smitty MOAs. Under Alternative 2, these airports would continue to be located beneath the Cato and Smitty MOAs. Operations at these airports would not be affected by the Proposed Action.

Spaceport America and Monte Prieto Ranch Airport are located beneath restricted areas associated with WSMR. The Proposed Action does not include any changes to these restricted areas; therefore, operations at these airports would not be affected by the Proposed Action.

The Catron County Heliport is located beneath the northern edge of the existing Cato and Smitty MOAs. Under Alternative 2, this area of the MOAs would be returned to the NAS and this heliport would no longer be under any training airspace.

The Grant County Airport is not currently located beneath training airspace. Under Alternative 2, the airport would be outside of the boundaries of the proposed MOAs and ATCAAs, but the airport's Class E airspace would slightly overlap the southeastern boundary of the Lobos Low MOA. None of the four published instrument approaches, nor the published instrument departure from the Grant County Airport use this small area of overlap (see **Appendix D2** *Section D2.4.2* for additional details). Arrivals and departures on the east side of the airport would be beneath the proposed Kendra ATCAA. The proposed floor of the ATCAA (18,000 feet MSL) would be far enough above the airport that there would be no impact from the ATCAA.

The Socorro Municipal Airport and Truth or Consequences Municipal Airport are currently not located under any training airspace. Under Alternative 2, these airports would be located beneath the proposed Christa ATCAA. These two airports are at elevations of 4,875 and 4,862 feet MSL, respectively, and the

ATCAA (when active) would begin at 18,000 feet MSL. Therefore; there would be no impact to either of these airports when the proposed ATCAA was active.

The Adobe Ranch Airport and Chloride Airport are located outside of the existing Cato and Smitty MOA boundaries, but would be located beneath the proposed Cato and Smitty MOA boundaries. Neither of these airports reported operations to the FAA. Any aircraft potentially using these private airstrips would be operating under VFR and would be able to transit the active MOA by employing see and avoid procedures. Private pilots using these airports would have to check NOTAMS to be aware of the MOA operating schedules. Air Force pilots operating in the proposed Smitty MOA (the low MOA) would also have to remain vigilant of potential VFR aircraft.

The Beaverhead Airstrip, Me-Own Airport, and Whiskey Creek are private airports that are not currently under training airspace, but would be beneath the proposed Lobos Low MOA under Alternative 2. The reported operations at these airports was 50, 30, and 1,100, respectively. Aircraft using these airstrips would be operating under VFR and would be able transit the active MOA by employing see and avoid procedures. Private pilots using these airports would have to check NOTAMS to be aware of the MOA operating schedules. Air Force pilots operating in the proposed Lobos Low MOA would have to remain vigilant of potential VFR aircraft. Approximately 770 annual sorties are proposed in the Lobos Low MOA under Alternative 2; an average of 0.7 hours per day. This limited training activity is not expected to impact airport operations at these airports.

The Casas Adobes Airpark is not currently located under any training airspace. Under Alternative 2, it would be located beneath the proposed Kendra ATCAA. The field elevation at this airport is 5,800 feet MSL, and the proposed ATCAA would begin at 18,000 feet MSL. Therefore, there would be no impact to this airport when the ATCAA was active.

4.2.3 Alternative 3: Talon, Cato, Smitty, and Lobos MOAs

Alternative 3 results in impacts that are less than any described in Alternatives 1 or 2, since the total operations would be spread across the east area (Talon MOAs/ATCAAs) and the west area (Cato and Smitty MOAs, Lobos MOAs/ATCAA, and the Christa/Kendra ATCAAs). This section will cover the differences (reductions) in those impacts associated with Alternative 3.

4.2.3.1 Impacts to Civil Aviation

Talon High A/B/C MOAs - Under Alternative 3, the Air Force would use the Talon High A and B MOAs (and the associated ATCAAs) 30 percent less than in Alternative 1. The impacts to civil aviation would be proportionally less. The Talon High C would not be established under Alternative 3, eliminating the impacts of its establishment detailed under Alternative 1.

Talon Low A/B MOAs - Under Alternative 3, the use of Talon Low A and B MOAs would be reduced by 30 percent, when compared to Alternative 1. The impacts to civil aviation would be reduced proportionally.

Cato MOA - Under Alternative 3, the use of Cato MOA would be reduced by 60 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally.

Smitty MOA - Under Alternative 3, the use of Smitty MOA would be reduced by 62 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally.

Lobos High and Low MOAs - Under Alternative 3, the use of proposed Lobos High MOA would be reduced by 67 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally. The proposed Lobos Low MOA would not exist under Alternative 3, so all impacts due to the establishment of proposed Lobos Low MOA in Alternative 2 would be eliminated.

Christa ATCAA - Under Alternative 3, the use of proposed Christa ATCAA would be reduced by 60 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally.

Kendra ATCAA - Under Alternative 3, the use of proposed Kendra ATCAA would be reduced by 67 percent, when compared to Alternative 2. The impacts to civil aviation would be reduced proportionally.

4.2.3.2 Impacts to Airports

Under Alternative 3, the proposed training would be spread across all the airspace areas described in Alternatives 1 and 2; therefore, there would be a reduced impact to any of the airports, especially those located near the proposed low airspace that would not be created under Alternative 3.

The potential impact to airports beneath the proposed Talon MOA under Alternative 3 would be same as those described in Alternative 1 for the following airports: Artesia Municipal Airport, Lea County-Zip Franklin Memorial Airport, Cavern City Air Terminal Airport, Seven Rivers Airport, 2 X 4 Ranch Airport, Champion Ranch Airport, and Pay Jay Nr 1/2. The Talon High C MOA would not be established under this alternative, therefore, the re-routing of civilian traffic approaching the Roswell International Air Center Airport along V-68 described for Alternative 1 would not occur. There would be no impact to the approach or departure procedures at any of the airports in the ROI for the proposed Talon MOA.

The potential impact to airports beneath the proposed Cato and Smitty MOAs, and the proposed Christa and Kendra ATCAAs would be the same as those described under Alternative 2 for the following airports: Lordsburg Municipal Airport, Deming Municipal Airport, Jewett Mesa Airport, Happy Mountain Airport, Magdalena Airport, Rancho Magdalena Airport, Spaceport America, Monte Prieto Ranch Airport, Catron County Heliport, Socorro Municipal Airport, Truth or Consequences Municipal Airport, Adobe Ranch Airport, and Chloride Airport.

Under Alternative 3, the proposed Lobos Low MOA would not be established. Therefore, the potential impacts to Beaverhead Airstrip, Me-Own, and Whiskey Creek described under Alternative 2 would not occur. These airports are located at elevations of 7,378 feet MSL, 7,554 feet MSL, and 6,126 feet MSL, respectively, and would be located beneath the proposed Lobos High MOA under Alternative 3. The proposed Lobos High MOA would begin at 13,500 feet MSL so there would be no impact to these airfields from the proposed Lobos High MOA. Without the proposed Lobos Low MOA, the Class E airspace surrounding Grant County Airport would only be overlaid partially with the proposed Lobos High MOA at 13,500 feet MSL and the proposed Kendra ATCAA at FL180, so there would be no impact.

4.2.4 No Action Alternative

Under the No Action Alternative, no new airspace would be created and no airspace would be returned to the NAS. The published hours and days of operations for the existing airspace would not change from baseline conditions. Civilian aircraft operations would continue to dominate the existing area proposed for new SUA and ATCAAs. Management of the airspace and air traffic by Albuquerque Center would be expected to continue as it is currently. The current SUA available to Holloman AFB pilots does not provide the optimal volume or attributes necessary to complete their training syllabus in an appropriate and efficient

manner. Continued use of the suboptimal airspace would continue to result in training delays and inefficiency. This situation ultimately results in fewer pilots ready for the combat mission.

4.3 ACOUSTIC ENVIRONMENT

This analysis quantifies the anticipated noise from aircraft activity within the existing and proposed airspace. The analysis accounts for both subsonic noise and sonic booms from supersonic flight. Refer to **Section 3.3.1.1** (Noise Metrics) for a description of the noise metrics used in this section. The projected DNL and CDNL levels from aircraft operations at POIs are also presented in this analysis and compared to the baseline conditions. The POIs include towns and recreational areas.

DNL and CDNL weight operations occurring during the nighttime period (after 10:00 p.m.) by adding 10 dB to their single event sound level to account for humans being typically more annoyed by noise later at night when most people are resting. The proposed nighttime operations are expected to occur "after dark" and not normally after 10:00 p.m., but the noise analysis presented in **Appendix F** and summarized in this section models all nighttime operations after 10:00 p.m. as a conservative measure.

The environmental impact methodology for noise impacts presented in this EIS are derived by utilizing the operational data developed as directed by AFI 32-1015, *Integrated Installation Planning*, 30 July 2019 (this instruction replaced AFI 32-7070, *Air Force Noise Program* that was referenced in the Draft EIS). Analysis of noise factors in the number and type of operations, aircraft power settings, and other relevant details of the affected environment, the Proposed Action, and alternatives necessary to produce a consistent determination of environmental consequences and anticipated mitigations.

The noise report for this Proposed Action is provided in **Appendix F** (Noise Report), a summary of those results are presented in this section. The noise from the proposed aircraft operations could impact other resource areas such as land use, recreation, socioeconomics, and natural resources. Those impacts are addressed in their respective sections of this document.

Noise Impact Thresholds

The USEPA has identified 55 DNL as a level that protects public health and welfare with an adequate margin of safety (USEPA 1974). This means that 55 DNL is a threshold below which adverse noise effects are usually not expected to occur. 65 DNL is widely used as a noise criterion for airports. It represents a compromise between acceptable noise and economic practicality. According to the Federal Interagency Committee on Urban Noise, noise exposure greater than 65 DNL is considered generally incompatible with residential, public use (i.e., schools), or recreational and entertainment areas (Federal Interagency Committee on Urban Noise 1980). The U.S. Army Public Health Command has recommended land use guidelines for noise sensitive areas at levels over 62 CDNL. At 62 CDNL or less, noise sensitive land uses are generally acceptable (U.S. Army Center for Health Promotion and Preventative Medicine 2005).

The FAA defines a threshold for significant noise impacts in FAA Order 1050.1F as, "*The action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a 1.5 dB or greater increase, when compared to the No Action Alternative for the same timeframe."*

In rural and Wilderness Areas, the analysis of effects is vastly different compared to areas near population centers. In these special areas, public concerns can include effects to wildlife, domestic animals, natural soundscapes, and outdoor recreation. Each of these effects can be difficult to assess because of limited

research and baseline noise data. Many studies have been conducted on noise impacts to animals. However, if the animal of concern has not been included in any of these studies, biological expertise is required to determine if additional research is required or a surrogate animal can be used for the assessment of impacts. See **Section 4.5** (Natural Resources) for a discussion of noise impacts to wildlife.

Relationship Between Noise and Annoyance

Annoyance, which is based on perception, represents the primary effect associated with aircraft noise. Attitudinal surveys conducted over the past 30 years show a consistent relationship between DNL and the percentages of groups of people who express various degrees of annoyance. Studies of community annoyance to numerous types of environmental noise show that DNL correlates well with effects, and Schultz (1978) showed a consistent relationship between noise levels and annoyance. The Schultz study has been periodically re-examined and reaffirmed. The updated relationship by Finegold et al. (1994), which does not differ substantially from the original, is the current preferred form, and is shown in **Table 4.3-1**. Also shown in **Table 4.3-1** is the equivalent relationship between annoyance and CDNL from sonic booms (Committee on Hearing Bioacoustics, and Biomechanics 1981).

Table 4.3-1. Relationship of Annoyance to DNL and CDNL

DNL (dBA)	Percent Highly Annoyed	CDNL (dBC)
45	0.83	42
50	1.66	46
55	3.31	51
60	6.48	56
65	12.29	60
70	22.10	65

Source: Finegold et al. 1994.
Legend: CDNL-C-weighted Day-Night Average Sound Level; DNL-Day-Night Average Sound Level; dBA – A-weighted decibel; dBC – C-weighted decibel.

Single Event Metrics

Sections 4.3.1, 4.3.2, and 4.3.3 (Alternative 1: Talon MOA; Alternative 2: Cato, Smitty, and Lobos MOA's and Christa and Kendra ATCAAs; Alternative 3: Talon, Cato, Smitty, and Lobos MOAs) provide the analysis results for subsonic and supersonic noise in terms of their respective cumulative metrics (DNL and CDNL). However, the cumulative metrics don't provide information on the "loudness" of an aircraft flying in the vicinity of an observer. To characterize the sound environment that exists when an aircraft is flying over a particular point on the ground, a number of overflight scenarios were modeled.

The noise metrics used to characterize an overflight include L_{max} and SEL (see **Section 3.3.1.1,** Noise Metrics, for a description of the metrics). Calculating these metrics requires consideration of a variety of aircraft power settings, airspeeds, and flight altitudes. With regard to power settings, the loudest setting would include use of the engine afterburner. Use of the afterburner is limited because of the fuel consumption and is generally only used in the higher altitudes (above FL300). The other power setting included in these scenarios is full power without the afterburner (known as military or "mil" thrust).

Another factor that drastically affects the sound level for an overflight is the distance between the aircraft and the observer. As the distance between an overflight and the observer increases the noise level decreases. To illustrate this effect, three scenarios were developed to quantify the noise levels at various lateral offsets from the overflight ranging from 0 (direct overflight) to 30,000 feet (approximately 5 miles). The following scenarios were modeled to characterize the noise experience from an aircraft overflight at varying altitudes:

- *Scenario 1*: An overflight at 500 feet AGL (the lowest proposed altitude). Both power settings were included (mil thrust and afterburner); however, use of an afterburner at this altitude would be rare. It should be noted that no overflights at this altitude would occur over populated places in accordance with FAA minimum safe altitudes (14 CFR 91.119) or over designated Wilderness Areas or National Parks (FAA Aeronautical Information Manual, paragraph 7-4-6). Under the Proposed Action, aircraft operations between 500 feet AGL and 2,000 feet AGL represent less than 10 percent of the proposed training. Therefore, observers are not expected to experience this scenario routinely but it represents the "loudest" scenario.
- *Scenario 2*: An overflight at 2,000 feet AGL. Both power settings were included (mil thrust and afterburner). As stated above, operations between 500 feet AGL and 2,000 feet AGL represent a small percentage of the proposed training.
- *Scenario 3*: An overflight at 10,000 feet AGL. Both power settings were included (mil thrust and afterburner). The majority of the proposed overflights (approximately 80 percent) would be at or above this altitude.

The L_{max} and SEL calculations for these scenarios are provided in **Table 4.3-2.** A graphical representation of the results for the 500 feet overflight (scenario 1) and the 10,000 feet overflight (scenario 3) are provided in **Figures 4.3-1 and 4.3-2**.

Figure 4.3-1 provides a graphical depiction of the L_{max} data for an overflight at 500 feet. The thickness of the orange band on each graph shows the variety of values possible from the differences in power settings. The top edge represents the F-16 using an afterburner and the bottom edge represents the F-16 at mil thrust power. Afterburner use at this altitude would be rare. The L_{max} (which is the peak noise level) occurs for about 1/8 of a second. To provide a frame of reference, three lines are shown to illustrate the average noise level for common noise sources: a lawnmower, a vacuum cleaner 10 feet away, and a garbage disposal. As illustrated, the peak noise level (L_{max}) from an F-16 flying at 500 feet altitude would typically be louder than the noise of a lawnmower to an observer within a half mile (if the aircraft is using an afterburner) or within a mile of the overflight (if the aircraft is using military power). An observer over 2 miles from the overflight would experience noise levels below the common noise sources (lawnmower, vacuum cleaner, and garbage disposal).

Table 4.3-2. L_{max} and SEL Values for F-16 Overflights at Different Power Settings, Altitudes and Lateral Offsets[1]

Offset (feet lateral distance)	Aircraft Altitude - 500 feet AGL				Aircraft Altitude - 2,000 feet AGL				Aircraft Altitude - 10,000 feet AGL			
	L_{max}		SEL		L_{max}		SEL		L_{max}		SEL	
	Mil thrust	Afterburner	Mil thrust	Afterburner	Mil thrust	Afterburner	Mil thrust	Afterburner	Mil thrust	Afterburner	Mil thrust	Afterburner
0	108 - 111	117 - 121	118-121	110 - 113	92 - 95	102 - 105	98 - 101	106 - 109	70 - 73	80 - 84	79 - 82	87 - 91
1,000	99 - 102	108 - 111	111-114	104 - 106	91 - 94	100 - 104	97 - 100	105 - 108	70 - 73	80 - 84	79 - 81	87 - 90
5,000	79 - 82	89 - 92	95-99	88 - 90	80 - 82	89 - 92	88 - 91	96 - 99	69 - 71	79 - 82	78 - 80	86 - 89
10,000	66 - 69	76 - 79	85-88	76 - 79	70 - 72	80 - 83	80 - 82	88 - 91	65 - 67	75 - 79	74 - 77	83 - 86
20,000	45 - 47	56 - 59	66-69	57 - 59	57 - 59	67 - 71	69 - 71	77 - 81	57 - 59	67 - 71	67 - 69	76 - 79
30,000	36 - 38	47 - 51	58-62	48 - 51	48 - 50	59 - 62	60 - 62	69 - 73	49 - 51	60 - 64	60 - 62	69 - 73

Note: [1] A range of values is provided for each metric since the F-16 variant flown out of Holloman AFB has two different engine types. The speed used for these models was 450 knots.

Legend: AGL – above ground level; L_{max}-maximum sound level; SEL-Sound Exposure Level.

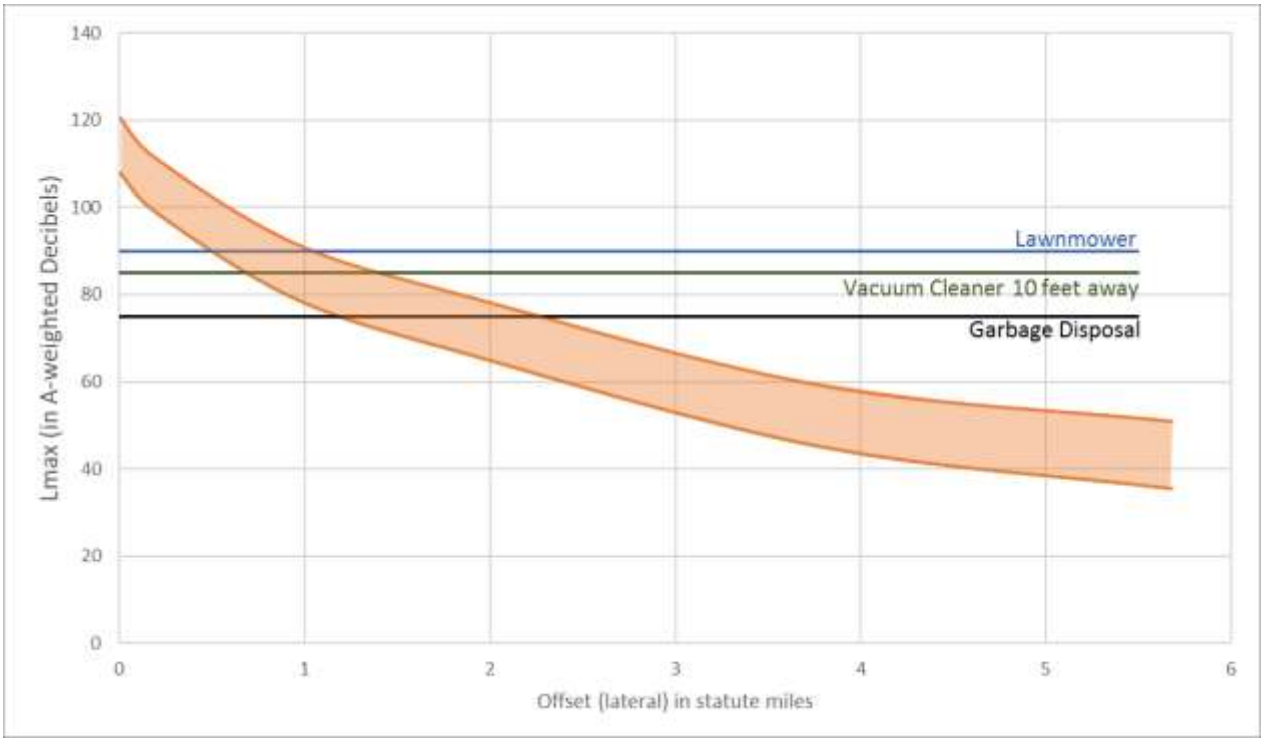


Figure 4.3-1. L_{max} for F-16 Overflight at 500 feet

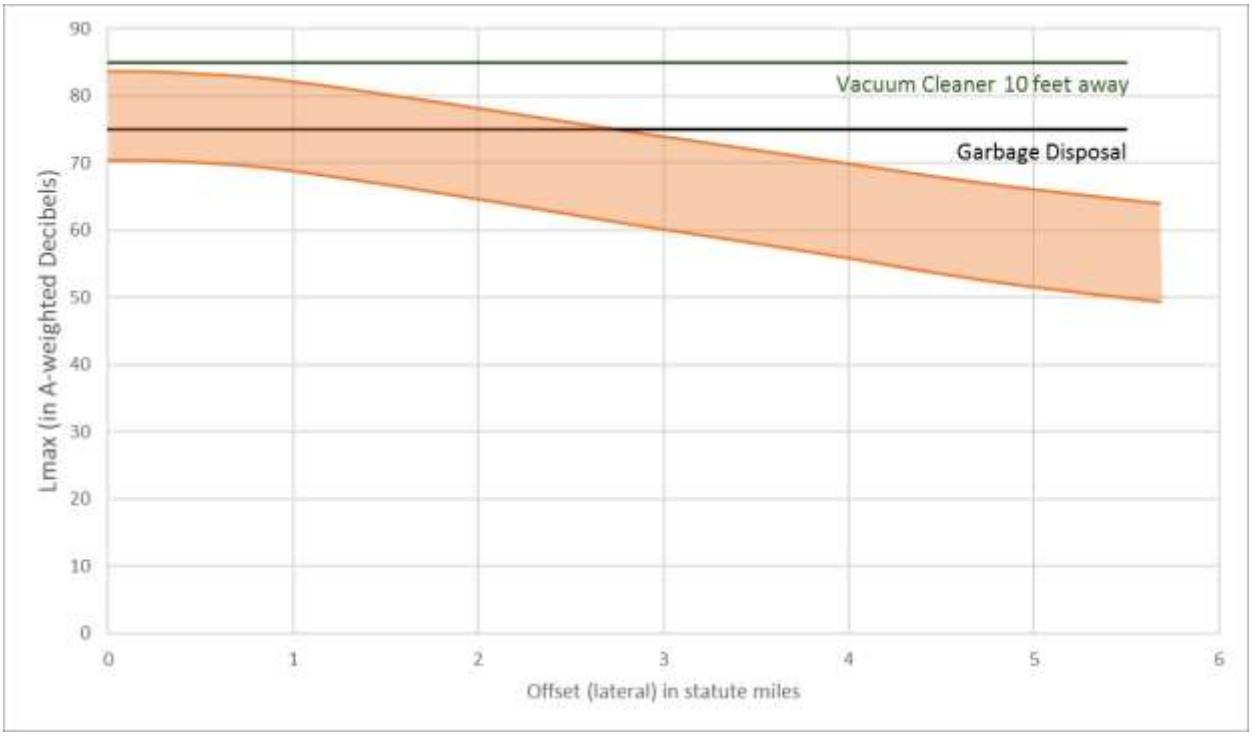


Figure 4.3-2. L_{max} for F-16 Overflight at 10,000 feet

Figure 4.3-2 provides a graphical depiction of the L_{max} data for an overflight at 10,000 feet. The peak noise level (L_{max}) for an observer within a mile of an overflight at this altitude would be similar to the noise level produced by a vacuum cleaner or garbage disposal.

Supersonic flight would primarily be associated with air combat training. Some of these training sorties require aircraft to exceed Mach 1.0 (supersonic) for brief periods of time. The duration for each individual supersonic flight is expected to be low given the relatively small dimensions of the proposed airspace. Flight at greater than Mach 1.0 creates a shock wave. Depending on the aircraft's altitude and the local atmospheric conditions, this shock wave can reach the ground, causing a "sonic boom". Higher altitudes and warmer surface temperatures can result in the sonic boom not reaching the surface of the earth. Lower altitudes for supersonic flight and higher speeds (higher Mach numbers) increase the likelihood and intensity of sonic booms.

When sonic booms reach the ground, they impact an area that is sometimes referred to as a "carpet." The size of the carpet depends on the supersonic flight path and on atmospheric conditions. The width of the boom carpet beneath the aircraft is about 1 mile for each 1,000 feet of altitude. Sonic booms are loudest near the center of the carpet (closer to the aircraft's flightpath), can have a sharp "bang-bang" sound, depending on altitude, speed, and other factors. Near the edges, the boom is weak and has a rumbling sound like distant thunder.

People located farther away from the supersonic flight paths, who are still within the primary boom carpet, might also be exposed to noise levels that may be startling or annoying, but the probability of this decreases the farther away they are from the flight path. People located beyond the edge of the boom carpet are not expected to be exposed to sonic booms although post-boom rumbling sounds may be heard.

The U.S. Air Force has determined that supersonic flight by fighters at altitudes above 30,000 feet AGL can produce sonic booms audible on the ground, but at an intensity that would have an acceptable level of impact. Under the three alternatives, supersonic activity would be allowed at or above 30,000 feet AGL.

4.3.1 Alternative 1: Talon MOA

4.3.1.1 Subsonic Noise

The projected DNL values that would be attributed to aircraft noise for the various components of airspace associated with Alternative 1 are provided in **Table 4.3-3**. As shown, the greatest projected value would be 57 DNL, with no values exceeding the 65 DNL threshold set forth for land use restrictions. As stated in **Section 3.3.2.1**, the current noise environment has a maximum 54 DNL in the existing Talon Low MOA and a maximum 47 DNL in the areas of the Talon High MOAs outside the lateral boundaries of the Talon Low MOA. Alternative 1 would result in an increase in noise in the proposed low MOAs, with no change for the proposed Talon High A or B MOAs. Within the Talon High B/Low B MOA (aircraft utilizing both areas during training) there would be an increase of 15 DNL (from 43 to 58 DNL). This increase in DNL would likely be noticeable to those exposed, especially if outdoors. However, 58 DNL is still well below the 65 DNL land use restriction threshold. The proposed Talon High C MOA would also produce an increase from the current DNL since there is currently no SUA in this area. As shown, the greatest projected value would be 57 DNL, with no values exceeding the 65 DNL threshold set forth for land use restrictions and the FAA's significance threshold would not be met. It should be noted that the minor adjustments to the Talon MOA boundary described in **Section 2.8.6**, *Identification of Preferred Alternative*, would not result in changes to how the aircraft would operate within the MOA. These changes were along the MOA

boundary where the aircraft typically would not fly and were minor enough that aircraft operations would not be concentrated in the MOA any further than previously analyzed in the Draft EIS.

Table 4.3-3. Projected Noise Levels Attributable to Aircraft Operations in Proposed Talon MOA under Alternative 1

Proposed Airspace Unit	Baseline DNL (dBA)	Projected DNL (dBA)
Talon High A/Low A	54	57
Talon High A	47	47
Talon High B/Low B	43	58
Talon High B	47	47
Talon High C	<35	39

Legend: <-less than; dBA-A-weighted decibel; DNL- Day-Night Average Sound Level; MOA-Military Operations Area.

Table 4.3-4 presents the baseline and projected DNL values attributed to aircraft noise at the 12 POIs beneath or near the proposed Talon MOA airspace.

Table 4.3-4. Baseline and Projected Noise Levels Attributable to Aircraft Operations at Selected POIs Beneath or Near Proposed Talon MOA under Alternative 1

Name	Baseline DNL (dBA)	Projected DNL (dBA)
Carlsbad, New Mexico[1]	40	42
Artesia, New Mexico[1]	40	42
Loving, New Mexico[2]	<35	42
Loco Hills, New Mexico[2]	<35	56
La Huerta, New Mexico[1]	41	42
Hobbs, New Mexico[3]	<35	<35
Roswell, New Mexico[3]	<35	<35
Carlsbad Caverns National Park[3]	<35	<35
Guadalupe Mountains National Park[3]	<35	<35
Lincoln National Forest[1]	53	56
Living Desert Zoo and Gardens State Park[1]	41	41
Brantley Lake State Park[1]	41	42

Notes: [1]lies beneath existing and proposed Talon MOA; [2]lies beneath proposed Talon MOA; [3]does not lie beneath existing or proposed Talon MOA.

Legend: <-less than; dBA-A-weighted decibels; DNL- Day-Night Average Sound Level; MOA-Military Operations Area; POI-Points of Interest.

The modeled subsonic aircraft noise at four of the 12 POIs (Hobbs, New Mexico; Roswell, New Mexico; Carlsbad Caverns National Park; and Guadalupe Mountains National Park) would have no quantifiable change in DNL under Alternative 1. These four POIs are outside of the existing and proposed airspace and are not expected to have significant impacts related to noise from military training. The greatest change in DNL would occur at Loco Hills, New Mexico, where the estimated DNL from aircraft operations would be 56 DNL. While this represents a large change in DNL value from the baseline conditions, it would be near to the 55 DNL threshold set by USEPA for which adverse noise effects would not be expected to occur. The projected DNL would also be well below the 65 DNL threshold for land use restrictions (Federal Interagency Committee on Urban Noise 1980). However, this much of a change in noise exposure would likely be noticeable. Under Alternative 1, it would be anticipated that less than 6.48 percent of the population would be highly annoyed based on the Schultz (1978) and Finegold et al. (1994) studies (see **Table 4.3-1**).

As discussed in the introduction to **Section 4.3** (Acoustic Environment), the cumulative metrics that are used to regulate noise do not characterize the "loudness" of an overflight that could be experienced by an observer on the ground. The modeled scenarios provide a better description of the potential noise that may be experienced beneath the proposed airspace. It should be noted that populated areas would be avoided by 1,000 feet AGL in accordance with FAA minimum safe altitudes. Therefore, individuals in these areas would not experience the "loudest" of the potential overflights, but could experience a range of noise depending on the altitude of the aircraft and their distance from the overflight path (see **Figures 4.3-1 and 4.3-2**).

In summary, it would be anticipated that there would be a perceptible increase to the subsonic noise levels attributed to aircraft activity to some areas beneath the proposed Talon MOA and ATCAA. Within these areas, the level of annoyance for residents and individuals using outdoor recreation areas may increase slightly from the current conditions. There would be no adverse impacts to hearing or health. There would be no land use restrictions related to noise beneath the proposed Talon MOA. Predicted noise levels would not exceed FAA's significance threshold.

4.3.1.2 Supersonic Noise

Supersonic operations already occur within the Talon ATCAA and would continue under Alternative 1. Under Alternative 1, all supersonic F-16 activity would be above FL300, where sonic booms have the least probability of reaching the ground.

As shown in **Table 4.3-5**, the projected CDNL from sonic booms would have no quantifiable change at eight of the 12 POIs. There would be minor increases at the remaining 4 POIs. Supersonic noise levels at the POIs would be less than the 62 CDNL threshold for noise sensitive areas and below the 42 CDNL which is the lowest CDNL with a relationship to annoyance in the Shultz (1978) and Finegold et al. (1994) studies (see **Table 4.3-1**). Supersonic noise levels at or below 42 CDNL would be anticipated to result in 0.83 percent of the general population being highly annoyed (Shultz 1978; Finegold et al. 1994). Noise at this level is difficult to accurately measure and would not be perceptibly different from the baseline conditions. Of the 12 POIs affected by Alternative 1, none would experience a value greater than 38 CDNL from the proposed operations. These levels would not exceed the threshold identified by USEPA that would be harmful to public health.

Table 4.3-5. Baseline and Proposed Supersonic Noise Levels (CDNL) at Selected POIs under Alternative 1

Name	Baseline CDNL (dBC)	Projected CDNL (dBC)
Carlsbad, New Mexico[1]	<35	35
Artesia, New Mexico[1]	<35	38
Loving, New Mexico[2]	<35	<35
Loco Hills, New Mexico [2]	<35	<35
La Huerta, New Mexico [1]	<35	36
Hobbs, New Mexico [3]	<35	<35
Roswell, New Mexico [3]	<35	<35
Carlsbad Caverns National Park[3]	<35	<35
Guadalupe Mountains National Park[3]	<35	<35
Lincoln National Forest[1]	<35	<35
Living Desert Zoo and Gardens State Park[1]	<35	<35
Brantley Lake State Park[1]	<35	38

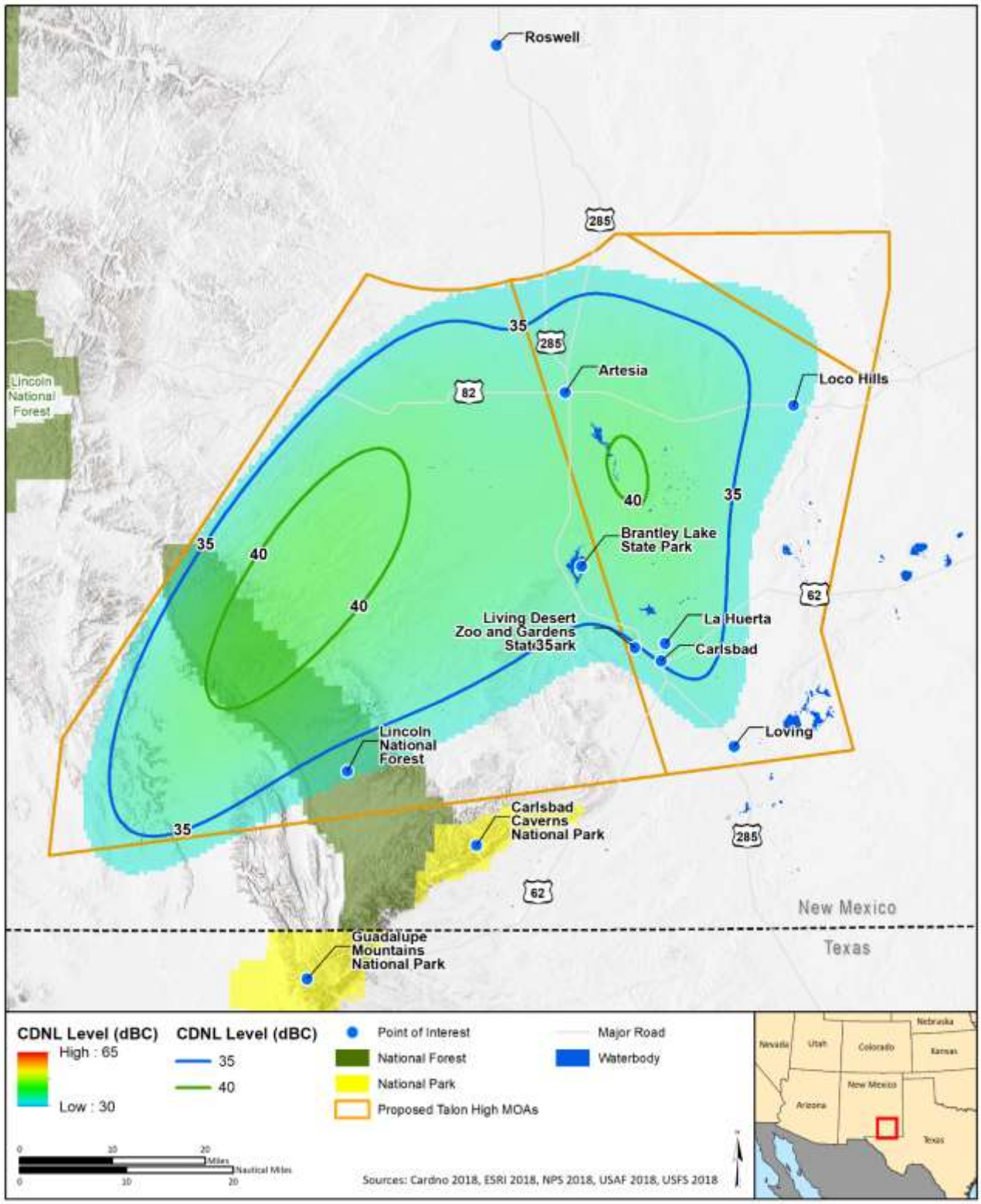
Notes: [1]lies beneath existing and proposed Talon MOA; [2]lies beneath proposed Talon MOA; [3]does not lie beneath Talon MOA.

Legend: <-less than; CDNL-C-Weighted Day-Night Average Sound Level; dBC-C-weighted decibels; POI-Points of Interest.

Figure 4.3-3 shows the projected CDNL contours in the airspace that would be attributed to the proposed annual supersonic activity under Alternative 1. CDNL values would gradually increase toward the center of the airspace, but would not exceed 42 CDNL. This would be well below the 62 CDNL level that the U.S. Army Public Health Command recommends as a threshold for noise sensitive land uses (U.S. Army Center for Health Promotion and Preventative Medicine 2005). These low values would be due to the relatively low number of supersonic operations, the altitudes proposed for these operations, and the large area of the airspace.

The average peak overpressure under Alternative 1 would be under 1 pound per square foot (psf). At 1 psf, the probability of a window breaking ranges from one in a billion (Sutherland 1990) to one in a million (Hershey and Higgins 1976). Sonic booms under the Proposed Action would not be expected to damage most structures such as houses and outbuildings. Outdoor structures such as barns, windmills, radio towers, etc., are resilient and routinely subject to wind loads far in excess of sonic boom pressures. Foundations and retaining walls, which are intended to support substantive earth loads, would not be at risk from sonic booms. The Air Force would continue to follow established procedures for claims against the government in cases where damage is claimed to result from sonic booms.

In summary, under Alternative 1, supersonic noise would not have a noticeable change from the baseline. The projected noise from supersonic activity would continue to be below 42 CDNL, which would be unlikely to generate annoyance from the general population (0.83 percent would be annoyed). The supersonic noise associated with Alternative 1 would generate the same level of annoyance as the current supersonic aircraft activity. There would be no adverse impacts to hearing or health.



Legend: CDNL- C-Weighted Day-Night Average Sound Level; dBC-C-weighted decibel; MOA-Military Operations Area.

Figure 4.3-3. Projected Supersonic Noise Contours under Alternative 1

4.3.2 Alternative 2: Cato, Smitty, and Lobos MOAs and Christa and Kendra ATCAAs

4.3.2.1 Subsonic Noise

The projected DNL values that would be attributed to aircraft noise for the various components of proposed airspace associated with Alternative 2 are provided in **Table 4.3-6**. As shown, the greatest projected value would be 55 DNL, with no values exceeding the 65 DNL threshold set forth for land use restrictions. The greatest change in DNL would occur within the Cato and Smitty West MOAs, with a difference of at least 13 DNL (change from <35 to 48 DNL). This increase in DNL would likely be noticeable to those exposed, especially if outdoors. However, 48 DNL is still well below the 65 DNL threshold for land use restrictions. The FAA's significance threshold would also not be met.

Table 4.3-6. Projected Noise Levels Attributable to Aircraft Operations in Proposed SUA under Alternative 2

Proposed Airspace Unit	Baseline DNL (dBA)	Projected DNL (dBA)
Cato and Smitty MOAs	47	55
Cato and Smitty MOA West[1]	<35	48
Lobos MOA	50	53
Christa ATCAA	50	50
Kendra ATCAA	50	50

Note: [1]Western corner of Cato and Smitty MOAs with altitude floor of 1,600 feet AGL.
Legend: <-less than; ATCAA-Air Traffic Control Assigned Airspace; dBA-A-weighted decibel; DNL- Day-Night Average Sound Level; MOA-Military Operations Area; SUA-special use airspace.

Table 4.3-7 presents the baseline and projected DNL values attributed to aircraft noise at the 16 POIs beneath or near the proposed Cato, Smitty, and Lobos MOAs and Christa and Kendra ATCAAs.

Table 4.3-7. Baseline and Projected Noise Levels Attributable to Aircraft Operations in Proposed SUA at Selected POIs under Alternative 2

Name	Baseline DNL (dBA)	Projected DNL (dBA)
Gila Cliff Dwellings National Monument [1]	<35	49
Socorro, New Mexico[2]	<35	<35
Truth or Consequences, New Mexico [2]	<35	<35
Las Cruces, New Mexico [2]	<35	<35
Magdalena, New Mexico [3]	<35	50
Bayard, New Mexico [2]	<35	<35
Old Horse Springs, New Mexico [3]	<35	50
Arenas Valley, New Mexico [1, 4]	<35	47
Silver City, New Mexico [1, 4]	<35	47
Gila Wilderness [1]	<35	49
Elephant Butte State Park[2]	<35	<35
Gila National Forest[1]	49	52
Aldo Leopold Wilderness[1, 4]	<35	49
Apache Kid Wilderness[3]	45	49
Bosque del Apache National Wildlife Refuge[2]	<35	<35
Rio Grande[2]	<35	<35

Notes: [1]lies beneath proposed Lobos MOA;
[2]lies outside existing or proposed MOAs;
[3]lies beneath existing and proposed MOAs.
[4] A single point wasn't established for the Continental Divide Trail since it is a linear feature. The noise calculated at nearby POIs along the trail provide a representation of the noise attributable to military aircraft. Points along or near the trail include: Arenas Valley, Silver City, and Aldo Leopold Wilderness.
Legend: <-less than; dBA-A-weighted decibels; DNL-Day-Night Average Sound Level; POI-Points of Interest; SUA-special use airspace.

Seven of the 16 POIs would remain unchanged under Alternative 2. The highest projected DNL would be 52 DNL within the Gila National Forest (which is an increase from the current 49 DNL). The greatest change in DNL occurs at Magdalena, New Mexico and Old Horse Springs, New Mexico, which would have values of 50 DNL. The current DNL in these areas is <35 DNL, so the increase would likely be noticeable. While this represents a large change in DNL value, all values would be well below the 65 DNL threshold for land use restrictions (Federal Interagency Committee on Urban Noise 1980). The DNL values are also below the USEPA threshold of 55 DNL which indicates adverse noise effects are usually not expected to occur. Under Alternative 2, 1.66 percent of the population would be expected to be highly annoyed at the subsonic noise based on the Schultz (1978) and Finegold et al. (1994) studies (see **Table 4.3-1**), which would represent a slight increase over baseline conditions.

As discussed in the introduction to **Section 4.3** (Acoustic Environment), the cumulative metrics that are used to regulate noise do not characterize the "loudness" of an overflight that could be experienced by an observer on the ground. The modeled scenarios provide a better description of the potential noise that may be experienced beneath the proposed airspace. It should be noted that populated areas would be avoided by a minimum of 1,000 feet in accordance with FAA regulations; and, designated Wilderness Areas, National Parks and Monuments would be avoided by 2,000 feet. Therefore, visitors in these areas would not experience the "loudest" of the potential overflights, but could experience a range of noise depending on the altitude of the aircraft and their distance from the overflight path (see **Figures 4.3-1 and 4.3-2**).

In summary, the projected DNL within the airspace and at the POIs would not exceed the 65 DNL threshold for land use restrictions. The POIs beneath the proposed Christa and Kendra ATCAAs would not experience a change from the baseline conditions. A perceptible increase to the subsonic noise levels may occur at some of the POIs under the proposed MOAs. Within these areas, the level of annoyance for residents and individuals using outdoor recreation areas may increase from the current conditions. No adverse impacts to hearing and health would be anticipated, nor would the FAA's significance threshold be met.

4.3.2.2 Supersonic Noise

Supersonic operations are approved in the Cato ATCAA, but have not occurred in recent years. Supersonic operations would be new in the areas proposed for the Lobos MOA and Christa and Kendra ATCAAs. All supersonic F-16 activity would be above FL300, where sonic booms have the least probability of reaching the ground. **Table 4.3-8** presents the baseline and projected CDNL attributed to supersonic aircraft activity at the POIs associated with Alternative 2. None of CDNL values would exceed the 62 CDNL threshold for noise sensitive areas. The projected supersonic noise would remain unchanged at five of the 16 POIs. The remaining 11 POIs would have a slight increase in supersonic noise, with the highest estimated value of 40 CDNL. Noise levels from supersonic activity at all of the POIs would be less than 42 CDNL which is the lowest CDNL with a relationship to annoyance in the Shultz (1978) and Finegold et al. (1994) studies (see **Table 4.3-1**). Supersonic noise levels at or below 42 CDNL would be anticipated to result in 0.83 percent of the general population being highly annoyed (Shultz 1978; Finegold et al. 1994). Noise at this level is difficult to accurately measure and would not be perceptibly different from the baseline conditions.

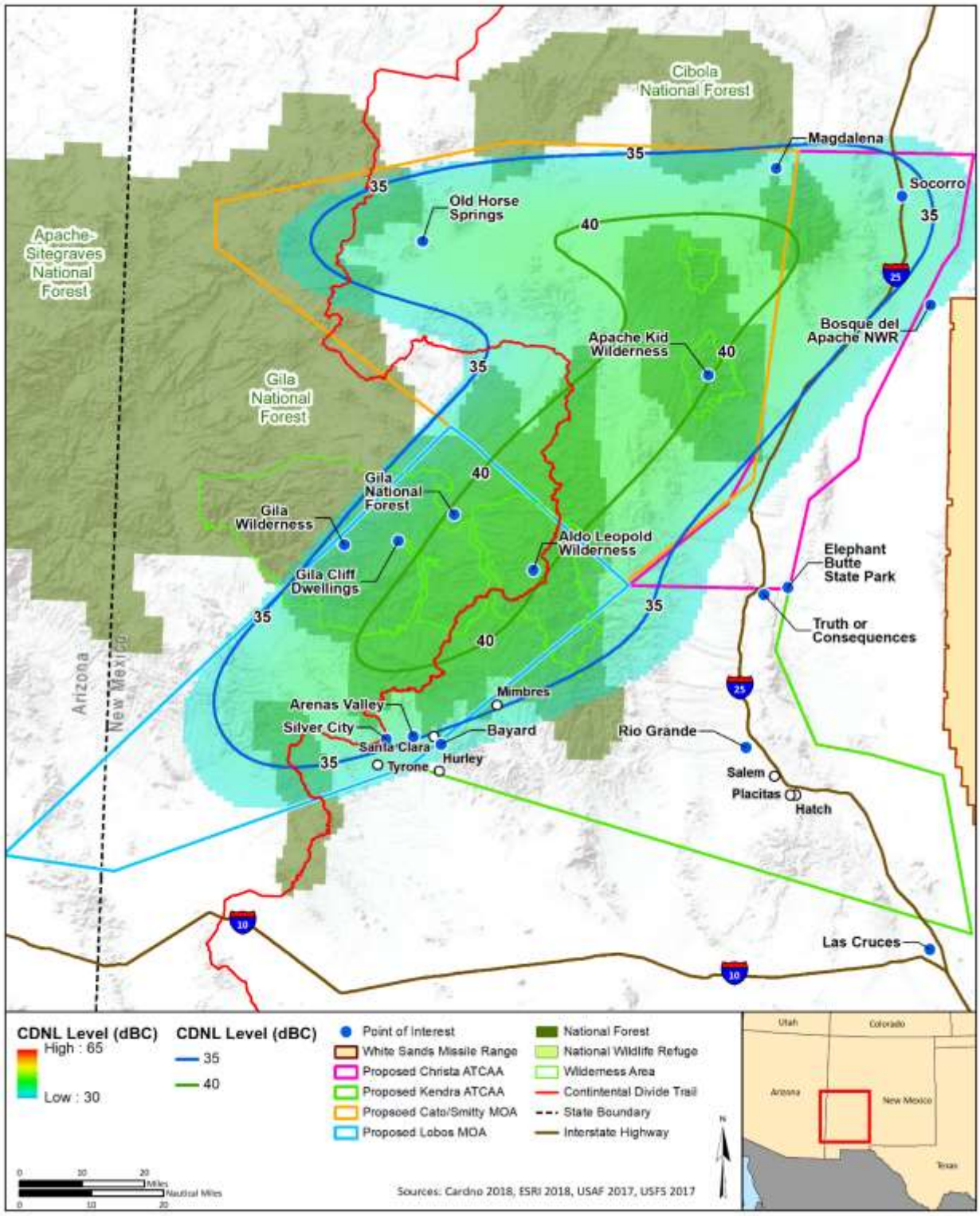
Table 4.3-8. Baseline and Projected Supersonic Noise Levels (CDNL) at Selected POIs under Alternative 2		
Name	**Baseline CDNL (dBC)**	**Projected CDNL (dBC)**
Gila Cliff Dwellings[1]	<35	39
Socorro, New Mexico[2]	<35	36
Truth or Consequences, New Mexico [2]	<35	<35
Las Cruces, New Mexico [2]	<35	<35
Magdalena, New Mexico [3]	<35	37
Bayard, New Mexico [2]	<35	<35
Old Horse Springs, New Mexico [3]	<35	38
Arenas Valley, New Mexico [1,4]	<35	35
Silver City, New Mexico [1,4]	<35	36
Gila Wilderness[1]	<35	37
Elephant Butte State Park[2]	<35	<35
Gila National Forest[1]	<35	40
Aldo Leopold Wilderness[1,4]	<35	40
Apache Kid Wilderness[3]	<35	40
Bosque del Apache National Wildlife Refuge[2]	<35	35
Rio Grande[2]	<35	<35

Notes: [1]lies beneath proposed Lobos MOA;
[2]lies outside existing or proposed MOAs;
[3]lies beneath existing and proposed MOAs.
[4] A single point wasn't established for the Continental Divide Trail since it is a linear feature. The noise calculated at nearby POIs along the trail provide a representation of the noise attributable to military aircraft. Points along or near the trail include: Arenas Valley, Silver City, and Aldo Leopold Wilderness.
Legend: <-less than; CDNL-C-Weighted Day-Night Average Sound Level; dBC-C-weighted decibels; POI-Points of Interest.

Figure 4.3-4 shows the CDNL contours in the airspace that would be attributed to the proposed annual supersonic activity under Alternative 2. CDNL values would gradually increase toward the center of the airspace, but would not exceed 42 CDNL. This would be well below the 62 CDNL level that the U.S. Army Public Health Command recommends as a threshold for noise sensitive land uses (U.S. Army Center for Health Promotion and Preventative Medicine 2005). These low values would be due to the relatively low number of supersonic operations, the altitudes proposed for these operations, and the large area of the airspace.

The likelihood of a sonic boom resulting in any structural impact would be negligible, just as under Alternative 1. The average peak overpressure under Alternative 2 would be under 1 psf. At 1 psf, the probability of a window breaking ranges from one in a billion (Sutherland 1990) to one in a million (Hershey and Higgins 1976).

Sonic booms would not be expected to damage most structures such as houses and outbuildings. Outdoor structures such as barns, windmills, radio towers, etc., are resilient and routinely subject to wind loads far in excess of sonic boom pressures. Foundations and retaining walls, which are intended to support substantive earth loads, would not be at risk from sonic booms. The Air Force would follow established procedures for claims against the government in cases where damage is claimed to result from sonic booms.



Legend: ATCAA-Air Traffic Control Assigned Airspace; CDNL-C-Weighted Day-Night Average Sound Level; dBC-C-weighted decibels; MOA-Military Operations Area.

Figure 4.3-4. Projected Supersonic Noise Contours under Alternative 2

In summary, supersonic noise under Alternative 2 would increase from baseline conditions since there are no sonic booms contributing to the acoustic environment currently. The projected noise from supersonic activity would be below 42 CDNL, which would be estimated to annoy a small percentage of the general population (0.83 percent would be annoyed). However, since sonic booms do not occur currently, the level of annoyance for residents and individuals using outdoor recreation areas when sonic booms occur may increase slightly from the current conditions.

The projected supersonic noise would not be at a level to cause adverse impacts to health and hearing or damage structures.

4.3.3 Alternative 3: Talon, Cato, Smitty, and Lobos MOAs

4.3.3.1 Subsonic Noise

The baseline and projected DNL values that would be attributed to aircraft noise for the various components of proposed airspace associated with Alternative 3 are provided in **Table 4.3-9**. As shown, the greatest value is 56 DNL which does not exceed the 65 DNL threshold set forth for land use restrictions. The greatest change that would occur under Alternative 3 would be within Talon High B/Low B, with a change of 12 DNL (change from 43 DNL to 55 DNL). This increase in DNL would likely be noticeable to those exposed, especially if outdoors.

Table 4.3-9. Projected Noise Levels Attributable to Aircraft Operations in SUA under Alternative 3

Proposed Airspace Unit	Baseline DNL (dBA)	Projected DNL (dBA)
Talon High A/Low A	54	56
Talon High A Outside Low A	47	47
Talon High B/Low B	43	55
Talon High B Outside Low B	47	47
Cato and Smitty MOAs	47	52
Cato and Smitty MOA West[1]	<35	43
Lobos MOA	50	50
Kendra ATCAA	50	50
Christa ATCAA	50	50

Note: [1]Western corner of Cato and Smitty MOA with altitude floor of 1,600 feet AGL.
Legend: <-less than; ATCAA-Air Traffic Control Assigned Airspace; dBA-A-weighted decibel; DNL- Day-Night Average Sound Level; MOA-Military Operations Area; SUA-special use airspace.

Table 4.3-10 shows the baseline and projected DNL values that would be attributed to aircraft noise at the 28 POIs beneath or near the Talon, Cato, and Smitty MOAs and Christa and Kendra ATCAAs.

Table 4.3-10. Baseline and Projected Noise Levels Attributable to Aircraft Operations at Selected POIs under Alternative 3

Name	Baseline DNL (dBA)	Projected DNL (dBA)
Eastern POIs		
Carlsbad, New Mexico	40	40
Artesia, New Mexico	40	40
Loving, New Mexico	<35	40
Loco Hills, New Mexico	<35	53
La Huerta, New Mexico	41	40
Hobbs, New Mexico	<35	<35
Roswell, New Mexico	<35	<35
Carlsbad Caverns National Park	<35	<35
Guadalupe Mountains National Park	<35	<35
Lincoln National Forest	53	55
Living Desert Zoo and Gardens State Park	41	39
Brantley Lake State Park	41	41
Western POIs		
Socorro, New Mexico	<35	<35
Truth or Consequences, New Mexico	<35	<35
Las Cruces, New Mexico	<35	<35
Magdalena, New Mexico	<35	45
Bayard, New Mexico	<35	<35
Old Horse Springs, New Mexico	<35	45
Arenas Valley, New Mexico[1]	<35	<35
Silver City, New Mexico[1]	<35	<35
Gila Cliff Dwellings National Monument	<35	<35
Gila Wilderness	<35	<35
Elephant Butte State Park	<35	<35
Gila National Forest	<35	<35
Aldo Leopold Wilderness[1]	<35	<35
Apache Kid Wilderness	<35	39
Bosque del Apache National Wildlife Refuge	<35	<35
Rio Grande	<35	<35

Note: [1] A single point wasn't established for the Continental Divide Trail since it is a linear feature. The noise calculated at nearby POIs along the trail provide a representation of the noise attributable to military aircraft. Points along or near the trail include: Arenas Valley, Silver City, and Aldo Leopold Wilderness.

Legend: <-less than; dBA-A-weighted decibels; DNL-Day-Night Average Sound Level; POI-point of interest.

The projected DNL at 20 of the 28 POIs would remain unchanged under Alternative 3. La Huerta and Living Desert Zoo and Gardens State Park both would decrease slightly under Alternative 3. The highest projected DNL value would occur at Lincoln National Forest (55 DNL) which would be a small increase from 53 DNL. As with Alternative 1, the greatest proposed increase in DNL value would occur at Loco Hills, with a projected 53 DNL. While these differences in DNL would likely be noticeable in some areas, they would remain well below the 65 DNL threshold for noise sensitive land use restrictions. Likewise, all of these locations would have DNL values of 55 DNL or less, which is the threshold set by USEPA for which adverse noise effects would not be expected to occur. Under Alternative 3, approximately 3.31

percent of the population would be expected to be highly annoyed based on the highest DNL value (55 DNL) (see **Table 4.3-1**).

As stated in Alternatives 1 and 2, the cumulative metrics that are used to regulate noise do not characterize the "loudness" of an overflight that could be experienced by an observer on the ground. The modeled scenarios provide a better description of the potential noise that may be experienced beneath the proposed airspace. It should be noted that populated areas would be avoided by a minimum of 1,000 feet in accordance with FAA regulations; and, designated Wilderness Areas, National Parks and Monuments would be avoided by 2,000 feet. Therefore, visitors in these areas would not experience the "loudest" of the potential overflights, but could experience a range of noise depending on the altitude of the aircraft and their distance from the overflight path (see **Figures 4.3-1 and 4.3-2**).

In summary, the projected DNL within the airspace and at the POIs would not exceed the 65 DNL threshold for land use restrictions. As with Alternative 2, the proposed DNL values at POIs beneath the Christa and Kendra ATCAAs would not change. A perceptible increase to the subsonic noise levels may occur at some of the POIs under the proposed MOAs. Within these areas, the level of annoyance for residents and individuals using outdoor recreation areas may increase slightly from the current conditions. No adverse impacts to hearing and health would be anticipated, and the FAA's threshold for significance would not be met.

4.3.3.2 Supersonic Noise

Table 4.3-11 presents the baseline and projected CDNL attributed to supersonic aircraft activity at the POIs associated with Alternative 3. None of CDNL values would exceed the 62 CDNL threshold for noise sensitive areas. Twenty-four of the POIs would have a projected value of 35 CDNL or less. Of the remaining four, the highest value would be 38 CDNL. Noise levels from supersonic activity at all of the POIs would be less than 42 CDNL which is the lowest CDNL with a relationship to annoyance in the Shultz (1978) and Finegold et al. (1994) studies (see **Table 4.3-1**). Supersonic noise levels at or below 42 CDNL would be anticipated to result in 0.83 percent of the general population being highly annoyed (Shultz 1978; Finegold et al. 1994). Noise at this level is difficult to accurately measure and would not be perceptibly different from the baseline conditions.

Table 4.3-11. Baseline and Projected Supersonic Noise Levels (CDNL) at Selected POIs under Alternative 3

Name	Baseline CDNL (dBC)	Projected CDNL (dBC)
Eastern POIs		
Carlsbad, New Mexico	<35	<35
Artesia, New Mexico	<35	<35
Loving, New Mexico	<35	<35
Loco Hills, New Mexico	<35	<35
La Huerta, New Mexico	<35	<35
Hobbs, New Mexico	<35	<35
Roswell, New Mexico	<35	<35
Carlsbad Caverns National Park	<35	<35
Guadalupe Mountains National Park	<35	<35
Lincoln National Forest	<35	<35
Living Desert Zoo and Gardens State Park	<35	<35
Brantley Lake State Park	<35	<35

Table 4.3-11. Baseline and Projected Supersonic Noise Levels (CDNL) at Selected POIs under Alternative 3

Name	Baseline CDNL (dBC)	Projected CDNL (dBC)
Western POIs		
Gila Cliff Dwellings	<35	37
Socorro, New Mexico	<35	<35
Truth or Consequences, New Mexico	<35	<35
Las Cruces, New Mexico	<35	<35
Magdalena, New Mexico	<35	<35
Bayard, New Mexico	<35	<35
Old Horse Springs, New Mexico	<35	<35
Arenas Valley, New Mexico[1]	<35	<35
Silver City, New Mexico[1]	<35	<35
Gila Wilderness	<35	<35
Elephant Butte State Park	<35	<35
Gila National Forest	<35	38
Aldo Leopold Wilderness[1]	<35	37
Apache Kid Wilderness	<35	37
Bosque del Apache National Wildlife Refuge	<35	<35
Rio Grande	<35	<35

Note: [1] A single point wasn't established for the Continental Divide Trail since it is a linear feature. The noise calculated at nearby POIs along the trail provide a representation of the noise attributable to military aircraft. Points along or near the trail include: Arenas Valley, Silver City, and Aldo Leopold Wilderness.

Legend: <-less than; CDNL-C-Weighted Day-Night Average Sound Level; dBC-C-weighted decibels; POI-Points of Interest.

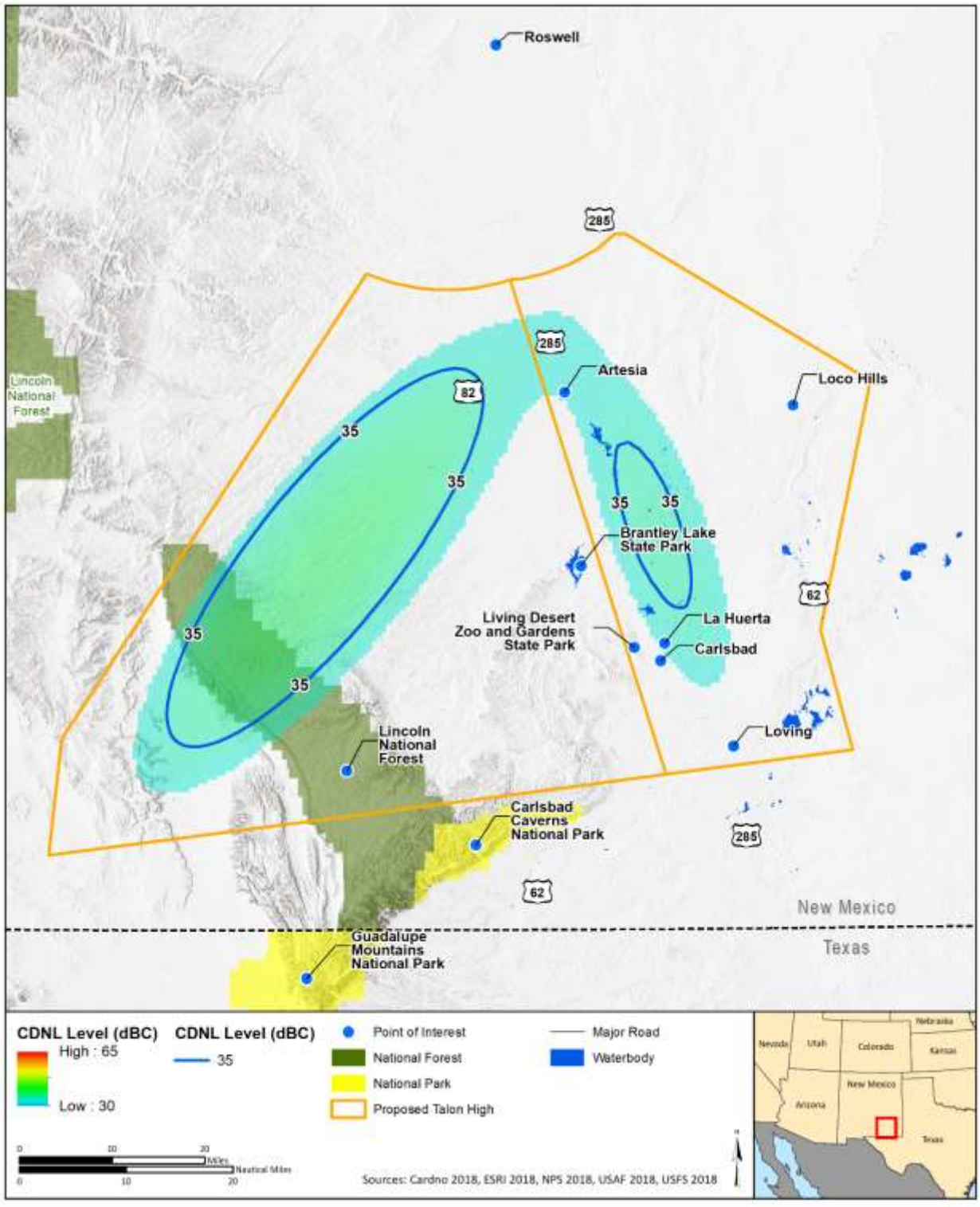
Figure 4.3-5 and Figure 4.3-6 show the CDNL contours in the airspace that would be attributed to the proposed annual supersonic activity associated with Alternative 3. CDNL values would gradually increase toward the center of the airspace, but would not exceed 39 CDNL (at either east or west areas). This would be well below the 62 CDNL level that the U.S. Army Public Health Command recommends as a threshold for noise sensitive land uses (U.S. Army Center for Health Promotion and Preventative Medicine 2005).

These low values would be due to the relatively low number of supersonic operations, the altitudes proposed for these operations, and the large area of the airspace. Overpressures from sonic booms would be similar or less than those described for Alternatives 1 or 2 and would not cause any structural damage concerns.

In summary, under Alternative 3, supersonic noise would not have a noticeable change from the baseline in the east. Some areas in the west would have a slight increase in supersonic noise. The projected noise from supersonic activity would continue to be below 42 CDNL in all areas, which would be unlikely to generate annoyance from the general population (0.83 percent would be annoyed). However, since sonic booms do not currently occur in the west area, the level of annoyance for residents and individuals using outdoor recreation areas when sonic booms occur may increase slightly from the current conditions. There would be no adverse impacts to hearing or health.

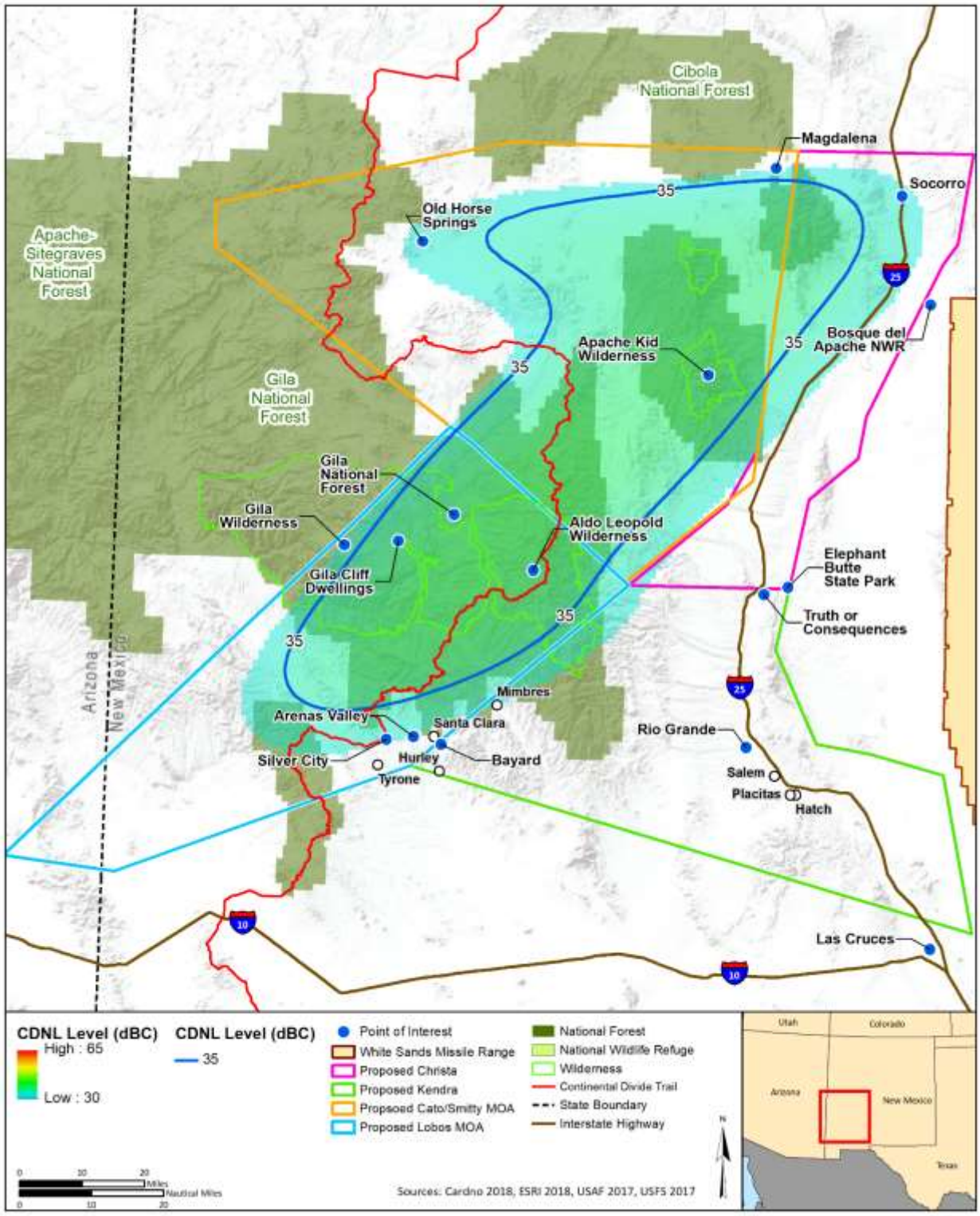
4.3.4 No Action Alternative

Under the No Action Alternative, noise levels would remain the same as the baseline or existing conditions described in **Section 3.3.2**, *Acoustic Environment, Affected Environment*. F-16 operations from Holloman AFB would continue to utilize the current airspace units. There would be no increase in noise levels.



Legend: CDNL-C-weighted Day-Night Average Sound Level; dBC-C-weighted decibels; MOA-Military Operations Area.

Figure 4.3-5. Projected Supersonic Noise Contours under Alternative 3 East



Legend: ATCAA-Air Traffic Control Assigned Airspace; CDNL-C-weighted Day-Night Average Sound Level; dBC-C-weighted decibels; MOA-Military Operations Area.

Figure 4.3-6. Projected Supersonic Noise Contours under Alternative 3 West

4.4 AIR QUALITY

The environmental impact methodology for both noise and air quality impacts presented in this EIS are derived by utilizing the same operational data developed as directed by AFI 32-1015, *Integrated Installation Planning*, 30 July 2019 (this instruction replaced AFI 32-7070, *Air Force Noise Program* that was referenced in the Draft EIS). The air analysis factors in the engine types used in the aircraft, the time spent at or below 3,000 feet AGL, the time spent with the engine operating in Military mode or afterburner mode, and the emission factors associated with those flight modes, and other relevant details of the affected environment, the Proposed Action, and alternatives necessary to produce a consistent determination of environmental consequences and anticipated mitigations. The air quality impacts analysis at the locations evaluated in this EIS has factored in weighted times in each mode of flight operations, that occur at or below the applicable mixing layer, based on the flight profiles developed for the noise impacts analysis, the projected frequency of use of each flight profile, and the percent thrust for the afterburner and military modes of operation documented in the flight profiles. Calculations showing the time weighted average assigned to each flight mode and its percentage of use, consistent with the operational data used throughout this analysis, can be found in **Appendix G**.

To assess emissions from the Proposed Action, the emissions from current F-16 pilot training flights in the MOAs and the use of several MTRs that intersect the existing and proposed MOAs (current operations) were compared to the emissions from the proposed training flights for each alternative on an annual basis. In addition, transient aircraft were also included in the model as described in **Sections 2.8.1.2, 2.8.2.2, and 2.8.3.2** (proposed operations for each Alternative).

The methodology for estimating aircraft emissions involves evaluating the type of activity, the number of hours of operation, the type of engine, and the mode of operation for each type of aircraft. Aircraft emissions were calculated based on the following inputs:

- Aircraft emissions for F-16C aircraft with two engine types (F100-PW-220 and F110-GE-100) and FA-18C (engine model F404-GE-400) were modeled using the Air Force Conformity Applicability Model. Lead is not included as it is not a component of jet fuel.
- Times-in-mode and power settings were assessed applying data used for the noise analysis.
- Flight operations data were the same as those used for the noise analysis.

In addition to aircraft flight emissions, emissions from flare detonation below 3,000 feet AGL were estimated using emission factors published in Chapter 15 of USEPA's Emission Source Guide, AP-42 (USEPA 2009). Flares would not be released below 2,000 feet AGL to prevent fire hazards, therefore, the number of flares released between 2,000 and 3,000 feet AGL are unknown but anticipated to be small. To provide the most conservative estimate for air quality impacts, the total number of flares was estimated to be released between 2,000 and 3,000 feet AGL.

A study conducted by the Desert Research Institute in 2002, The Fate and Distribution of Radio Frequency Chaff (Desert Research Institute 2002), and an independent parallel study conducted by B.W. Cook, Investigation of the Abrasion, Fragmentation, and Re-Suspension of Chaff (referenced in Air Force 2011), addressed the concern of chaff fragmentation into inhalable particles (PM_{10} or smaller). Based on these studies it can be concluded that there is little to no risk of chaff abrading in the air to inhalable particles before being deposited on the ground. On the issue of fragmentation on the ground and re-suspension of inhalable particles, these two studies concluded that once chaff particles settle to the ground they rapidly

fragment and become indiscernible from ambient soil materials (Air Force 2011). In conclusion, chaff will not be addressed further in this Air Quality analysis.

The USEPA publication "Aircraft Contrails Factsheet" (USEPA 2000) describes the formation, occurrence, and effects of contrails in detail. In short, contrails are formed by a mixture of water vapor in jet aircraft exhaust and particulates either already in the atmosphere, from the jet aircraft exhaust itself, or both. All contrails are line-shaped clouds composed of ice particles that pose no direct threat to public health. These ice particles in contrails do not reach the Earth's surface due to the fact that they fall slowly and conditions in the lower atmosphere cause them to evaporate first. Therefore, contrails do not affect air quality and will not be addressed further in this analysis.

Potential impacts to air quality are evaluated with respect to the extent, context, and intensity of the impact in relation to relevant regulations, guidelines, and scientific documentation. The CEQ defines significance in terms of context and intensity in 40 CFR 1508.27. This requires that the significance of an action be analyzed with respect to the setting of the action and be based relative to the severity of the impact. For attainment area criteria pollutants, the project air quality analysis uses the USEPA's Prevention of Significant Deterioration (PSD) permitting threshold of 250 tons per year (TPY) as an initial indicator of the local significance of potential impacts to air quality. It is important to note that these indicators only provide a clue to the potential impacts to air quality. In the context of criteria pollutants for which the proposed project region is in attainment of a NAAQS, the analysis compares the annual net increase in emissions estimated for each project alternative to the 250 TPY PSD permitting threshold. The PSD permitting threshold represents the level of potential new emissions below which a new or existing minor non-listed stationary source may acceptably emit without triggering the requirement to obtain a permit. Thus, if the intensity of any net emissions increase for a project alternative is below 250 TPY in the context of an attainment criteria pollutant the indication is the air quality impacts will be insignificant for that pollutant.

4.4.1 Alternative 1: Talon MOA

4.4.1.1 Criteria Pollutant Emissions

Current flight activities below 3,000 feet AGL for both the F-16C training activities and the transient aircraft result in approximately 81 hours of flight time. Under Alternative 1, flight time would increase to reflect a new annual total of 727 hours. All of the counties within the Talon Low A and B MOAs are in attainment with the NAAQS and do not require a General Conformity analysis. The proposed annual emissions were screened against the PSD threshold values as comparative thresholds or indicators for criteria pollutants (250 tons per year).

Table 4.4-1 provides estimated air emissions of criteria pollutants for the current aircraft operations and flares, the proposed aircraft operations and flares under Alternative 1, and the comparative threshold. A Record of Air Analysis (ROAA) for Alternative 1 is located in **Appendix G** (Air Quality Supporting Documents), along with detailed air emission calculations.

Table 4.4-1. Current and Alternative 1 Annual Emission Estimates

Activity	Total Annual Emissions in Tons					
	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Current Operations	0.43	6.03	13.16	0.61	0.77	0.59
Alternative 1 Operations	4.23	47.22	112.61	5.00	4.77	3.96
Net Change	**3.81**	**41.19**	**99.45**	**4.40**	**4.00**	**3.37**
Comparative Threshold	250	250	250	250	250	250
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Legend: CO-Carbon monoxide;; NO_x-Nitrogen oxides; PM_{10} - particulate matter less than or equal to 10 microns; $PM_{2.5}$ - particulate matter less than or equal to 2.5 microns; SO_2-Sulfur dioxide; VOCs-Volatile Organic Compounds.

Criteria pollutant emissions would increase with the proposed aircraft activity, though the proposed net increases would be less than the comparative thresholds used as a guide for assessing significance. The criteria pollutant emissions associated with Alternative 1 would not alter the attainment status of Chaves, Eddy, or Otero Counties and would not be categorized as significant. While the emissions specific to the Talon Low A and B MOAs are not separately accounted for, the portion of all emissions that could be attributed to this one area is small and therefore would not adversely impact visibility in the National Parks located near the Talon Low A and B MOAs.

4.4.1.2 Greenhouse Gas Emissions

The GHG analysis is a global analysis and since all of the sorties for the existing and anticipated squadrons at Holloman AFB are already occurring somewhere globally, there is no increase in GHGs. While the training syllabus is currently reduced within the existing New Mexico airspace, this training is still accomplished once the pilot reaches their operational squadron at other installations. Thus, there is no increase in GHGs since all sorties currently occur globally. However, the GHG emissions were calculated to illustrate the proposed action contributions to global GHGs. These emissions are based on all of the annual flight hours for the year for the F-16C and the transient aircraft (represented with the F/A-18), regardless of altitude. The average sortie is estimated at one hour without refueling and so this was used as the average time for a sortie. The current flight time (current operations) for all sorties is estimated at 1,554 hours. Under Alternative 1, the total flight time would increase to 7,667 hours. **Table 4.4-2** provides the GHG emissions that would be anticipated from the current and Alternative 1 operations and indicates the proposed net change. The 125,518 tons of GHG emissions would be the equivalent of 24,525 passenger vehicles onto roads, driving 11,500 miles per year on average.

Table 4.4-2. Current and Alternative 1 Annual GHG Emission Estimates

Total Annual Emissions in Tons	
Activity	**CO_2e**
Current Operations	39,381
Alternative 1 Operations	164,899
Net Change	**125,518**

Legend: CO_2e-carbon dioxide equivalent; GHG-greenhouse gas.

4.4.2 Alternative 2: Cato, Smitty, and Lobos MOAs

4.4.2.1 Criteria Pollutant Emissions

Current flight activities below 3,000 feet AGL for both the F-16C training activities and the transient aircraft result in approximately 81 hours of flight time. Under Alternative 2, annual flight time below 3,000 feet AGL would increase to 560 hours. All of the proposed areas are in attainment with the NAAQS with the exception of Greenlee County, Arizona and Grant County, New Mexico. These counties would be within the proposed Lobos Low MOA region and are maintenance areas for SO_2. For this reason, the SO_2 emissions for Alternative 2 are compared to the General Conformity *de minimis* threshold (100 tons per year) for SO_2 to assess significance. All other proposed criteria pollutant emissions were screened against the applicable General Conformity threshold values as comparative thresholds or indicators for criteria pollutants (250 tons per year).

Table 4.4-3 provides estimated air emissions of criteria pollutants for the current aircraft operations and flares, the proposed aircraft operations and flares under Alternative 2, the comparative threshold, and the SO_2 *de minimis* threshold. A Record of Conformity Analysis for SO_2 and a ROAA for the remaining criteria pollutants under Alternative 2 is located in **Appendix G** (Air Quality Supporting Documents), along with detailed air emission calculations.

Table 4.4-3. Current and Alternative 2 Annual Emission Estimates

Activity	Total Annual Emissions in Tons					
	VOCs	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Current Operations	0.43	6.03	13.16	0.61	0.77	0.59
Alternative 2 Operations	43.26	36.35	86.71	3.85	3.68	3.05
Net Change	**2.84**	**30.32**	**73.55**	**3.25**	**2.91**	**2.47**
Comparative Threshold	250	250	250	NA	250	250
Exceed Threshold?	**No**	**No**	**No**	NA	**No**	**No**
Conformity *de minimis* Threshold	NA	NA	NA	100	NA	NA
Exceed Threshold?	NA	NA	NA	**No**	NA	NA

Legend: CO-Carbon monoxide;; NO_x-Nitrogen oxides; PM_{10} - particulate matter less than or equal to 10 microns; $PM_{2.5}$ - particulate matter less than or equal to 2.5 microns; SO_2-Sulfur dioxide; VOCs-Volatile Organic Compounds.

Criteria pollutant emissions would increase with the proposed aircraft activity, though the proposed net increases would be less than the comparative thresholds used as a guide for assessing significance. The SO_2 emissions associated with the Proposed Action would not exceed the General Conformity *de minimis* threshold for Grant County, New Mexico or Greenlee County, Arizona. Based on this analysis, General Conformity does not apply. The estimated criteria pollutant emissions associated with Alternative 2 would not alter the attainment status of Sierra, Catron, Socorro, or Hidalgo Counties in New Mexico or Graham County in Arizona, and would not be categorized as significant. While the emissions specific to the Smitty Low and Lobos Low MOAs are not separately accounted for, the portion of all emissions that could be attributed to these areas is small and therefore is not likely to adversely impact visibility in the Class I areas located near them. Specifically, these include Galiuro Wilderness in Graham County Arizona; Gila Wilderness in Catron and Grant Counties in New Mexico; and Bosque del Apache Wilderness in Socorro County.

4.4.2.2 Greenhouse Gas Emissions

The GHG analysis is a global analysis and since all of the sorties for the existing and anticipated squadrons at Holloman AFB are already occurring somewhere globally, there is no increase in GHGs. While the training syllabus is currently reduced within the existing New Mexico airspace, this training is still accomplished once the pilot reaches their operational squadron at other installations. Thus, there is no increase in GHGs since all sorties currently occur globally. However, the GHG emissions were calculated to illustrate the proposed action contributions to global GHGs. These emissions were calculated based on all of the annual flight hours for the year for the F-16C and the transient aircraft (represented with the F/A-18), regardless of altitude. The average sortie is estimated at one hour without refueling; and so, this was used as the average time for a sortie. The current flight time (current operations) for all sorties is estimated at 1,554 hours. Under Alternative 2, the total flight time would increase to 6,439 hours. **Table 4.4-4** provides the GHG emissions that would be anticipated from the current and Alternative 2 operations and indicates the proposed net change. The 102,525 tons of GHG emissions would be the equivalent of 20,033 passenger vehicles onto roads, driving 11,500 miles per year on average.

Table 4.4-4. Current and Alternative 2 Annual GHG Emission Estimates

Total Annual Emissions in Tons	
Activity	**CO_2e**
Current Operations	39,381
Alternative 2 Operations	141,907
Proposed Net Change	**102,525**

Legend: CO_2e-carbon dioxide equivalent GHG-greenhouse gas.

4.4.3 Alternative 3: Talon, Cato, Smitty, and Lobos MOAs

4.4.3.1 Criteria Pollutant Emissions

Under Alternative 3, annual flight time below 3,000 feet AGL would increase to reflect a new annual total of 669 hours. All of the areas within the areas beneath the proposed Talon and Smitty low MOAs are in attainment with the NAAQS, so no General Conformity analysis is required (Alternative 3 does not include the proposed Lobos Low MOA). The proposed annual emissions were screened against the PSD threshold values as comparative thresholds or indicators for criteria pollutants (250 tons per year).

Table 4.4-5 provides estimated air emissions of criteria pollutants for current operations and flares, the proposed aircraft operations and flares under Alternative 3, and the comparative threshold. A ROAA for Alternative 3 is located in **Appendix G** (Air Quality Supporting Documents), along with detailed air emission calculations.

Table 4.4-5. Current and Alternative 3 Annual Emission Estimates						
	Total Annual Emissions in Tons					
Activity	**VOCs**	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Current Operations	0.43	6.03	13.16	0.61	0.77	0.59
Alternative 3 Operations	3.90	43.48	103.64	4.61	4.39	3.65
Net Change	**3.47**	**37.45**	**90.48**	**4.00**	**3.63**	**3.06**
Comparative Threshold	250	250	250	250	250	250
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Legend: CO-Carbon monoxide;; NO_x-Nitrogen oxides; PM_{10} - particulate matter less than or equal to 10 microns; $PM_{2.5}$ - particulate matter less than or equal to 2.5 microns; SO_2-Sulfur dioxide; VOCs-Volatile Organic Compounds.

Criteria pollutant emissions would increase with the proposed aircraft activity, though the proposed net increases for all pollutants would be less than the comparative thresholds used as a guide for assessing significance. The criteria pollutant emissions associated with Alternative 3 would not alter the attainment status of Chaves, Eddy, Otero, Sierra, Catron, or Socorro Counties in New Mexico and would not be categorized as significant. While the emissions specific to the Talon Low and Smitty MOAs are not separately accounted for, the portion of VOC and NO_x emissions that could be attributed to each of these areas is modest and therefore would not likely adversely impact visibility in the Federal Class I areas located near the Talon Low and Smitty MOAs.

4.4.3.2 Greenhouse Gas Emissions

The GHG analysis is a global analysis and since all of the sorties for the existing and anticipated squadrons at Holloman AFB are already occurring somewhere globally, there is no increase in GHGs. While the training syllabus is currently reduced within the existing New Mexico airspace, this training is still accomplished once the pilot reaches their operational squadron at other installations. Thus, there is no increase in GHGs since all sorties currently occur globally. However, the GHG emissions were calculated to illustrate the proposed action contributions to global GHGs. These emissions were calculated based on all of the annual flight hours for the year for the F-16C and the transient aircraft (represented with the F/A-18), regardless of altitude. The average sortie is estimated at one hour without refueling; and so, this was used as the average time for a sortie. Under Alternative 3, the total flight time would increase to 7,435 hours. **Table 4.4-6** provides the GHG emissions that would be anticipated from current and Alternative 3 operations and indicates the proposed net change. The 122,997 tons of GHG emissions would be the equivalent of 24,033 passenger vehicles onto roads, driving 11,500 miles per year on average.

Table 4.4-6. Current and Alternative 3 Annual GHG Emission Estimates	
Total Annual Emissions in Tons	
Activity	**CO_2e**
Current Operations	39,381
Alternative 3 Operations	162,379
Proposed Net Change	**122,997**

Legend: CO_2e-carbon dioxide equivalent; GHG-greenhouse gas.

4.4.4 No Action Alternative

Under the No Action Alternative, there would be no SUA modifications in the vicinity of Holloman AFB in support of F-16 pilot training. Emissions associated with baseline operations would continue in all existing airspace areas.

4.5 NATURAL RESOURCES

Determination of the significance of potential impacts to biological resources is based on: 1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource, 2) the proportion of the resource that would be affected relative to its occurrence in the region, 3) the sensitivity of the resource to proposed activities, and 4) the duration of ecological ramifications. Impacts to natural resources would be significant if species or habitats of special concern would be adversely affected over relatively large areas or disturbances would cause reductions in population size or distribution of a species of special concern. This analysis focuses on wildlife and special-status species that occur or potentially occur beneath the MOAs, which could be impacted by noise from the Proposed Action and alternatives. The wildlife and domestic animals impact discussions focus on species groups, not specific geography; therefore, the potential impacts from aircraft noise to these resources would be the same for all alternatives. The detailed impacts to the species groups are provided in Alternative 1 and referred to in Alternatives 2 and 3. This approach was used to eliminate repetitive text and reduce the overall size of the document. Impacts to threatened and endangered species are discussed specifically for each alternative.

This project was entered into the USFWS Information for Planning and Consultation (IPaC) system to initiate consultation with USFWS (Consultation Codes: AZ - 02EAAZ00-2019-SLI-0001; NM - 02ENNM00-2019-SLI-0001). A Biological Assessment was prepared for the Preferred Alternative and provided to USFWS for concurrence to complete the consultation process. The USFWS provided their concurrence on the findings in the Biological Assessment. **Appendix H** (USFWS Consultation Correspondence) provides copies of the consultation correspondence.

Many animal species use sound to communicate, to detect prey and avoid predation. Noise can mask communication, cause behavioral changes, interfere with daily cycles, and can cause stress (Shannon et al. 2016). Increased noise levels reduce the distance and area over which animals can perceive important acoustic signals (Barber et al. 2009). The potential for external noise to mask these important signals is of greater concern for continuous and near continuous noise sources (e.g., compressors, busy highways, etc.) than for intermittent brief noise exposures such as military jet overflight. Such secondary effects of noise vary widely with species, environmental variables, as well as the types, durations and sources of noise (Manci et al. 1988; NPS 2011). Primary effects, such as eardrum rupture or temporary and permanent hearing threshold shifts, are unlikely given the noise levels produced by aircraft overflights. Most of the effects of noise are mild enough to be undetectable as variables of change in population size or growth (Bowles 1995).

Other potential impacts associated with noise may include stress and hypertension; behavioral modifications; interference with mating or reproduction; and impaired ability to obtain adequate food, cover, or water. Other environmental variables (e.g., predators, weather, changing prey base, ground-based disturbance) confound the ability to identify the ultimate factor in limiting productivity of a certain nest, area, or region (Smith et al. 1988). Overall, the literature suggests that species differ in their response to various types, durations, and sources of noise (Manci et al. 1988; Radle 2007; NPS 2011; Shannon et al. 2016); and that, response of unconfined wildlife and domestic animals to aircraft overflight under most circumstances has minimal biological significance.

Many scientific studies have investigated the effects of aircraft noise on wildlife, and some have focused on wildlife "flight" due to noise. Animal responses to aircraft are influenced by many variables, including size, speed, proximity (both height above the ground and lateral distance), engine noise, color, flight profile,

and radiated noise. The type of aircraft (e.g., fixed-wing [jets] versus rotary-wing [helicopters]) and type of flight mission may also produce different levels of disturbance, with varying animal responses (Smith et al. 1988). Consequently, it is difficult to generalize animal responses to noise disturbances across species. Pepper et al. (2003) suggest that many past studies were inconclusive and based on relatively small sample sizes; and that, more work is needed to determine if noise adversely impacts wildlife. Research into the effects of noise on wildlife often presents conflicting results because of the variety of factors and variables that can affect and/or interfere with the determination of the actual effects that human produced noise is having on any given animal (Radle 2007).

A 1997 review revealed that the noise produced by an aircraft plays a minor role in disturbance to animals when the animal cannot see the aircraft. This was illustrated in examples of nearly soundless paragliders causing panic flights (Kempf and Hüppop 1997). This research indicated that aircraft noise can cause startle responses; but, the severity of response depends upon the animal's previous exposure to the noise source and does not result in severe consequences. These authors felt that aside from the rare panic flights causing accidents, negative consequences of aircraft noise on individuals and populations are not proven (Kempf and Hüppop 1997).

The Air Force has conducted many studies that define a startle response as the sequence of events that occurs when an animal is surprised, including behavioral responses (muscular flinching, alerting, and running) and physiological changes (e.g., elevated heart rate) (Air Force 1994). The startle is a natural response that helps animals avoid predators. If the behavioral component of the startle is uncontrolled, particularly if the animal runs or jumps without concern for its safety, it is often called a panic. Completely uncontrolled panics are rare in mammals (Air Force 1994).

Although the concerns listed above have been raised in the literature and examples have been documented, studies of unconfined wildlife and domestic animals to overflight by military jet aircraft at 500 feet AGL or higher have not shown measurable changes in population size or reproductive success at the population level or other significant biological impact under normal conditions.

F-16 aircrews would be required to follow applicable procedures outlined in the Holloman AFB Bird/Wildlife-Aircraft Strike Hazard Plan (Holloman AFB 2015). Adherence to this program has minimized bird-aircraft strikes historically. When safety procedures identify an increased risk, limits are placed on low-altitude flights and some types of training (e.g., multiple approaches, closed pattern work). Furthermore, special briefings are provided to pilots whenever the potential exists for greater bird-strike risks within airspace. Generally, F-16 aircrews would operate in the same general airspace environments of New Mexico as they do currently. Therefore, no measurable increase in potential for bird-aircraft strikes is expected and this potential hazard is not analyzed further in this EIS.

4.5.1 Alternative 1: Talon MOA

Proposed pilot training within the proposed Talon MOA could potentially disturb wildlife residing beneath the existing and proposed airspace. Disturbance could be caused by the visual observation of the aircraft, aircraft noise, and the use of chaff and flare. As detailed in **Section 4.3** (Acoustic Environment) the training within the proposed Talon MOA would contribute minor increases to the average acoustic environment. The proposed Talon MOA would support a variety of proposed training activities (i.e., various aircraft speeds and maneuvers within high and low altitudes); and, the resulting noise would be spread across a vast area (over 2 million acres). As such, the proposed training would not create a consistent, significant noise

source in any one location. The average annual DNL throughout the airspace from all of the aircraft operations would range from less than 35 to 57 DNL (see **Table 4.3-2**).

While it would not be expected that a single location would be subjected to regular or continuous high levels of noise, there would be the possibility that a location would be subjected to a low-level overflight and animals beneath such a flight would experience a high level of intermittent noise. As shown in **Section 4.3** (Acoustic Environment), the estimated noise that would be experienced by an animal would be significantly reduced the further away the animal was from the direct aircraft path. In the most extreme scenario an animal could experience a peak noise level (L_{max}) as high as 120 dB for a duration of 0.8 seconds. This would only occur from an overflight at 500 feet AGL using maximum power with an afterburner passing directly above the animal and is not expected to occur with any sort of regularity or frequency for a given location. The majority of the proposed operations would occur above 10,000 feet AGL, which would have a peak noise level (L_{max}) of 85 dB for a duration of 0.8 seconds from an aircraft passing directly above the animal. Acute exposures to noise (i.e., those that are brief and occasional) damage hearing at levels over 140 to 150 dB in the frequency range heard best by humans. Guidelines that protect human hearing apply to many terrestrial mammals because they are based on studies of laboratory animals (Bowles 1995). Therefore, the proposed low-level overflights are not expected to result in hearing damage to animals since a direct overflight would not result in noise levels over 140 dB.

Continuous, intense noise exposure has caused health effects in laboratory experiments, but extensive experiments with intermittent noise does not (Bowles 1995). This is because animals' ears recover between the intermittent exposures. Intense noise can damage the underlying membranes, supportive tissue, and nervous tissue of animals' ears, but ruptures and breaks in the bones surrounding the ear are always the result of impact injuries (i.e., hitting the head). "Bleeding ears" result from ruptures of the tympanic membrane, which occurs from abrupt changes in static pressure; animals do not develop bleeding ears from noise exposure (Bowles 1995).

Since the Proposed Action would include supersonic flight, sonic booms would occur within the Talon MOA. As described in **Section 4.3** (Acoustic Environment), given the high altitude proposed for supersonic activity, sonic booms would be less likely to reach the ground and would not be a continuous noise source within the Talon MOA. Sonic booms would not contribute significantly to the overall noise environment (less than 42 CDNL within the MOA, see **Section 4.3.1.2**, *Supersonic Noise*).

Potential impacts to natural resources (wildlife, domestic animals, and special-status species) within the Talon MOA are described in **Sections 4.5.1.1** (Wildlife) **through 4.5.1.3** (Special-Status Species).

4.5.1.1 Wildlife

Potential Effects from Aircraft Noise

Animal species differ greatly in their responses to noise and thus the potential impact to animals from aircraft noise would vary. Below is a summary of studies of the effects of aircraft noise on mammals and birds. Based on estimated noise levels, the proposed pilot training in the proposed Talon MOA would be expected to have minor impacts to wildlife inhabiting land beneath the proposed airspace.

Mammals. Sound levels above 90 dB may impact mammals and may be associated with a number of behaviors such as retreat from the sound source, freezing, or a strong startle response (Manci et al.1988). Early studies of terrestrial mammals showed that noise levels of 120 dBA could damage mammals' ears, and levels of 95 dBA could cause temporary loss of hearing acuity. It has been speculated that repeated

aircraft overflight (e.g. surveillance flights along a pipeline) could affect large carnivores such as grizzly bears by causing changes in home ranges, foraging patterns, and breeding behavior (Dufour 1980). These possible effects have not been borne out in subsequent studies, and Bowles (1995) indicated that acute exposure to noise only damaged an animals' hearing at levels above 140 dB. Incidental observations of wolves and bears exposed to fixed-wing aircraft and helicopters indicated a stronger reaction to helicopters. Wolves were less disturbed by helicopters than wild ungulates, while individual grizzly bears showed the greatest response of any animal species observed (Manci et al. 1988). However, response to overflight by grizzly bears varied from individual to individual (Dufour 1980).

Wild ungulates appear to be much more sensitive to noise disturbance than domestic livestock (Manci et al. 1988; Weisenberger et al. 1996; Bleich et al. 1990, 1994). Behavioral reactions may be related to the past history of disturbances by such things as humans and aircraft. Minor behavioral reactions would include turning to orient toward the aircraft. Moderate responses to disturbance may be nervous behaviors, such as trotting a short distance. Escape behavior would represent a typical severe response, but it is rarely observed in response to overflights above 500 feet AGL (Bowles 1995; Dufour 1980).

Weisenberger et al. (1996) exposed captive mule deer and mountain sheep (*Ovis canadensis mexicana*) to simulated low-altitude jet noise and evaluated the effects on behavior and heart rate at a range of noise levels and overflight frequency. Heart rate changed during overflights but returned to pre-disturbance conditions within 60-180 seconds. Behavior also changed and returned to pre-disturbance conditions in less than 5 minutes. Both responses decreased with increased exposure suggesting that the animals became habituated to the noise. Krausman et al. (1998) studied the impacts of F-16 overflight on wild mountain sheep. F-16 aircraft flew approximately 125 meters above ground level. The study found that heart rates were elevated above pre-flight levels in 21 of 149 overflights and returned to pre-flight levels within 120 seconds. Overflights did not alter behavior or use of habitat.

Although few studies have been conducted on the response of wild ungulates to sonic booms, these disturbances appear to have little to no adverse effects. Workman et al. (1992) studied the physiological and behavioral responses of captive pronghorn, elk (*Cervus elaphus*), and bighorn sheep to sonic booms. All three species exhibited an increase in heart rate that lasted for 30 to 90 seconds in response to their first exposure to a sonic boom. Behaviorally, the animals responded to their first exposure to a sonic boom by running a short distance (less than 30 feet reported for elk). After successive sonic booms, the heart rate response decreased greatly and the animals remained alert, but did not run. The authors suggested the animals became habituated in response to successive exposures.

Bats. The Brazilian free-tailed bat is a wildlife species of particular interest because it roosts in great numbers at Carlsbad Caverns National Park, just south of the existing and proposed Talon MOA and forages great distances from the cave. These bats are migratory, using the cave from March through October. Their exit from the cave and nighttime foraging would temporally overlap slightly with nighttime operations (only 10 percent of the annual proposed operations would occur after dark), specifically those operations that would occur within the low MOAs that are within the altitude range for foraging (the bats forage up to 9,800 feet). Their response to aircraft noise would be similar to responses described for other mammals and would likely include startle or alerting to the noise source (Dufour 1980). Another concern would be masking of echolocation pulses that could disrupt flight or foraging. A study on New Zealand long-tailed bats found that low-level aircraft activity did not mask echolocation pulses since the aircraft noise was most intense at less than 10 kilohertz (kHz); and, bat echolocation pulses are 40 kHz. There were no statistically significant differences in mean bat activity during and after overflights compared with pre-aircraft activity

(Le Roux and Waas 2012). It should be noted that the size of the colony at Carlsbad Caverns fluctuates regularly. These fluctuations represent natural responses of the colony to factors such as seasonal food availability and local and large-scale weather patterns. The size of a count on any given night does not necessarily reflect a population estimate, and the pattern of decline widely reported may not be as severe as thought (Hristov et al. 2010). The proposed nighttime operations within Talon MOA would create a noise disturbance for the bats, however, the disturbance is expected to be minor and temporary.

Birds. In comparison to humans, birds typically hear less well over a narrower frequency bandwidth (Dooling and Popper 2007). The majority of the published literature on bird hearing focuses on terrestrial birds and their ability to hear in air. A review of 32 terrestrial and marine species reveals that birds generally have greatest hearing sensitivity between 1 and 4 kHz, and very few can hear below 20 Hz (Beason 2004). Most concerns related to the effects of noise on birds involve the masking of communications among members of the same species, reducing the detectability of biologically relevant signals including the sounds of predators and prey, and temporarily or permanently decreasing hearing sensitivity (Dooling and Popper 2007). A study of captive zebra finches (*Taeniopygia guttata*) given a choice of foraging in noisy and quiet area found no significant difference in the amount of time birds spent in noisy and quiet areas though those foraging in noisy areas spent more time being vigilant, resulting in less efficient foraging than those in quiet areas (Evans et al. 2018). In a study of ovenbirds, Habib et al. (2007) found chronic noise exposure near compressor stations affected pairing success, attributable by masking and distorting the song of breeding males on territories. In birds, hearing loss is difficult to characterize since birds regenerate hair cells even after substantial losses that can result in temporary threshold shifts (Bowles 1995).

Raptors. In a literature review of raptor responses to aircraft noise, Manci et al. (1988) found that most raptors did not show a negative response to overflights. When negative responses were observed, they were predominantly associated with rotor-winged aircraft or jet aircraft that were repeatedly passing within 0.5 miles of a nest. Ellis et al. (1991) performed a study to estimate the effects of low-level military jet aircraft and mid- to high altitude sonic booms (both actual and simulated) on nesting peregrine falcons and seven other raptors (common black hawk, Harris' hawk, zone-tailed hawk, red-tailed hawk, golden eagle, prairie falcon, bald eagle). Re-occupancy and productivity rates were within or above expected values for self-sustaining populations. In a 1997 helicopter overflight study, Mexican spotted owls did not flush from a nest or perch unless a helicopter was as close as 330 feet (Delaney et al. 1997). Researchers in Colorado found that Mexican Spotted Owl responses to F-16 overflights were often less significant than responses to naturally occurring events such as thunderstorms. Similarly, Delaney et al. (1997) found that Mexican spotted owls quickly returned to normal day-roosting behavior after being disturbed by helicopters. A 6-year study within the Gila National Forest found that low-level aircraft overflight had no effect on occupancy of Mexican Spotted Owl activity centers and found no correlations among measures of aircraft exposure and nesting success (ACC 2008).

Waterfowl and Other Waterbirds. Manci et al. (1988) noted that aircraft can be particularly disturbing to waterfowl. The USFWS Waterfowl Management Handbook (Korschgen and Dahlgren 1992) lists "loud noise" caused by aircraft as the top disturbance category for waterfowl. Several studies showed that migratory waterfowl (e.g., ducks and geese) expend more energy when exposed to repeated aircraft overflights, at least in the short-term (Bowles 1995). Waterfowl are sensitive to disturbance because of their aggregation into large flocks during their migration and overwintering. When at rest, the flocks are typically in water bodies or wetlands exposed to the open sky and subject to aerial and ground predation. Taking flight is their defense against either type of predation. Waterfowl flocks seem to be as sensitive as their

most responsive individual in the flock, so that larger flocks would have a greater chance of responding than small flocks (Bowles 1995).

A variety of studies cited in Bowles (1995) indicated that migratory waterfowl exposed to overflights by light aircraft and helicopters did not habituate completely to overflight. Due to the danger to aircraft and aircrews posed by potential collisions with waterfowl and other flocking birds, BASH has received much attention by the military. BASH programs exist at every installation where there is an active flying mission and areas where low-level aircraft flight training takes place (e.g., MTRs). BASH programs identify locations of seasonal concentrations of waterfowl and provide guidance for pilots with regard to elevational or lateral separation from these sites at specific seasons and times of day to avoid or minimize the potential for collision. This avoidance in turn reduces the potential for disturbance of migratory waterfowl concentrations by military aircraft overflight. See **Section 4.10** (Safety) for additional discussion on BASH with respect to safety concerns.

Potential Effects from Chaff and Flare

No toxicological effects from chaff on terrestrial organisms have been observed, even when subject to higher concentrations than would occur under the Proposed Action (Air Force 2011). Air Force chaff filament size is approximately 0.04 inches in diameter and 0.3 to 1 inch in length, and is thinner than human hair. As a result, chaff is too large for inhalation and rapidly breaks down in the environment. Because of the nature of disposition and the low rate of application and dispersal of chaff filaments during defensive training, wildlife and livestock would have little opportunity to ingest chaff filaments or residual materials (i.e., end caps). As provided in **Table 3.1-2,** *Potential Chaff Distribution,* approximately 0.5 grams of chaff would be expected to be distributed per acre of land beneath the proposed Talon MOA. Similarly, the land beneath the proposed Talon MOA would average one piece of residual material per approximately 22 acres (see **Table 3.1-3,** *Potential Chaff and Flare Residual Material)*. Wildlife do not use chaff fibers for food or nesting material and chaff is not known to be toxic to animals if ingested. Although some chemical components of chaff are toxic at high levels, such levels could only be reached through the ingestion of many chaff bundles or billions of chaff filaments. On the ground, chaff degrades over time to aluminum or silica particles that are indistinguishable from ambient soil materials. Chaff fragments do not display asbestos-like characteristics and do not pose asbestos-like health risks. The number of degraded or fragmented particles would be insufficient to result in disease (Spargo 1999; Air Force 2011). Inhalation or ingestion of chaff filaments or fragments with adverse effects to wildlife, livestock, or humans is unlikely.

Biological effects of residual flare materials would be comparable to the effects described for chaff residual materials. Based on toxicological studies on flare residual materials, no chemical effects to biological resources would be expected. The small amount of magnesium dispersed from flares (as the combustion product magnesium oxide) would not result in levels that would be associated with acute exposure. In addition, there would be a minimal amount of flare ash residue produced by a deployed flare in the proposed airspace. As a result, the flare ash would be undetectable at any given location (Air Force 2011).

Wildlife inhabiting land beneath airspace would have a very remote possibility of being struck by a clump of undeployed chaff, dud flare, or residual materials. Of all of these, dud flares pose the greatest concern because of their weight; however, given the reliability rate of flares it is highly unlikely for an animal to be struck by a dud flare. Undeployed chaff and residual materials weigh so little, and create so much drag in comparison to the weight, no serious injury would be anticipated. In addition, the wide distribution of these items throughout the airspace would mean a physical strike would be extremely remote.

The possibility of a wildfire from flare usage impacting wildlife habitat would be remote considering the release altitude under the Proposed Action. Flares would not be released below 2,000 feet AGL and are designed to burn completely within the first 400 feet of descent. The risk of wildfires from flare usage would be mitigated by operational constraints, including the prohibition of flares during periods of "Very High" or "Extreme" National Fire Danger Ratings. During periods of "High" fire danger, aircraft would not use flares below 18,000 feet MSL. Potential impacts associated with wildfires is further discussed in **Section 4.10.1.3,** *Safety: Chaff and Flares*.

4.5.1.2 Domestic Animals

Potential Effects from Aircraft Noise

Behavioral reactions to jet aircraft noise in domestic animals vary with each species, however, observations of livestock exposed to sonic booms have generally consisted of startle reactions that were considered minimal (Manci et. al. 1988). In a study of the effects to the anatomy of swine ears from aircraft noise, animals exposed to trials of aircraft noise of 120 dB to 135 dB showed no injury to the gross anatomy of the ear or the organ of corti compared to a control group (Dufour 1980). In another study nursing sows, baby pigs, and adult pigs during mating were observed to show initial alarm followed by indifference at noise sources from 104 to 120 dB (Defour 1980). These researchers considered that swine were able to tolerate and even become accustomed to noise up to at least 120 dB (Dufour 1980). It is expected that domestic animals and livestock beneath the proposed airspace would have a behavioral reaction to an overflight but the intensity of that reaction would vary greatly with the species and other environmental conditions at the time of the overflight. These studies indicate that these animals would habituate to the noise over time if it occurred with some regularity and such noise would not have a long-term impact. Animals experiencing an overflight for the first time would likely alert or startle, but it is not expected that this would have a detrimental impact to the animal's overall health. Given the volume of proposed airspace, no single location is expected to be subjected to repeated or continuous overflights or sonic booms.

A horse's range of hearing is greater than that of a human and their ears can pick up a sound at a lower volume and greater distance than would be picked up by humans (The British Horse Society, no date). Horses are prey animals so their typical response to danger is flight (The British Horse Society, no date). Horses have been observed to show fright responses, such as jumping or galloping around, to jet aircraft (Dufour 1980). According to The British Horse Society (no date), a horse's reaction to a sudden noise is typically freezing followed by spinning or running away from the noise source. When a horse is in "flight" mode, it can be difficult for the rider or handler to maintain control of the horse or the rider could be knocked off the horse. Horses can often habituate or become used to a noise, but this varies greatly depending on the individual horse's temperament and training. Their reaction is usually strongest when the noise resembles that of a predator, that is, a quiet rustling would elicit a stronger response than a high speed train (The British Horse Society, no date).

While the studies on the effect of aircraft noise on pregnant mares are somewhat limited, LeBlanc, et al performed a study that focused on changes in pregnancy success, behavior, cardiac function, hormonal production, and rate of habituation in response to F-14 overflights (LeBlanc et.al. 1991). The study found that pregnant mares habituated to jet noise after a few exposures. All of the mares showed flight posture after the first noise exposure but at no time did any of them strike or run into stall walls. Since the mares in this study were kept in stalls during the noise exposure events, it was speculated that in a large, open environment the response would have been stronger (galloping farther distance or faster). There were no

differences in pregnancy success when compared to a control group. Since all of the mares habituated to the noise, it was recommended that new mares remain in familiar stalls until their reaction to overflights could be gauged and they become habituated (LeBlanc et.al. 1991). Since the overflights associated with the Proposed Action are not expected to occur with regularity at any one location, any pregnant mares that happen to be beneath the flight path of a low-level flight would likely startle but their reaction is not anticipated to result in pregnancy loss.

Horseback riding is a common practice beneath the existing and proposed airspace. The primary concern with respect to horses would be the safety of the rider or handler in the event a horse startles and bolts to such a degree that the rider is thrown from the horse or the horse injures itself. Overflights above Wilderness Areas, where horseback riding is a common recreational pastime, would be limited to no less than 2,000 feet AGL and would not experience the "loudest" overflight (that is, a direct overflight of 500 feet AGL). A direct overflight at this altitude would still create a high level of noise (see **Section 4.3**, *Acoustic Environment*), but the duration of the noise event would be short (several seconds). While it is quite probable that a horseback rider may experience an overflight, it is not expected that this would be a regular situation given the volume of airspace proposed for training. It is assumed that a horse would startle and possibly spin or bolt in response to an overflight, although the response would vary greatly with each individual animal. In support of the U.S. Forest Service Report to Congress: Wilderness Aircraft Overflight Study, a review of U.S. Forest Service annual reports for a 10-year period found 3 accidents were reported in which aircraft startled the horse and threw the rider (USFS 1992). Also in this study, national visitor surveys about accidents found that 1,180 visits reported an "accident", but none of those accidents were related to aircraft overflights. These survey results indicate that while there is potential for aircraft to cause accidents (to include startling horses), incidents are rare. In addition to the proposed military aircraft overflights, aircraft are used for a variety of forest management objectives such as fire suppression, resource management, and scenic overflights, therefore, the presence of aircraft is not uncommon.

Potential Effects from Chaff and Flare

A 1972 study found no evidence of toxicity in calves fed chaff (Air Force 2011). The study was unsuccessful in getting calves to eat chaff until the chaff was soaked with molasses. The study found no significant differences in the weight gain of calves given chaff versus the animals not given chaff. Similar studies in cattle and goats found no evidence that chaff ingestion posed a health hazard for farm animals (Air Force 1997). Since chaff distribution is expected to be minimal in any given location, adverse effects from chaff ingestion is not expected. Another concern of chaff that has been raised would be its effect on sheep's wool. In the unlikely event that chaff or residual materials had fallen on a sheep and remained in the wool, it is expected these items would be removed from the wool during the normal process to remove impurities prior to marketing the wool (Air Force 2011). The potential effects of flares and flare residual materials to domestic animals would the same as those described for wildlife (see **Section 4.5.1.1**, *Wildlife*).

4.5.1.3 Special-Status Species

The potential impacts associated with the proposed training activities to special-status species would be the same as those described in **Section 4.5.1.1**, *Wildlife*. As described in **Section 4.5.1.2**, *Potential Effects from Chaff and Flare*, there have been no observed effect of chaff on terrestrial organisms, even when subject to higher concentrations than would occur under the Proposed Action. Birds have not been documented using chaff filaments or residual materials as nesting material or food. The possibility of a wildfire from flare usage would be remote considering the reliability of flares, the proposed release altitude, and the fire

restrictions that would be implemented as part of this Proposed Action. Therefore, the use of chaff and flare would not affect threatened or endangered species.

The potential impact to threatened and endangered species would be disturbance from aircraft noise. The five threatened or endangered bird species that potentially occur beneath the proposed Talon MOA would not be expected to be significantly affected by the noise associated with the proposed training. In accordance with Section 7 of the ESA, the Air Force consulted with USFWS on the Preferred Alternative and received their concurrence with the effects determinations made in the Biological Assessment. A summary of the potential impacts from aircraft noise is provided below for each species.

Interior Least Tern

The only known breeding population of Interior Least Terns in the vicinity of the proposed Talon MOA is at Bitter Lake National Wildlife Refuge. The refuge is near Roswell, New Mexico approximately 20 miles from the northern border of the proposed Talon High B and C MOAs. The projected average subsonic noise within the Talon High B and C MOAs would be 47 and 39 DNL, respectively. The proposed F-16 training is not expected to change the current average noise at Roswell, New Mexico under Alternative 1 (see Section 4.3.1.1, Subsonic Noise). Similarly, the sonic boom activity is not expected to change the noise environment at Roswell, New Mexico. Terns breeding at the refuge would not experience a direct overflight since they would be outside of the proposed MOA. Therefore, disturbance to the terns from the proposed operations would be very unlikely. The Proposed Action would have no effect on Interior Least Terns.

Mexican Spotted Owl

The Mexican Spotted Owl inhabits the southern portion of the Lincoln National Forest outside of the boundary of the proposed Talon MOA, but could occur in parts of the forest beneath the MOA. Owls located beneath the proposed Talon Low A MOA could experience low-level overflights of 500 feet AGL. In a 1997 helicopter overflight study, Mexican spotted owls did not flush from a nest or perch unless a helicopter was as close as 330 feet (Delaney et al. 1997). Researchers in Colorado found that Mexican Spotted Owl responses to F-16 overflights were often less significant than responses to naturally occurring events such as thunderstorms. Similarly, Delaney et al. (1997) found that Mexican spotted owls quickly returned to normal day-roosting behavior after being disturbed by helicopters. A 6-year study within the Gila National Forest found that low-level aircraft overflight had no effect on occupancy of Mexican Spotted Owl activity centers and found no correlations among measures of aircraft exposure and nesting success (ACC 2008). Movement and flight as a behavioral response to overflights has been treated as a potential concern since it exposes the owl, chicks, or eggs to predation. However, the results of the 6-year study showed that Mexican Spotted Owl flights in response to military jet overflights were so rare that the rate could not be distinguished from normal rates of flight. In fact, females were never observed flushing from nests in response to military jets or other low-flying aircraft. Observations during this study confirmed that flight and flushing responses are close-range defensive responses (ACC 2008). Given these studies, Mexican spotted owls beneath the proposed Talon MOA could be disturbed from low-level F-16 training activity, but the impact would be temporary and minor. The Proposed Action may affect, but is not likely to adversely affect Mexican Spotted Owls.

Northern Aplomado Falcon

There have been limited occurrences of Northern Aplomado Falcons from an experimental, non-essential population in the vicinity of the proposed Talon MOA. While considered rare, falcons beneath the airspace

could be disturbed from the proposed F-16 training. In a literature review of raptor responses to aircraft noise, Manci et al. (1988) found that most raptors did not show a negative response to overflights. When negative responses were observed, they were predominantly associated with rotor-winged aircraft or jet aircraft that were repeatedly passing within 0.5 miles of a nest. Ellis et al. (1991) performed a study to estimate the effects of low-level military jet aircraft and mid- to high altitude sonic booms (both actual and simulated) on nesting peregrine falcons and seven other raptors (common black hawk, Harris' hawk, zone-tailed hawk, red-tailed hawk, golden eagle, prairie falcon, bald eagle). Re-occupancy and productivity rates were within or above expected values for self-sustaining populations. Based on these studies, the potential impact to any falcons occurring beneath the Proposed Talon MOA would be temporary and minor. The Proposed Action may affect, but is not likely to adversely affect Northern Aplomado Falcons.

Piping Plover

The Piping Plover has only been known as a very rare migrant in New Mexico, with potential to occur in Chaves and Eddy Counties, including one reported observation at Avalon Lake, north of Carlsbad, New Mexico and beneath the boundaries of the existing Talon MOA. Though there are no studies of the effects of noise on piping plovers, the potential impacts from aircraft noise are expected to be the same as those described above for birds: masking of intraspecific communications, reduced detectability of predators, and with exposure to high noise levels, temporary hearing shifts. Volume II of the *Draft Revised Recovery Plan for the Wintering Range of the Northern Great Plains Piping Plover and Comprehensive Conservation Strategy for the Piping Plover in its Coastal Migration and Wintering Range in the Continental United States* (USFWS 2015) provides an overview of threats to wintering piping plovers including a review of the impacts of military activities including training, and aircraft operations, to wintering piping plovers and their habitats. It concludes that current threats to wintering and migrating piping plovers posed by military activities appear minimal. Based on the rare occurrence of piping plovers beneath the proposed Talon MOA, and the low likelihood of a direct overflight, the potential for impacts would be low and in the event an overflight occurred, masking would be temporary and minor. The Proposed Action would have no effect on Piping Plovers.

Southwestern Willow Flycatcher and Yellow-billed Cuckoo

The southwestern willow flycatcher and yellow-billed cuckoo have the potential to occur beneath the proposed Talon MOA. Both species nest in riparian vegetation along rivers and streams throughout the arid southwest. Though there are no studies of the effects of noise on these species, the potential impacts from aircraft noise are expected to be the same as those described above for birds: masking of intraspecific communications, reduced detectability of predators, and with exposure to high noise levels, temporary hearing shifts. Noise disturbance, particularly from recreationists, is listed among the threats to the southwestern willow flycatcher and is often accompanied by other impacts such as vegetation damage and removal, increased incidence of fire, increased spread of invasive plant species, and increases in predation (USFWS 2002). The same potential for disturbance applies to yellow-billed cuckoo, which also breed in riparian habitat where recreation is common. Though increases in noise are expected to occur as a result of the Proposed Action in parts of the land beneath Talon MOA, noise levels would remain generally low and exposure would be distributed over a large area and episodic rather than chronic. Any masking that would occur would be temporary and minor and is not expected to result in impacts to breeding success of these species. Based on the nature of the noise that would result from the modification of the Talon MOA, and the low likelihood of a direct overflight, the potential for impacts to these species would be low. In the

event a direct overflight did occur, impacts are expected to be temporary and minor. The Proposed Action may affect, but is not likely to adversely affect Southwestern Willow Flycatchers or Yellow-billed Cuckoos.

4.5.2 Alternative 2: Cato, Smitty, and Lobos MOAs

Proposed pilot training within the proposed Cato, Smitty, and Lobos MOAs could potentially disturb wildlife residing beneath the existing and proposed airspace in the same manner as described under Alternative 1. Since the floors of the Christa and Kendra ATCAAs are 18,000 feet MSL, no disturbance to wildlife or special-status species beneath these areas would be anticipated. The proposed increases to the average acoustic environment would be minor and were detailed in **Table 4.3-6** in **Section 4.3** (Acoustic Environment). Similar to Alternative 1, the proposed Cato, Smitty, and Lobos MOAs would support a variety of proposed training activities (i.e., various aircraft speeds and maneuvers within high and low altitudes) and the potential noise would be spread across a vast area (over 3 million acres). As such, the proposed training would not create a consistent, significant noise source in any one location. The predicted average annual DNL throughout the airspace from all of the aircraft operations would range from 48 to 55 DNL (see **Table 4.3-6**).

As described in Alternative 1, while it would not be expected that a single location would be subjected to regular or continuous high levels of noise, there would be the possibility that a location would be subjected to a low-level overflight and animals beneath such a flight would experience a high level of noise. As shown in **Section 4.3** (Acoustic Environment), the estimated noise that would be experienced by an animal would be significantly reduced the further away the animal was from the direct aircraft path. In the most extreme scenario an animal could experience a peak noise level (L_{max}) as high as 120 dB for a duration of 0.8 seconds. This would be very rare and would only occur from a low-level overflight (500 feet AGL) using maximum power with an afterburner passing directly above the animal. The majority of the proposed operations would occur above 10,000 feet AGL, which would have a peak noise level (L_{max}) of 85 dB for a duration of 0.8 seconds from an aircraft passing directly above the animal.

Since the Proposed Action would include supersonic flight, sonic booms would be likely within the Cato, Smitty, and Lobos MOAs. As described in **Section 4.3** (Acoustic Environment), given the high altitude proposed for supersonic activity, sonic booms would not be a continuous noise source within these MOAs nor would they contribute significantly to the overall noise environment.

4.5.2.1 Wildlife

While the individual species and abundance of wildlife beneath the proposed MOAs in Alternative 2 may vary, the potential impacts to wildlife from aircraft noise and use of chaff and flares would be the same as those described for species groups in Alternative 1 in **Section 4.5.1.1** (Wildlife) and **Section 4.5.1.2** (Domestic Animals). The pilot training in the proposed Cato, Smitty, and Lobos MOA would be expected to have minor impacts to wildlife inhabiting land beneath the airspace.

4.5.2.2 Special-Status Species

The potential impacts associated with the proposed training activities to special-status species would be the same as those described in **Section 4.5.1.1,** *Wildlife*. As described in **Section 4.5.1.2**, *Potential Effects from Chaff and Flare*, there have been no observed effect of chaff on terrestrial organisms, even when subject to higher concentrations than would occur under the Proposed Action. Birds have not been documented using chaff filaments or residual materials as nesting material or food. The possibility of a wildfire from flare

usage would be remote considering the reliability of flares, the proposed release altitude, and the fire restrictions that would be implemented as part of this Proposed Action. Therefore, the use of chaff and flare would not affect threatened or endangered species.

Critical habitat has been designed for three of the threatened and endangered species potentially affected by the Proposed Action (Mexican Spotted Owl, Southwestern Willow Flycatcher, and Yellow-billed Cuckoo). The Proposed Action would not alter or otherwise affect critical habitat beneath the airspace. As described in previous sections of this EIS, chaff filaments and residual materials from chaff and flare use would not be concentrated in any one area to a degree that would have an impact to ground or water resources. The Proposed Action does not include any ground disturbance activities that would remove critical habitat or diminish its availability or quality. Therefore, the Proposed Action would have no effect on critical habitat.

The potential impact to threatened and endangered species would be disturbance from aircraft noise. The six threatened or endangered bird species and three mammals that potentially occur beneath the proposed Cato, Smitty, and Lobos MOAs would not be expected to be significantly affected by the noise associated with the proposed training. The potential impacts to the bird species and the effects determinations would be the same as those described in **Section 4.5.1.3**, *Special-Status Species*. The Air Force consulted with the USFWS on Alternative 1 (Preferred Alternative) and received concurrence for their findings on the bird species. If Alternative 2 were selected, the Air Force would informally consult with USFWS to gain their concurrence with their findings for the three mammal species that were not included in the consultation for Alternative 1. A summary of the potential impacts from aircraft noise to the three mammals is provided below.

Mexican wolf

The Mexican wolf in the vicinity of the proposed Cato, Smitty, and Lobos MOAs is an experimental, non-essential population. While wolves have been frightened by low altitude flights that were 25 to 1,000 feet AGL, they have been found to adapt to aircraft overflights and noise as long as they were not being hunted from aircraft (Dufour 1980). Incidental observations of wolves and bears exposed to fixed-wing aircraft and helicopters indicated a stronger reaction to helicopters. Wolves were less disturbed by helicopters than wild ungulates, while individual grizzly bears showed the greatest response of any animal species observed (Manci et al. 1988). Fright is not a recognized cause of abortions in clinical studies involving thousands of animals. Spontaneous noise induced abortions do not occur in well-established pregnancies (Bowles 1995). If a noise arouses an animal (i.e., gets their attention, wakes them, or increases their activity), the increased activity has the potential to affect the animals metabolic rate. The increased activity could deplete energetic reserves. A few studies have documented increases in activity after aircraft approaches, but the response was fairly mild, such as starting a few steps or walking away slowly from the site of the disturbance (Bowles 1995). Given the available information, the potential impact to the Mexican wolf from the proposed operations would be temporary and minor. The Proposed Action may affect, but is not likely to adversely affect Mexican wolves.

Jaguar

The very northern edge of the Borderlands Secondary Area of the Northwestern Recovery Unit for the jaguar overlaps the lower southwest corner of New Mexico, approximately 12 miles from the proposed Lobos MOA (USFWS 2018). It would be extremely rare for a jaguar to be beneath the airspace, however, if one were to occur the potential impacts from noise would be similar to those described for the Mexican

wolf. There are no studies or data on jaguar responses to jet overflights. The Proposed Action would have no effect on jaguars.

Mexican long-nosed bat

Bat responses to overflights would be the same as those described for other mammals. Startle or fright is typically the immediate behavioral reaction to transient, unexpected noise in mammals (Dufour 1980). A field study was done to determine if aircraft noise altered the evening activity of New Zealand long-tailed bats. In this study the low altitude aircraft activity overlapped the evening bat activity near a runway at an international airport. The study found that the aircraft activity did not mask echolocation pulses since the aircraft noise was most intense at less than 10 kHz and bat echolocation pulses are 40 kHz. There were no statistically significant differences in mean bat activity during and after overflights compared with pre-aircraft activity (Le Roux and Waas 2012). The bat is nocturnal so their potential interaction with the proposed operations would be limited to aircraft operations after dark (approximately 10 percent of the proposed operations). Given the results of the Le Roux and Waas (2012) study and the limited potential interaction with overflights, it is expected that noise disturbance to the bat would be minor and temporary. The Proposed Action may affect, but is not likely to adversely affect Mexican long-nosed bats.

4.5.3 Alternative 3: Talon, Cato, Smitty, and Lobos MOAs

Alternative 3 includes the same geographic locations (and associated wildlife) as Alternatives 1 and 2. While the increases to the average acoustic environment would be slightly different, ranging from 43 to 56 DNL (see **Table 4.3-10 in Section 4.3**, Acoustic Environment), the potential impacts to wildlife and domestic animals associated with aircraft noise and chaff and flare usage would be similar to those described in **Sections 4.5.1 (**Alternative 1: Talon MOA) **and 4.5.2** (Alternative 2: Cato, Smitty, and Lobos MOAs). Likewise, the potential impacts to special-status species would be similar to those described in **Sections 4.5.1.3 and 4.5.2.2**. If Alternative 3 were selected, the Air Force would informally consult with USFWS to gain their concurrence with their findings for the three mammal species that were not included in the consultation for Alternative 1. Under Alternative 3, the Lobos Low MOA would not be established. Therefore, the wildlife and special-status species that occur beneath the Lobos Low MOA would not be exposed to low-level overflights. The lowest overflights in this area would be limited to 13,500 feet MSL which would have much less noise than what was addressed in Alternative 2.

4.5.4 No Action Alternative

Under the No Action Alternative, there would be no airspace modifications in the vicinity of Holloman AFB in support of F-16 pilot training. Training of F-16 aircrews stationed at Holloman AFB would continue to utilize WSMR airspace and other MOAs in the vicinity of Holloman AFB to the extent practicable. Natural resources beneath or in the vicinity of existing airspace would continue to be exposed to aircraft activity and the associated noise.

4.6 LAND MANAGEMENT

Land use is affected by changes that alter, detract, or eliminate use or enjoyment of a place. Since the Proposed Action would not involve any ground disturbance, the primary effect of project implementation on land use would be associated with noise generated by aircraft operations within existing and proposed airspace. Acoustic Environment is discussed in detail in **Section 4.3**. Impacts to Recreation are discussed in **Section 4.7** and the socioeconomic impacts are discussed in **Section 4.8**.

FAA regulations specify minimum altitude and avoidance distances aircraft must adhere to when flying over specific types of structures, settlements, or categories of land. In accordance with FAA avoidance rules (14 CFR 91.119), aircraft must avoid congested areas of a city, town, or settlement or any open-air assembly of people by 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet. Outside congested areas, aircraft must avoid persons, vessels, vehicles, or structures by 500 feet. Low altitude avoidance and noise sensitive areas for the proposed airspace would be charted and published by the FAA and/or identified in the local flight instructions for pilots. Pilots would be instructed to avoid these locations by horizontal and vertical distances to enhance flight safety, noise abatement, and environmental sensitivity. Even with these avoidance distances, there would be a potential for perceptible increases in noise levels for some rural residents to occur.

According to the Federal Interagency Committee on Urban Noise, exposure to noise levels in excess of 65 DNL is incompatible with residential, public use, and recreation. Noise and overflight exposure changes were evaluated at POIs including population centers, Wilderness Areas, and parks. Some of these are discussed below. For a detailed discussion, see **Section 4.3** (Acoustic Environment).

4.6.1 Alternative 1: Talon MOA

Nearly 1.6 million acres including Brantley and Avalon Reservoirs, Living Desert Zoo and Gardens, and the towns of Carlsbad, Artesia, La Huerta, Atoka, Happy Valley, and Livingston Wheeler lie beneath the existing Talon MOA, the floor of which would be raised from 300 to 500 feet AGL. The noise exposure at all of these locations would remain below the 65 DNL threshold.

The configuration of Talon MOA proposed under Alternative 1 would overlie an additional 1.08 million acres, primarily non-Federal lands, including the town of Loving, and land managed by the BLM in addition to a smaller area of the Lincoln National Forest (see **Table 4.6-1**).

Table 4.6-1. Lands Underlying the Proposed Expanded Configuration of Talon MOA under Alternative 1

Lands underlying new Talon MOA configuration Alternative 1	Area[1] (acres)
Non-Federal Lands	485,974
BLM	583,009
Lincoln National Forest	11,329
Total	**1,080,312**

Note: [1] Acreages are derived from multiple data sources and so are approximate.
Legend: BLM-Bureau of Land Management; MOA-Military Operations Area.

As shown in **Table 4.3-2** (**Section 4.3,** Acoustic Environment), no areas beneath the configuration of Talon MOA proposed under Alternative 1 would be exposed to a noise level in excess of 65 DNL, though some increases in noise levels from military aircraft would be experienced beneath the proposed Talon MOA. **Table 4.3-4** (**Section 4.3**, Acoustic Environment) shows projected noise levels at identified POIs including managed lands and towns. The communities of Loco Hills and Loving lie beneath the expanded boundaries of Talon MOA and would experience noise (56 and 42 DNL, respectively) from proposed aircraft operations within the MOA. The Lincoln National Forest lies beneath the existing and proposed boundaries of Talon MOA, and would experience a slight increase in noise from aircraft operations, from 53 to 56 DNL. While these levels would be perceptible, they would be well below the threshold of 65 DNL considered to be incompatible with residential and recreational land uses. Additionally, due to the size of the airspace, single event noise-related impacts in these areas associated with direct aircraft flyovers would

be infrequent, temporary, and short-term. Therefore, it would be expected that land use patterns beneath the Talon MOA proposed by Alternative 1 would remain unchanged.

4.6.2 Alternative 2: Cato, Smitty, and Lobos MOAs

More than 2.25 million acres of land underlie the existing configuration of the Cato and Smitty MOAs. These lands are primarily non-Federal, including the town of Magdalena, or are managed by the BLM or USFS, including the Cibola, Gila, and Apache-Sitgreaves National Forests and the Withington Wilderness within the Cibola National Forest.

The proposed configuration of the Cato and Smitty MOAs under Alternative 2 would overlie an additional 297,442 acres of lands, primarily non-Federal land and larger areas of the Cibola and Gila National Forests, including the Apache Kid and Aldo Leopold Wildernesses. Approximately 180,000 acres of the Apache-Sitgreaves National Forest that lie under the current configuration of the Cato and Smitty MOAs would not underlie the area proposed to be returned to the NAS (See **Table 4.6-2**).

Table 4.6-2. Lands Underlying the Existing and Proposed Configurations of Cato and Smitty MOAs under Alternative 2

Lands underlying Cato and Smitty MOAs		Area (acres)		
		Existing	Proposed	Change
Non-Federal Lands		890,990	1,062,328	171,338
USFS	Cibola National Forest	389,230	456,612	67,382
	Withington Wilderness (within Cibola National Forest)	1,406	18,815	17,409
	Apache Kid Wilderness (within Cibola National Forest)	0	44,671	44,671
	Gila National Forest	214,579	440,991	226, 412
	Aldo Leopold Wilderness (within Gila National Forest)	0	3,657	3,657
	Apache-Sitgreaves National Forest	374,257	193,957	-180,300
BLM	Socorro Field Office	384,242	321,230	-63,012
	Las Cruces District	0	9,885	9,885
Total		**2,254,704**	**2,552,146**	**297,442**

Note: Acreages are derived from multiple data sources and so are approximate.
Legend: BLM-Bureau of Land Management; MOA-Military Operations Area; USFS-U.S. Forest Service.

The proposed Lobos MOA would overlie a total of nearly 1.5 million acres of federally-managed land, including nearly 1 million acres of the Gila National Forest that includes the Aldo Leopold and Gila Wildernesses, lands managed by the Las Cruces District and Safford Field Offices of the BLM, and the Gila Cliff Dwellings National Monument. Additionally more than 1.1 million acres of non-Federal land lie beneath the proposed Lobos MOA including the communities of Silver City, Santa Clara, Arenas Valley, and Tyrone (See **Table 4.6-3**).

Table 4.6-3. Lands Underlying the Proposed Lobos MOA under Alternative 2		
Lands Underlying the Proposed Lobos MOA		**Area (acres)**
Non-Federal Lands		1,151,976
USFS	Gila National Forest	476,038
	Aldo Leopold Wilderness (within Gila National Forest)	177,228
	Gila Wilderness (within Gila National Forest)	325,086
BLM	Las Cruces District	304,065
	Safford Field Office	62,340
NPS	Gila Cliff Dwellings National Monument	463
Total		**2,497,197**

Note: Acreages are derived from multiple data sources and so are approximate.
Legend: BLM-Bureau of Land Management; MOA-Military Operations Area; NPS-National Park Service; USFS-U.S. Forest Service.

The proposed Christa and Kendra ATCAAs would overlie a total of more than 1.35 million acres of federally-managed land including nearly more than 230,000 acres of the USFS land that includes the Aldo Leopold Wilderness, lands managed by the Las Cruces District and Socorro Field Offices of the BLM, The Bosque del Apache National Wildlife Refuge, the BOR-managed Elephant Butte and Caballo Reservoirs, and the Jornada Experimental Station. Additionally approximately 387,000 acres of non-managed land lie beneath the proposed ATCAAs, including the following locations with populations greater than 500: Hurley, Bayard, Mimbres, Hatch, Doña Ana, Radium Springs, Salem, Placitas, Las Cruces, and Truth or Consequences (see **Table 4.6-4**). The floor of these ATCAAs would be 18,000 feet MSL, consequently underlying lands such as the towns of Truth or Consequences and Socorro and managed lands like Bosque del Apache National Wildlife Refuge and Elephant Butte and Caballo Reservoirs would not experience any perceptible increase in noise above background levels.

Table 4.6-4. Lands Underlying the Proposed Christa and Kendra ATCAAs under Alternative 2		
Lands Underlying the Proposed Christa and Kendra ATCAA		**Area (acres)**
Non-Federal Lands		387,812
USFS	Cibola National Forest	70,699
	Gila National Forest	138,761
	Aldo Leopold Wilderness (within Gila National Forest)	20,826
BLM	Socorro Field Office	233,519
	Las Cruces District	740,862
USFWS	Bosque del Apache National Wildlife Refuge	41,763
BOR	Elephant Butte and Caballo Reservoirs	37,596
USDA	Jornada Experimental Station	64,442
Total		**1,736,280**

Note: Acreages are derived from multiple data sources and so are approximate.
Legend: ATCAA-Air Traffic Control Assigned Airspace; BLM-Bureau of Land Management; BOR-Bureau of Reclamation; USDA-U.S. Department of Agriculture; USFS-U.S. Forest Service; USFWS-U.S. Fish and Wildlife Service.

As shown in **Table 4.3-6,** no areas beneath the configuration of Cato, Smitty, and Lobos MOAs or the Christa and Kendra ATCAAs proposed under Alternative 2 would be exposed to a noise level in excess of

65 DNL, though some noticeable increases in noise levels would be experienced beneath the proposed airspace.

Table 4.3-7 shows projected noise levels at identified POIs, including managed lands and towns, all of which would be below 52 DNL. While these levels would be perceptible, they would be well below the threshold of 65 DNL considered to be incompatible with residential and recreational land uses. Additionally, due to the size of the airspace, single event noise-related impacts in these areas associated with direct aircraft flyovers would be infrequent, temporary, and short-term. Therefore, it would be expected that land use patterns beneath the Cato, Smitty, and Lobos MOAs and the Christa and Kendra ATCAAs proposed by Alternative 2 would remain unchanged.

4.6.3 Alternative 3: Talon, Cato, Smitty, and Lobos MOAs

Alternative 3 includes expanding Talon MOA similarly to what is proposed in Alternative 1, as well as incorporating the changes proposed to Cato and Smitty MOAs, and establishing the Lobos MOA and Christa and Kendra ATCAAs as proposed in Alternative 2 (See **Tables 4.6-1, 4.6-2, 4.6-3, and 4.6-4**). However, there would be a few differences. First, the configuration of Talon MOA proposed by Alternative 3 would not include Talon High C, resulting in approximately 150,000 fewer acres of BLM and non-Federal land lying beneath the Talon MOA proposed by Alternative 3 (see **Table 4.6-5**).

Table 4.6-5. Lands Underlying the Proposed Expanded Configuration of Talon MOA under Alternative 3

Agency and Managed Lands		Existing	Proposed	Change
Non-Federal Lands		651,375	1,069,706	418,330
BLM	Total	722,634	1,223,624	500,989
USFS	Lincoln National Forest	199,602	210,932	11,329
Total		**1,583,366**	**2,514,015**	**930,649**

Note: Note: Acreages are derived from multiple data sources and so are approximate**.**
Legend: BLM – Bureau of Land Management; MOA-Military Operations Area; USFS – U.S. Forest Service.

In addition to the change in proposed configuration of Talon MOA, the proposed 10,000 annual flights would be divided among the Talon MOA to the east of Holloman AFB and the Cato, Smitty, and Lobos MOAs to the west, resulting generally in dispersal over a larger area and less frequent exposure to overflight noise on lands beneath all airspace. However, there would be no low component to the Lobos MOA; and therefore, low-level flights in the west would be concentrated in the Cato and Smitty MOAs. As shown in **Table 4.3-9**, no areas beneath the configuration of Talon, Cato, Smitty, and Lobos MOAs and the Christa and Kendra ATCAAs proposed under Alternative 3 would be exposed to a noise level in excess of 65 DNL, though some increases in noise levels, similar to those experienced under Alternatives 1 and 2, would occur. **Table 4.3-10** shows projected noise levels at identified POIs, including managed lands and towns. The highest levels of noise resulting from the proposed operations would be experienced in Loco Hills, which does not lie beneath the current configuration of Talon MOA (53 DNL), and in the Lincoln National Forest (from 53 to 55 DNL). While these levels would be perceptible, they would be well below the threshold of 65 DNL considered to be incompatible with residential and recreational land uses. Additionally, due to the size of the airspace, single event noise-related impacts in these areas associated with direct aircraft flyovers would be infrequent, temporary, and short-term. Therefore, it would be expected that land use patterns

beneath the Talon, Cato, Smitty, and Lobos MOAs and the Christa and Kendra ATCAAs proposed by Alternative 3 would remain unchanged.

4.6.4 No Action Alternative

If the No Action Alternative were selected, the airspace changes proposed would not be made and land use conditions would remain the same as those described in **Section 3.6 (Land Use)**.

4.7 RECREATION RESOURCES

4.7.1 Alternative 1: Talon MOA

Under Alternative 1, the Talon MOA would be reconfigured and expanded. There are numerous recreational opportunities under the Talon MOA that occur on both public and private land. The Lincoln National Forest, Brantley Lake State Park, and Living Desert Zoo and Gardens are located under the existing Talon MOA and would continue to be under the proposed Talon MOA. The proposed airspace modifications would not alter, prohibit, or otherwise limit the public's access to these recreational areas beneath the MOA. The proposed pilot training would generate noise within the MOA, which could detract from the public's enjoyment of these outdoor recreational areas. Numerous studies of park visitors demonstrate that some visitors, particularly to backcountry areas, report that their enjoyment and experience is affected by noise from a number of sources including rotary and fixed-wing aircraft, snowmobile and other vehicle noise as well as loud talking and other visitor sounds. In addition, that these experiences are influenced by a number of factors including the type of experience (overlook, front country or back country), whether an individual had visited previously, whether a visitor had taken a flight tour, and whether children were in the party (Rapoza et al. 2015; U.S. Department of Transportation 2014; Manning et al. 2009).

Recreational users of some of the lands under the airspace would experience slight noise increases, but the projected noise would not be considered incompatible with recreational land uses (see **Section 4.3.1**, Alternative 1: Talon MOA). Military training in the proposed Talon MOA would be dispersed throughout the MOA and individual training events would be relatively short in duration (lasting approximately 30 minutes to an hour). Operations within the Talon MOA would mostly occur between 7:00 a.m. and 10:00 p.m., Monday through Friday. Some activity would occur at night (approximately 10 percent of the operations); therefore, people camping on land beneath the airspace would have the potential to hear aircraft after dark. Most of the recreational areas beneath the proposed Talon MOA are under the existing Talon MOA and are currently subjected to pilot training activity. The proposed training would not be appreciably different from the current experience or that experienced from historical use of the MOA.

The introduction of sonic booms in a quiet environment would be noticeable, but the noise generated by the booms would be minimal (see **Section 4.3**, Acoustic Environment). The sonic boom, if heard, would be a sudden and startling noise that could adversely impact the experience of recreational users.

4.7.2 Alternative 2: Cato, Smitty, and Lobos MOAs

Under Alternative 2, the Cato and Smitty MOAs would be reconfigured and expanded, the Lobos MOA would be established, and the Christa and Kendra ATCAAs would be created. There are numerous recreational opportunities under these MOAs and ATCAAs that occur on both public and private land. The Cibola National Forest, Gila National Forest, Apache-Sitgreaves National Forest, Gila Cliff Dwellings National Monument, and Continental Divide Trail are located under the proposed Cato, Smitty, and Lobos

MOAs. A large portion of all these areas are beneath the existing Cato and Smitty MOAs and an MTR and currently experience some level of military training (for reference, see **Figure 3.3-3***, Points of Interest – West* in **Section 3.3.2.1,** *Acoustic Environment*.). The proposed airspace modifications would not alter, prohibit, or otherwise limit the public's access to these recreational areas beneath the MOAs or ATCAAs.

The proposed training would generate noise within the MOAs, which could detract from the public's enjoyment of these outdoor recreational areas. The USFS and NPS have studied the impact of flights on these sensitive areas (specifically, wilderness areas and national parks). The USFS study surveyed 2,020 visitors nationally, and found that nearly all visitors to wildernesses reported their intent to return (USFS 1992). In this study, aircraft noise intrusions did not appreciably impair surveyed wilderness user's overall enjoyment of their visits to wildernesses or reduce their reported likelihood of repeat visits. The majority of wilderness users interviewed were not annoyed by overflights, a minority was annoyed in some degree, and a smaller minority were highly annoyed by overflights. Wilderness visit enjoyment showed little relationship with annoyance due to the sound or sight of aircraft. In the NPS study, it was found that 2 to 3 percent of visitors can be expected to report "impact" from hearing or seeing aircraft (NPS 1994). "Impact" was defined as: interfered with enjoyment; annoyed by hearing or seeing aircraft; or interfered with appreciation of natural quiet. The USFS and NPS conclusions per these assessment reports issued after the 1987 National Parks Overflight Act, PL 100-91, were that up to 2,000 feet was the level at which environmental impacts raised concerns (USFS 1992; NPS 1994). FAA, in coordination with those same agencies, considered this concern when they issued FAA Advisory Circular 91-36D and recommended voluntary restrictions on flying below 2,000 feet AGL over these specific lands. The 2,000 feet AGL restriction would be implemented as part of the Proposed Action (see **Section 2.8.2** *Alternative 2: Cato, Smitty, and Lobos MOAs*). While aircraft activity over these recreational lands may impact the visitor's enjoyment of the area, it is not expected that the activity would have a significant impact on visitation to these areas.

Impacts to general aviation from implementation of Alternative 2 are discussed in **Section 4.2.2**, Alternative 2: Cato, Smitty, and Lobos MOAs, and Christa and Kendra ATCAAs. As stated in that section, it is expected that the MOA would be activated less than two times per weekday on average, for 30 minutes per period. It is not expected that the limited use of the low MOAs would significantly disrupt flights using private airstrips to access the area for recreational purposes.

Elephant Butte State Park, Bosque del Apache NWR, and the Rio Grande are located under the proposed Christa and Kendra ATCAAs. Recreational users of the lands under the ATCAAs would not experience an increase in noise from aircraft activity given the proposed high altitude for the floor of the ATCAAs (18,000 feet MSL) and limited use of the area for training purposes (see **Section 4.3.2**, Alternative 2: Cato, Smitty, and Lobos MOAs, and Christa and Kendra ATCAAs). While recreational users of lands beneath the ATCAAs may see an aircraft or hear some of the overflights, the noise at this high altitude would be minimal and not anticipated to disrupt recreational activities.

As described in Alternative 1, the introduction of sonic booms in a quiet environment would be noticeable, but the potential for sonic booms and the potential noise impacts associated with the booms would be minimal (see **Section 4.3**, Acoustic Environment). The sonic boom, if heard, would be a sudden and startling noise that could adversely impact the experience of recreational users.

4.7.3 Alternative 3: Talon, Cato, Smitty, and Lobos MOAs

The recreational areas beneath the airspace in Alternative 3 are the same as those described in Alternatives 1 and 2. As shown in **Section 4.3.3** (Alternative 3: Talon, Cato, Smitty, and Lobos MOAs), the potential noise impacts under Alternative 3 would be less than the potential noise impacts under Alternatives 1 and 2, and none of the projected noise levels would be considered incompatible with recreational uses. The proposed airspace modifications would not alter, prohibit, or otherwise limit the public's access to the recreational areas beneath the MOAs. The proposed pilot training would generate noise within the MOAs which could detract from the public's enjoyment of these outdoor recreational areas as described in Alternatives 1 and 2.

4.7.4 No Action Alternative

Under the No Action Alternative, there would be no SUA modifications in the vicinity of Holloman AFB. The recreational areas beneath existing SUA would continue to be exposed to military training activity and the associated noise (see also **Section 3.3.2.1** *Acoustic Environment: Affected Environment, Subsonic Noise*).

4.8 SOCIOECONOMICS

4.8.1 Impacts Common to All Action Alternatives

4.8.1.1 Population

The Proposed Action would not result in an increase in personnel at Holloman AFB or within the region. Therefore, the population within the ROI would remain unchanged from that presented for each alternative in **Section 3.8** (Socioeconomics).

4.8.1.2 Housing

There are a number of factors that affect property values that make estimating impacts difficult. Factors directly related to the property, such as size, improvements, and location of the property, as well as current conditions in the real estate market, interest rates, and housing sales in the area, are more likely to have a direct impact on property values. Several studies have analyzed property values as they relate to military and civilian aircraft noise. In one study, a regression analysis of property values as they relate to aircraft noise at two military installations was conducted (Fidell et al. 1996). This study found that, while aircraft noise at these installations may have had minor impacts on property values, it was difficult to quantify that impact. Other factors, such as the quality of the housing near the installations and the local real estate market, had a larger impact on property values. Therefore, the analysis was not able to predict the impact of aircraft noise on the property values of two comparable properties.

Another study examined and summarized the results of 33 studies that attempted to quantify the impact of noise on property values (Nelson 2003). It concluded that aircraft noise has the potential to adversely impact property values, specifically, property values could be discounted between 0.5 and 0.6 percent per decibel when compared to a similar property that is not affected by aircraft noise. Additionally, the data indicate that noise effects on property value increases for noise levels above 75 DNL. As illustrated in **Section 4.3** (Acoustic Environment), the noise associated with training is lower than that associated with an active runway (i.e., an installation). Also the noise exposure is distributed across a vast area and no single location would be expected to receive a consistently high exposure to noise. The highest DNL expected at any of

the municipalities under any of the Action Alternatives is 56 DNL which is much lower than the 65 DNL threshold established for land use restrictions and significantly lower than 75 DNL which has been indicated to affect property values. Given the low expected DNL values and the distribution of the training activity across such a large area, it would not be expected that the Proposed Action would have any quantifiable impacts to the existing housing values within the ROI.

4.8.1.3 Economic Impacts

Data from the USFS National Visitor Use Monitoring Program, including visitation and visitor spending are provided in **Section 3.8.2.3,** *National Forest Visitor Spending***.** These data also indicate that an average of 57 percent of visitors to the four National Forests within the region of influence, travel more than 50 miles for their visits. Data from the NPS, including visitation and visitor spending are provided in **Section 3.8.2.4,** *National Park Visitor Spending***.** Noise analysis results presented in **Section 4.3** (Acoustic Environment) indicate that the Proposed Action would not result in significant increases in noise and that the average noise resulting from the Proposed Action would not be at a level that would be considered incompatible with recreational land uses (greater than 65 DNL). Though studies show that noise from a number of sources, including aircraft, can affect visitor experience and enjoyment (see Section **4.7.1**), it is not clear how such experience affects visitation. In a USFS survey of 2,020 visitors nationally, nearly all visitors to wildernesses reported their intent to return (survey was part of a *Report to Congress: Potential Impacts of Aircraft Overflights of National Forest Service System Wildernesses* [USFS 1992]). In the 1992 USFS study, wilderness visit enjoyment showed little relationship with annoyance due to the sound or sight of aircraft. In a similar NPS study, it was found that 2 to 3 percent of visitors can be expected to report "impact" from hearing or seeing aircraft (*Report to Congress: Report on Effects of Aircraft Overflights on the National Park System* [NPS 1994]). "Impact" was defined as: interfered with enjoyment; annoyed by hearing or seeing aircraft; or interfered with appreciation of natural quiet. While it is possible that noise could reduce visitation by some users, there is no way to predict the exact impact that the presence of military aircraft may have on a specific National Forest or National Park. Since the specific impact to visitation cannot be determined, the economic impact cannot be quantified. However, based on the USFS and NPS assessments, it is not expected that the presence of aircraft noise would have a significant impact to overall visitation nor the economic contributions associated with that visitation.

4.8.2 No Action Alternative

Under the No Action Alternative, there would be no SUA modifications in the vicinity of Holloman AFB. Socioeconomic conditions would continue as described in **Section 3.8**, *Socioeconomics*.

4.9 ENVIRONMENTAL JUSTICE

The analysis of environmental justice considered the minority and low-income populations and children underlying the affected airspace under the Proposed Action. Changes in the noise environment were the primary consideration in the analysis, and as such, determinations are made as to whether changes in the noise environment would adversely affect the health or environment of populations living in the areas identified in the affected environment (see **Table 3.9-1**).

4.9.1 Impacts Common to All Action Alternatives

No significant impacts were identified in association with any resource areas that would be anticipated to adversely impact the health or environment of minority or low-income populations or children living under

the areas affected under any of the alternatives. Noise levels in the airspace would remain below 65 DNL and would not create a health concern. The noise levels are also well below 75 DNL, the level at which housing values could be affected. Air emissions would not exceed any defined thresholds that are in place to protect the public health. The proposed training operations would be spread across a vast area and are not expected to occur in any one location on a repetitive basis; therefore, no population would be exposed to a disproportionate amount of overflights and the associated impacts from those overflights. Because there would not be significant impacts that would adversely affect minority or low-income populations or children, there would be no impact to environmental justice. There would be no disproportionate impact to minority or low-income populations or children under any of the action alternatives.

4.9.2 No Action Alternative

Under the No Action Alternative, there would be no SUA modifications in the vicinity of Holloman AFB. The minority and low-income populations and children would remain as described in **Section 3.9**, *Environmental Justice*.

4.10 SAFETY

Numerous Federal, civil, and military laws and regulations govern operational safety at Holloman AFB. Individually and collectively these laws and regulations prescribe measures, processes, and procedures required to ensure safe operations and to protect the public, military, and property. Elements of the Proposed Action with a potential to affect safety were evaluated to determine the degree to which such elements increase or decrease safety risks.

4.10.1 Impacts Common to All Action Alternatives

4.10.1.1 Ground Safety

Under the Proposed Action, the ground operations and maintenance procedures conducted by Holloman AFB personnel would not change from current conditions. All activities would continue to be conducted in accordance with applicable regulations, Technical Orders, and Air Force Occupational Safety and Health standards. There would be no aspects of the Proposed Action that would be expected to create new or unique ground safety issues or create additional risk. Any ground safety emergency that involves a life-flight transporting time-critical patients or donated organs receive priority status through any airspace unit when the pilot provides a call sign to the air traffic controller. FAA Order JO 7110.65X, *Air Traffic Control*, states that operational priority is given to civilian air ambulance flights when verbally requested. Priority to life-flight status would not change with implementing the Proposed Action. Military training in the affected airspace would be stopped during such an event. Operations within the proposed MOAs would not be expected to create any ground safety issues.

Crash Response

Holloman AFB has the capability to provide crash response; and this capability would remain in place under this airspace proposal. In the unlikely event of a crash within the proposed airspace area, local first responders would likely be first on the scene given the distance from Holloman AFB. Holloman AFB crash response would continue to follow standard procedures and plans as described in **Section 3.10** (Safety). There would be no changes to crash response procedures from implementation of the Proposed Action.

It is impossible to predict the precise location of an aircraft accident. Major considerations in any accident are loss of life and damage to property. The aircrew's ability to exit from a malfunctioning aircraft is dependent on the type of malfunction encountered. The probability of an aircraft crashing into a populated area is extremely low, but it cannot be totally discounted. Several factors are relevant: the ROI and immediate surrounding areas have relatively low population densities; pilots of aircraft are instructed to avoid direct overflight of population centers at very low altitudes; and, finally, the limited amount of time the aircraft is over any specific geographic area limits the probability that impact of a disabled aircraft in a populated area would occur.

Should a mishap occur, response and recovery operations could necessitate such activities as the use of motorized vehicles and excavation to contain contamination. This type of activity is normally prohibited in Wilderness Areas. When responding to a crash site, the Air Force would consult with the appropriate land use manager to minimize direct damage and coordinate actions. Due to the myriad factors in such an occurrence, detailed steps cannot be foreseen. Each crash response would be considered on a case by case basis to minimize the intrusiveness to the maximum extent practicable, consistent with national security considerations and the need to protect life and property from further risk.

Secondary effects of an aircraft crash include the potential for fire (discussed below) and environmental contamination (discussed in **Section 4.12.1.1**, *Aircraft Hazardous Materials*).

Fire Risk and Management

The extent of secondary effects from a crash or mishap is situationally dependent, and is therefore difficult to quantify. The regional terrain that would be overflown under this proposal is diverse. For example, should a mishap occur, highly vegetated areas (such as those found beneath the proposed Cato, Smitty, and Lobos MOAs) during a hot, dry summer would have a higher risk of experiencing extensive fires than would more barren and rocky areas during winter. Land within the proposed MOAs would continue to be managed for fire risk by local owners and agencies that manage that land. F-16 operations currently occur within airspace associated with Holloman AFB and have not presented an increased fire risk nor has the base's aircraft activity been the cause of a fire. The proposed operations would be similar in nature to the existing operations and would not constitute a novel or increased fire risk for the land under the MOAs.

Since 1992, there have been 1,066 recorded fire incidents within the proposed Talon MOA footprint. Of the 1,066 fires, 28 percent were classified as "miscellaneous", 25 percent were unidentified, and 21 percent were caused by lightning (Short 2017). Within the proposed Cato, Smitty, and Lobos MOAs, lightning has been the predominant cause of wildfires since 1992, accounting for 90 percent of fires in this area and 75 percent of fires in the proposed Lobos MOA (Short 2017). No fires from aircraft mishaps or pilot training activities were recorded in the USFS data (Short 2017).

4.10.1.2 Flight Safety

As stated in **Section 3.10** (Safety), the Class A mishap rate for the F-16 is 3.43 per 100,000 flying hours over the lifetime of the F-16 platform. The type of training proposed would be the same as what is performed currently, and there would be no aspect of the Proposed Action that would increase the accident rate; however, the increase in sortie numbers could slightly elevate the number of accidents overall.

A Class A mishap can also result in metal debris on the ground. The extent of the debris field depends upon the aircraft accident. Both for reconstructing the cause of the accident and for restoring the accident site as

much as possible, the Air Force would make every effort to locate, document, and then clean up debris resulting from any accident.

As aircraft move through the air, they create vortices from their wing tips. These vortices, collectively called wake turbulence, form as the air passes both over and under the wing tips. The pressure differential caused by the passing of air over and under the wings generates lift with the lowest pressure above the wing and the highest pressure under it. Due to this differential, a "rollup" of the airflow occurs behind the wing causing swirling air to trail from the wing tips. The rollup process produces a wake consisting of a counter-rotating vortex extending from each wing tip (FAA 2014). Aircraft begin to generate vortices as soon as the nose wheel lifts off the surface of the runway; vortex generation ends as soon as the nose wheel touches down during landing.

A complex set of variables and conditions influence the behavior and persistence of vortices. These variables include aircraft weight and size, wing span, wind and weather conditions, atmospheric turbulence, flight mode, altitude, G-forces, and airspeed. The vortex characteristics of any given aircraft can also be changed by extension of flaps or other wing-configuring devices. Aircraft weight and airspeed tend to form the most influential factors, with slow and heavy aircraft generating stronger vortices. Smaller fighter aircraft, like the F-16, tend to produce minimal vortices that dissipate rapidly (Air Force 2011).

Vortices commonly descend behind an aircraft to an altitude of about twice the aircraft's wingspan. For an F-16, that distance would measure about 85 feet. Studies by the Air Force (Air Force 2006) demonstrate that vortices generated by large aircraft such as B-1Bs and B-52s flying at 500 feet AGL descend and dissipate rapidly and pose no threats to persons, objects, or structures on the ground. Given these results for larger, heavier aircraft, it would be unlikely that F-16s using the proposed MOAs would generate vortices of sufficient strength or duration to reach the ground and pose a safety risk.

Bird/Wildlife-Aircraft Strike Hazard

Under the Proposed Action, F-16 aircrews would operate in the same general airspace environments of New Mexico as they do currently. As such, the overall potential for bird aircraft strikes would not be anticipated to be statistically different with implementation of any of the alternatives. F-16 aircrews operating in the MOAs would be required to follow applicable procedures outlined in the Holloman AFB BASH Plan (Holloman AFB 2015). Adherence to this program has minimized bird aircraft strikes. When safety procedures identify an increased risk, limits are placed on low altitude flights and some types of training (e.g., multiple approaches, closed pattern work). While Alternatives 2 and 3 do include airspace that overlies a relatively small area that is a National Wildlife Refuge, and a migration corridor along the Rio Grande, this area is under the proposed ATCAA, where operations would be above 18,000 feet MSL. Therefore, there would be limited potential for additional mishaps from bird/wildlife strikes at the altitudes that would be used under these alternatives. Furthermore, special briefings are provided to pilots whenever the potential exists for greater bird-strike risks within airspace.

Obstructions, Airfields, and Restricted Areas

Appendix I (Air Obstruction Analysis) consists of an obstruction analysis of the proposed airspace reconfigurations. The only vertical obstructions that exist that intrude into the 500 foot AGL floor exist within the proposed Talon airspace. Four vertical obstructions exist within the proposed Talon Low MOAs, with three occurring in the Talon Low B and one occurring within Lincoln National Forest in the Talon Low A MOA (See **Appendix I,** Air Obstruction Analysis).

There are 24 identified airfields that exist within the proposed airspace as well. As for overflight restrictions, Holloman AFB would maintain the 1,600-foot minimum altitude that is currently observed in the western portion of the Smitty MOA. Similarly, Wilderness Areas, National Parks, and National Monuments would be avoided by 2,000 feet AGL within the proposed MOAs. Populated areas would be avoided by 1,000 feet AGL.

Nothing within the obstruction analysis would create an adverse impact to safety under the Proposed Action. Vertical obstructions would be noted and avoided as they currently are in existing areas where obstructions intrude into proposed airspace. Restricted areas and airfields would also be noted and standard outlined safety protocols for avoidance and separation of aircraft for safety would be observed, in accordance with FAA procedures.

4.10.1.3 Chaff and Flares

Chaff

RR188 training chaff would be the only type of chaff authorized for use under the Proposed Action. This type of training chaff has dipole fibers removed thereby eliminating interference with FAA radar tracking systems and has been approved for use by the FAA. Should any issues arise, Albuquerque Center would coordinate with controllers at Holloman AFB, and dispensing chaff would cease. Therefore, potential safety issues related to aircraft and FAA tracking systems would not be anticipated.

The use of chaff could possibly interfere with weather surveillance radar (Air Force 2011). The Air Force uses RR188 chaff to reduce, but not eliminate, chaff caused echoes to weather and other radars. Chaff particles suspended in weather systems could give inaccurate information regarding precipitation or severe weather conditions. Meteorologists can usually accurately identify chaff from rainfall on radar, but automated systems may not (U.S. General Accounting Office 1998). Chaff may create electron interference and interfere with lightning strikes to the ground which may affect the projection of storm severity (U.S. General Accounting Office 1998).

Safety issues for people underneath or immediately adjacent to the proposed MOAs would stem from the probability of chaff residual material striking an individual on the ground. Data on this issue are difficult to obtain; however, there have been no reports of any person being injured from falling chaff residual material. Chaff residual material consists of a 1-inch square plastic piece only 1/8-inch thick. The individual end cap weighs approximately 0.114 ounces. Previous analysis indicates that if a person on the ground were hit by an ejected end cap, the impulse impact would be 0.003 pound-seconds and be similar to being struck by a piece of hail (Air Force 2011). The impact required to cause brain injury is 0.10 pound-seconds (Air Force 1997). As shown in **Table 3.1-3**, chaff and flare residual materials would be very widespread (1 piece of residual material per 22 acres under Alternative 1 and 1 piece of residual material per 70 acres under Alternative 2) making the probability of these materials impacting a person on the ground extremely unlikely. Therefore, the safety risk to people under or immediately adjacent to the MOAs in which chaff is dispensed would be minimal.

Arfsten et al. reviewed scientific data and concluded that there are no data indicating that inhalation or ingestion of chaff or dermal contact with chaff causes any adverse health effects in humans (Arfsten et al. 2002). See **Section 4.12.1.2**, *Chaff and Flares*, for additional discussion on the toxicity of chaff and flares.

Flares

Under this proposal, flares would be dispensed in the proposed MOAs during training operations. Once flares are deployed, the end cap and piston of the flare falls to the ground. The end cap weighs approximately 0.16 ounces, creating the potential to generate an impact momentum of 0.010 pound-seconds (Air Force 1997). If an end cap struck a person on the ground, the momentum generated would be far below that required to cause serious injury. As stated above, the wide distribution of the residual materials would make the probability of these materials impacting a person on the ground extremely unlikely. Therefore, safety risks related to residual flare material would be negligible.

Flares consist of magnesium and Teflon pellets that burn rapidly and completely after being dispensed. The flares have a greater than 99 percent reliability rate for discharging and burning. On extremely rare occasions, however, a flare may not ignite and fall to the earth as a dud flare. A dud flare could seriously injure a person if he or she is either struck by the falling dud or if a dud flare is discovered and mishandled. There is no instance of a dud flare or any flare striking an individual on the ground and the probability of such occurring would be extremely rare (Air Force 2011). Previous analysis has determined the probability of a dud flare striking a person on the ground is correlated with population density (Air Force 2011). To reduce the risk of dud flares striking a person on the ground, flares would not be released over established communities beneath the airspace. Dud flares may be mishandled if discovered on non-DoD lands by the uninformed public; however, since the reliability rate is so high and the geographic distribution of flare usage would be so large the probability of such an occurrence would be extremely low. Any dud flare found should be treated as Unexploded Ordnance. A dud flare would probably not ignite even in a campfire unless it was on a very hot bed of coals. If a dud flare were shot with a bullet or cut with a power saw, the friction could cause it to ignite.

A flare fire risk assessment using modeling software was reported in *Environmental Effects of Chaff and Flares* (Air Force 1997) and the analysis in this EIS relies on the results of those studies. The probability of a single flare starting a fire cannot be predicted to any level of statistical significance, particularly since it would depend on so many variables as to be totally situationally dependent. If a burning flare reaches the ground or the canopy of a tree or shrub, it may or may not start a fire. The conditions that must be satisfied in order for a fire to start and spread include: (1) the source must be very near to or in contact with a fuel element, (2) the source must have sufficient residual energy to ignite the fuel element, and (3) fuel conditions must support the spread of fire. With regards to fires starting from a flare landing in the crown of a tree or shrub, a burning flare alighting in the crown layer of shrub cover may start a fire, but the crown layer must contain a sufficient density of dead foliage with low enough moisture content to support the spread of fire, or no fire would result. If hot material comes in contact with rotten wood, smoldering combustion can be sustained at temperatures as low as 200 degrees Celsius. However, the fraction of surface area covered by rotten wood is small in even a decadent forest stand.

The probability of ignition given a hot inert item reaching the surface can be assessed based on the moisture content of "fuel" (vegetation and other combustible materials on the ground), which can be derived from local meteorological history and current conditions. The National Fire Danger Rating System uses these variables to calculate the fire hazards on a daily basis for the entire country. The system uses a selection of wildland fuel types that together can be used to characterize most forest and rangeland vegetation cover found in the continental U.S. The National Fire Danger Rating System is used primarily for pre-suppression planning over large geographic areas. The system's indices are sensitive to the phenology of vegetation communities; historical precipitation, temperature, and humidity; and current temperature, humidity, and

windspeed. Holloman AFB uses these daily ratings to determine if flares can be safely released in a specific MOA or if a constraint should be implemented (see **Table 2.2-4**). This way a balance can be struck between the risk of an unwanted fire start, possible consequences of an unwanted fire, and disruption of training operations. Suspending use of flares during high fire risk periods is an effective procedure at reducing fire risk (Air Force 1997).

Fire management procedures and resources employed by land management agencies such as BLM, USFS, and state forests provide an effective and efficient means for the Air Force to gauge when fire hazards may be too high to permit flare use. Because of the type of fire information required for fire hazard evaluation, risk assessments must be performed on a site-specific basis. Modeling a local fire hazard involves considerable data collection and effort; therefore, as a first step, guidelines already developed by land managers for an area can be adopted to determine when it is safe to drop flares. Fire prediction modeling would only need to be performed for areas where this approach is not adequate. Implementing the current fire restrictions used by Holloman AFB has proven to be effective at preventing fires from training activities originating from the base.

In a fire risk assessment for all Air Force ranges and areas where flares are used (Air Force 1997), operating parameters (such as release altitude, area, environmental conditions) were too diverse to isolate level of use as the only or primary factor affecting frequency of fires. For this reason, and because flare-caused fires were rare in any case, no statistical correlations could be made between utilization and fire occurrence.

Any fires of a natural or non-natural source may adversely affect vegetation, injure wildlife or livestock, and destroy property such as fences or buildings. If a wildland fire were to occur as a result of flare activity, a loss of canopy and/or understory vegetation would likely occur depending on the severity of the fire, land condition at the time, and how quickly fire control could respond. Recovery of the vegetation would depend on the species burned, season, and severity. Grasslands, such as would be found beneath much of the proposed Talon MOA, naturally have frequent fire regime, and therefore are composed of species that can quickly recover from fires. Woodland and shrubland communities, such as would be found beneath much of the proposed Cato, Smitty, and Lobos MOAs, recover over longer periods depending on severity of the fire and climatic conditions available following the fire.

Fires result in a loss of plant cover that could increase erosion and sedimentation downslope in some areas. Bare ground resulting from fires can allow the spread of invasive and non-native plant species such as annual grasses depending on the nature of the vegetation burned and the presence of invasive species in surrounding areas.

Fire damages crops, rangelands, timber, and infrastructure. National grasslands, forests, and agricultural areas under airspace would be vulnerable to fire. Any potential loss of forage, livestock, or infrastructure due to fire could result in economic impacts to affected landowners. AFI 11-214 (22 December 2005) prescribes a minimum flare release altitude of 2,000 feet AGL over non-government-owned or controlled property minimizing the risk of flare caused fires. Under the Proposed Action, additional fire restrictions for flare use would be implemented to reduce the risk of fires. Specifically, flares would not be used at altitudes less than 18,000 feet MSL under “High” fire conditions and flares would not be used at all under “Very High” or “Extreme” fire conditions (see **Table 2.2-4**). There have been no recorded wildfires from flare use by Holloman AFB. In addition, the Air Force would inform local fire departments about proper dud flare handling procedures and would cooperate with local agencies for response to flare-related fires.

Implementation of these management practices would greatly reduce the risk of fire from flares; therefore, no significant fire-related impacts would be expected from the Proposed Action.

4.10.2 No Action Alternative

Under the No Action Alternative, there would be no reconfiguration or expansion of the existing MOAs. F-16 aircraft would continue to use the existing MOAs as they currently do. Current operations and training activities in the existing MOAs and ATCAAs do not pose a significant safety risk to the public, military personnel, or property. Procedures in place for ground safety (crash response and fire risk management) and flight safety (bird-aircraft strike hazards and chaff and flare usage) would continue as described in **Section 3.10**, *Safety*.

4.11 CULTURAL RESOURCES

Analysis of potential impacts on cultural resources considers both direct and indirect impacts. Direct impacts may occur by: (1) physically altering, damaging, or destroying all or part of a resource; (2) altering characteristics of the surrounding environment that contribute to resource significance; (3) introducing visual, audible, or atmospheric elements that are out of character with the property or alter its setting; or (4) neglecting the resource to the extent that it deteriorates or is destroyed. Direct impacts can be assessed by identifying the type and location of the Proposed Action and by determining the exact locations of cultural resources that could be affected. Indirect impacts generally result from increased use of an area and are harder to quantify.

Only those NRHP-listed cultural resources that would reasonably be affected by visual (overflights) and noise intrusions are considered under the Proposed Action. These include architectural resources, archaeological resources, and traditional cultural properties. The Proposed Action does not include any ground disturbing activities; therefore, an inadvertent discovery or physical destruction of a resource would not occur.

4.11.1 Impacts Common to All Action Alternatives

4.11.1.1 Archaeological and Architectural Resources

The Proposed Action would result in flights being distributed over a vast area of airspace, most of which would occur above 10,000 feet AGL. It is unlikely that any one location would experience regular or routine overflights (specifically those below 10,000 feet AGL) given the large volume and various altitudes of airspace needed for training. Due to the high altitude of the overflights, small size of the aircraft, high speeds, and the infrequent occurrence the aircraft would not represent a major visual resource to observers on the ground. Chaff and flares deployed from the aircraft would not pose a visual intrusion for the following reasons: they are small in size (1 inch to no more than 13 inches in length), burn only for a few seconds (flares only), and the relatively high altitude of the flights when deployed would make them virtually undetectable to observers on the ground. The likelihood of residual chaff and flare material to land at archaeological or architectural sites would be very rare and would not have an adverse effect on these resources. Visual intrusion under any of the alternatives would be minimal and would not cause adverse impacts to the settings of these resources.

The Proposed Action would result in supersonic flight within the airspace with an average peak overpressure of 1 psf or less. Overpressure values are used to provide a description of psf resulting from supersonic flight. At 1 psf, the probability of a window breaking ranges from one in a billion (Sutherland

1990) to one in a million (Hershey and Higgins 1976). At 10 psf, the probability of breakage is between one in a hundred and one in a thousand (Haber and Nakaki 1989). Damage to plaster is in a comparable range but depends on the condition of the plaster. Adobe faces risks similar to plaster, but assessment is complicated by adobe structures being exposed to weather, where they can deteriorate in the absence of any specific loads (Sutherland 1990). Typical outdoor structures such as buildings, windmills, radio towers, etc., are resilient and routinely subject to wind loads far in excess of sonic boom pressures. Foundations and retaining walls, which are intended to support substantive earth loads, would not typically be at risk from sonic booms below 4 psf.

A sonic boom could occur with every supersonic event; however, not all of these sonic booms would be heard or felt on the ground. No structural damage to NRHP-listed archaeological or architectural resources would be anticipated since the overpressures would not exceed 1 psf. The risk of damaging structures at this level of psf would be very low, one in a billion (Battis 1983; Haber and Nakaki 1989). Some prehistoric archaeological sites could contain natural structures such as rock shelters or caves. These structures often house petroglyphs or pictographs, which are etched or painted onto the rock surfaces. However, studies have found that these types of natural formations are not affected any more by noise vibrations, such as sonic booms, than by natural erosion, wind, or seismic activity (Battis 1983).

Holloman AFB consulted with both the Arizona and New Mexico SHPOs for the Proposed Action and both provided concurrence that the Proposed Action would not affect historic resources (see **Appendix J** for consultation correspondence).

4.11.1.2 Traditional Cultural Properties

Government-to-government consultation with federally-recognized Tribes and Pueblos did not identify any traditional cultural properties associated with the lands under the proposed airspace (consultation correspondence is located in **Appendix J**).

4.11.2 No Action Alternative

Under the No Action Alternative, there would be no SUA modifications in the vicinity of Holloman AFB in support of F-16 pilot training. Training of F-16 aircrews stationed at Holloman AFB would continue to use restricted areas at WSMR and Fort Bliss, and MOAs in the vicinity of Holloman AFB to the extent practicable. The boundaries of Talon, Cato, and Smitty MOAs would remain unchanged and they would continue to be used as they are currently. Cultural resources beneath existing airspace as defined in **Section 3.11**, *Cultural Resources*, would continue to be exposed to aircraft activity at the current operation levels. There have been no impacts to existing cultural resources from aircraft operations.

4.12 HAZARDOUS MATERIALS

4.12.1 Impacts Common to All Action Alternatives

4.12.1.1 Aircraft Hazardous Materials

Under all Action Alternatives, aircrews would conduct training operations in the proposed airspace areas. There would be the potential for hazardous materials to be introduced into the environment under these areas in the unlikely case of an aircraft mishap. As noted in **Section 3.10.2.2**, *Flight Safety*, the F-16 has a Class A mishap rate of 3.43 per 100,000 flight hours. There have been no recorded mishaps with F-16 aircraft from Holloman AFB. Hazardous materials that could be introduced into the environment in the

event of a mishap include jet fuels, ethylene glycol, and hydraulic fluid. In addition to these common materials, the emergency power unit for the single engine F-16 fighter jet uses hydrazine, a highly volatile propellant, to restart the engine in case of emergency. Radioactive materials are used in small quantities for navigation systems, instruments, and some coatings. Composite materials are used in most aircraft in some form.

When an aircraft crashes, it may release hydrocarbons. Those petroleum, oils, and lubricants not consumed in a fire could contaminate soil and water. The potential for contamination is dependent on several factors. The porosity of the surface soils would determine how rapidly contaminants are absorbed. The specific geologic structure in the region would determine the extent and direction of the contamination plume. The locations and characteristics of surface and groundwater in the area would also affect the extent of contamination to those resources.

F-16 aircraft carry a small quantity of hydrazine in a sealed canister that is designed to withstand crash impact damage. Hydrazine is a highly volatile propellant that contains toxic elements. It is carried on the F-16 as part of the emergency power unit. When used for this purpose, hydrazine is completely consumed, and poses no safety hazard. In any crash that is severe enough to rupture the canister, it is most likely that fire would also be involved. In this case, the hydrazine would also burn and be completely consumed. Any hazards associated with the brief time the hydrazine was burning would be very localized to the crash site and short-term. Any fumes from hydrazine would be gone by the time first responders or any person could approach the crash site. In the unlikely event that the hydrazine should be released but not consumed by fire, impacts on soils and groundwater are likely to be of minor consequence. Hydrazine absorbs water at room temperature. It is incombustible in solution with water at concentrations of 40 percent or less and it evaporates at any given combination of constant meteorological conditions (i.e., temperature, humidity, wind speed, etc.) at a rate slightly slower (approximately 11 percent) than water.

Movement of hydrazine through natural soils has been shown to be slow and limited. Due to its absorption and natural decomposition processes, the probability of released hydrazine significantly contaminating groundwater is considered extremely low. However, if a Class A accident occurred and the hydrazine canister were ruptured, no fire consumed the hydrazine, and quantities of hydrazine were to reach a surface water body, aquatic life in those areas experiencing high concentrations could be significantly impacted.

The Air Force has SOPs in the event of an aircraft mishap to identify potential hazardous materials and situations, protect responding personnel and the environment from immediate hazards, and to provide guidelines for the ultimate cleanup and disposal of the crash residues. Aircraft mishaps are rare, therefore, hazardous material releases from aircraft mishaps under any of the Action Alternatives would be minimal.

4.12.1.2 Chaff and Flares

Chaff

The principal components of chaff (i.e., aluminum, silica glass fibers, and stearic acid) do not pose an adverse risk to human and environmental health, based on the low-level toxicity of the components, their dispersion patterns, and the unlikelihood that the components would interact with other substances in nature to produce synergistic toxic effects (Air Force 2011). The components of chaff are generally nontoxic except in exorbitantly large quantities that humans or wildlife would not encounter as a result of chaff use associated with the proposed operations.

The component of chaff that has the potential to affect soil or water chemistry is aluminum, which tends to break down in acidic and highly alkaline environments. Laboratory and field analyses referenced in Air Force 1997, indicate that the pH of water in the soil or in a water body is the primary factor that determines the stability of the aluminum coating of chaff. The chaff fiber coating would be likely to release aluminum if the soil or water pH is less than 5.0 (extremely acidic) or greater than 8.5 (strongly alkaline). In semiarid conditions such as those found in much of the western U.S. and beneath the proposed airspace, soil pH tends to be neutral to alkaline and there is usually not enough water in the soils of this region to react with the aluminum. The low percentage of soils with a pH within the range to react with the chaff aluminum coating, in combination with the low soil water content, results in conditions that would be extremely improbable for detectable aluminum concentrations to be produced from chaff particles that weather on the ground (Air Force 2011).

Confined aquatic habitats could be affected if there were a potential for significant accumulation and decomposition of chaff fibers. Since chaff would be broadly distributed with a low density in any one area, it is unlikely that chaff would be detectable or significantly accumulate within confined water bodies. Water bodies in western U.S. are neutral to slightly alkaline in pH (similar to soils) and are outside the pH range necessary to degrade the aluminum coating. Chaff particles that could fall on surface water would be chemically stable and subject to mechanical fragmentation. No impact to water bodies would be anticipated, even in a highly unlikely event such as a clump of non-deployed chaff falling into a small, confined water body (Air Force 2011). Aluminum is not known to accumulate to any great extent in most invertebrates under non-acidic conditions. It is unlikely that much, if any, of the aluminum present due to chaff use would be available for uptake by aquatic plants, fish, or other biota (Air Force 2011).

Flares

The M206 flare proposed for use does not contain lead although some earlier flares had lead in the firing mechanism and some flares still contain chromium in the firing mechanism. In Air Force 2011, a statistical model was used to calculate the emission concentration of lead and chromium with the goal of learning what level of flare emissions or ash would be required to achieve toxic levels of lead or chromium. The model calculated that 1.5 million flares would have to be released below an altitude of 400 feet AGL over a 10,000-acre training range before the level of chromium emissions would become a health risk. No Air Force training range uses this amount of flares annually and the minimum release altitude for flares is 2,000 feet AGL.

There are also trace amounts of boron in the flare pellet. To achieve a toxic level of boron, flare ash from approximately 4,000 flares would need to fall on an acre of land annually. It would be impossible to deposit 4,000 flares on one acre of land. In fact, it would not be possible for a high performance aircraft to purposefully deposit even one flare on a specific acre of land. Flare ash and flare emissions are not able to result in measurable effects to the environment (Air Force 2011).

The likelihood of finding a dud flare is extremely remote and the likelihood of a dud flare igniting is even more remote. If a dud flare fell in a waterbody, it would deteriorate over time. The chemicals released during deterioration (metallic magnesium) would not be expected to be of sufficient quantity to cause a noticeable reduction in the water quality or impact on aquatic species or the environment (Air Force 2011).

Toxicological studies on flare residual materials indicate that no chemical effects to biological resources would be expected. The amount of magnesium dispersed from flares is too small to result in levels that would be associated with acute exposure (Air Force 1997). The concentration of flare ash residue at any

location would be undetectable under normal circumstances due to dispersal of the minimal amount of residue produced by a burning flare deployed in the airspace.

4.12.2 No Action Alternative

Under the No Action Alternative, there would be no SUA modifications in the vicinity of Holloman AFB. Aircrews stationed at Holloman AFB would continue to use restricted areas at WSMR and Fort Bliss, and MOAs in the vicinity of Holloman AFB to conduct F-16 pilot training. Hazardous materials management would continue as described in **Section 3.12**, *Hazardous Materials*, and the use of chaff and flares would continue in all of the areas already approved for use.

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5.0 CUMULATIVE IMPACTS

Cumulative impacts analysis is important for understanding how multiple actions that occur in a particular time and area affect the environment. CEQ regulations stipulate that the cumulative effects analysis should consider the potential environmental impacts resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7).

Whereas the individual impacts of one project in a particular area or region may not be considered significant, numerous projects in the same area or region may cumulatively result in significant impacts. Cumulative impacts most likely arise when a relationship exists between a proposed action and other actions occurring in a similar location or during a similar time period. Actions overlapping with or in proximity to the Proposed Action would be expected to have more potential for a relationship than those more geographically separated. Similarly, actions that coincide in time, even partially, have the potential for cumulative impacts.

5.1 PAST, PRESENT AND REASONABLY FORESEEABLE ACTIONS

The first step in assessing cumulative effects involves defining the scope of other actions and their interrelationship with the Proposed Action and alternatives (CEQ 1997). The scope must consider other projects that coincide with the location and timing of the Proposed Action. In this section, past, present, and reasonably foreseeable activities that have occurred, are occurring, or will occur on lands that lie beneath the existing and proposed Talon, Cato, Smitty, and Lobos MOAs and the Christa and Kendra ATCAAs and have the potential to interact with the Proposed Action have been identified.

In identifying past activities for cumulative analysis, agencies are not required to list the individual effects of past actions; rather they can focus "on the current aggregate effects of past actions" without providing details of those actions. CEQ (2005) states that cumulative effects analysis requires "a concise description of the identifiable present effects of past actions to the extent that they are relevant and useful in analyzing whether the reasonably foreseeable effects of the agency proposal…may have a continuing, additive, and significant relationship with those effects".

The effects of past and ongoing actions were considered as part of the baseline conditions and were described in the existing environment for each resource. Past and ongoing actions that were evaluated in this cumulative effects analysis including those that have occurred or are occurring in, beneath, or near the airspace affected by the Proposed Action are presented in **Table 5.1-1**. For each of these actions, published environmental and planning documents were reviewed in order to determine their potential to result in cumulative impacts when considered along with the Proposed Action.

Table 5.1-1. Past, Ongoing, and Reasonably Foreseeable Actions				
Action	**Description**	**Timeframe**	**Contribute to Cumulative Impacts**	**Resource Interaction**
Air Force Actions				
Proposed Airspace Modifications to Support Units at Holloman AFB, New Mexico EA (Air Force 1997)	EA evaluated the impacts of modifying airspace to support U.S. and German Air Force Units at Holloman AFB including establishing new aerial refueling route, consolidating existing airspace units into a new MTR, and dividing Talon MOA into High East, High West, and Low components.	Past	Yes. Action modified Talon MOA, establishing new Talon High West and Talon Low.	Effects captured in baseline conditions for airspace management, acoustic environment, natural resources, land management, recreation, and safety.
Proposed Expansion of German Air Force Operations at Holloman AFB, New Mexico EIS (Air Force 1998)	Beddown of an additional 30 Tornado aircraft and associated personnel, construction on base and at WSMR target complex, increased day and night operations on MTRs and SUA, establish new target complex on McGregor Range. The German Air Force has recently departed Holloman AFB.	Past	Yes. Aircraft utilized Talon MOA for training until 2017.	Airspace management, acoustic environment, natural resources, land management, recreation, and safety.
EA for Deployment of Chaff and Flares in Military Training Airspace (Phase II) (Air National Guard Readiness Center 2003)	Proposed action in EA was to either continue, reintroduce, or introduce the use of chaff and/or flares in the course of training operations, by ANG and other units, in specific military training airspace.	Past	Yes. Proposed action included Cato MOA as well as Reserve and Morenci MOAs that would be adjacent to Lobos MOA.	Airspace management, acoustic environment, and natural resources.
Transforming the 49th Fighter Wing's Combat Capability, Holloman AFB, New Mexico EA (Air Force 2006)	Evaluated replacing the retiring F-117A and T-38A aircraft with two F-22A squadrons. The action involved increased use of all training airspace including Talon High MOA and use of flares in Talon MOA.	Past	No. The F-22 fleet was consolidated, resulting in the movement of all Holloman AFB F-22s to other locations by 2013.	NA
C-130 Use of VR-176	C-130s from Kirtland AFB fly up to 34 sorties annually along VR-176. Additionally, C-130s associated with the ANG Advanced Tactics Aircrew Course from Missouri fly up to 100 sorties annually in western New Mexico.	Past, Ongoing	Yes. VR-176 overlaps with Cato, Smitty and proposed Lobos MOAs.	Effects captured in baseline conditions for airspace, acoustic environment, natural resources, land management, and safety.

Table 5.1-1. Past, Ongoing, and Reasonably Foreseeable Actions (cont.)				
Action	**Description**	**Timeframe**	**Contribute to Cumulative Impacts**	**Resource Interaction**
New Mexico Training Range Initiative, EIS (Air Force 2007)	Evaluated proposal to expand the Pecos MOA to provide more realistic training opportunities.	Past	Yes. Pecos is near proposed airspace.	Airspace Management.
Recapitalization of the 49th Wing Combat Capabilities and Capacities Holloman AFB, New Mexico EA (Air Force 2011)	56 F-16 aircraft were relocated to Holloman AFB to replace F-22A; increased operations in Talon MOA by approximately 950 annual sortie-operations.	Past, ongoing	Yes. Aircraft utilize Talon MOA.	Effects captured in baseline conditions for airspace management, acoustic environment, natural resources, land management, recreation, and safety.
F-35A Training Basing EIS (Air Force 2012)	Proposed beddown of F-35A training mission at one or more of four locations including Holloman AFB.	NA	No. Luke AFB was selected for beddown.	NA
Installation Complex Encroachment Management Action Plan for Holloman AFB: Volume I Action Plan (Air Force 2014)	Identifies potential encroachment issues to identify opportunities to engage stakeholders with goal of preserving mission capability, conserving resources, and maintaining quality of life. Plan identified potential communications interference, airborne noise, and population and urban growth as issues that could affect Talon MOA.	Past, ongoing	Yes. Identifies issues that could impact Talon MOA.	Past and present effects captured in baseline conditions for airspace management, acoustic environment, natural resources, land management, and recreation. Same resources expected to be affected in future.
Replacement of QF-4 with QF-16 Full-Scale Aerial Targets at Holloman AFB, New Mexico EA (Air Force 2015a).	35 QF-4 Full-Scale Aerial Targets were replaced with 35 QF-16s; air-to-air training operations utilize Talon MOA but there was no change of configuration, use, or use of defensive countermeasures.	Past, ongoing	Yes. Aircraft utilize Talon MOA.	Effects captured in baseline conditions for airspace management, acoustic environment, natural resources, land management, recreation, and safety.
CATEX for F-16 Use of Talon MOA and R-5107E and F-5111A/B (Air Force 2015b).	Clarifies F-16 use of Talon Low MOA and restricted airspace that was not specifically defined in "Recapitalization of 49th Wing Combat Capabilities and Capacities" (Air Force 2011). Establishes cap for F-16 aircraft sortie-operations in Talon MOA.	Past, ongoing	Yes. Aircraft utilize Talon MOA.	Effects captured in baseline conditions for airspace management, acoustic environment, natural resources, land

Table 5.1-1. Past, Ongoing, and Reasonably Foreseeable Actions (cont.)				
Action	**Description**	**Timeframe**	**Contribute to Cumulative Impacts**	**Resource Interaction**
				management, recreation, and safety.
Interim Relocation of F-16 Squadrons to Holloman AFB, New Mexico EA (Air Force 2017a).	Temporarily relocated two F-16 squadrons (45 aircraft) from Hill AFB to Holloman AFB; air-to-air training operations would utilize Talon MOA.	Past, ongoing	Yes. Aircraft utilize Talon MOA.	Effects captured in baseline conditions for airspace management, acoustic environment, natural resources, land management, recreation, and safety.
Draft EA for Holloman AFB F-16 Use in WSMR R-5111 C/D Airspace (Air Force 2017b)	Proposed use of restricted airspace for expand F-16 pilot training flights for air-to-air combat maneuvers, use of chaff and flare, and supersonic operations	NA	No. Project was canceled.	NA
EA Addressing the Angel Thunder Personnel Recovery/Rescue Training Exercise in the Southwestern United States (Air Force 2017c)	Proposed biannual, 3-week Angel Thunder exercise throughout southwestern U.S. using DoD and non-DoD properties as landing zones, helicopter landing zones, drop zones, ground training sites, and aircraft training sorties.	Past, ongoing	Yes. Includes temporary use of airstrip and helicopter landing zones within Gila National Forest, however, these areas are outside of proposed airspace addressed in this EIS.	Airspace management.
Permanent Beddown of F-16 Squadrons at Holloman AFB, New Mexico (date unknown, action is under development)	Permanent beddown of two F-16 squadrons from Hill AFB. Temporary beddown addressed in previous EA (Air Force 2017a).	Future	Yes. Aircraft utilize Talon MOA.	Effects captured in baseline conditions for airspace management, acoustic environment, natural resources, land management, recreation, and safety.
Adversary Air (Air Force 2019) (Final EA June 2020)	Contracted Adversary Air Training Support for Holloman AFB would add 12 aircraft, 15 pilots, and 72 maintainers at Holloman AFB. Aircraft would fly a total of 3,144 additional annual sorties and would employ defensive countermeasures. An estimated 314 sorties and use of less than 200 flares would occur in the Talon MOA.	Future	Yes. Would utilize Beak and Talon MOAs.	Airspace management, acoustic environment, natural resources, land management, recreation, and safety.

Table 5.1-1. Past, Ongoing, and Reasonably Foreseeable Actions (cont.)				
Action	**Description**	**Timeframe**	**Contribute to Cumulative Impacts**	**Resource Interaction**
EIS for Regional Special Use Airspace Optimization to Support Air Force Missions in Arizona (date unknown, action is under development)	Proposal to optimize existing MOAs in Arizona to include Sunny, Bagdad, Gladden, Outlaw, Jackal, Reserve, Morenci, Tombstone, Ruby, Fuzzy, and Sells.	Future	Yes. Reserve and Morenci MOAs adjacent to proposed Lobos, Cato, and Smitty MOAs.	Airspace management, acoustic environment, and natural resources.
Other DoD Actions				
Defense Threat Reduction Agency Activities on WSMR Programmatic EIS (Army 2007)	Testing activities utilize WSMR airspace and lands beneath airspace, thereby, reducing availability of airspace to other users.	NA	No. Proposed Action does not affect airspace above WSMR.	NA
Modification of Special Use Airspace Fort Bliss, Texas and New Mexico EA (Army 2012)	EA modified Class G airspace to restricted airspace over the Southern Training Areas at McGregor Range, Fort Bliss.	NA	No. Airspace does not coincide with existing or proposed airspace.	NA
Fighter Aircraft Use of Biggs Army Airfield EA (Army 2014)	Joint Training Operations with Air Force fighter aircraft occurs six times per year at Biggs Army Airfield.	NA	No. Airspace does not coincide with existing or proposed airspace.	NA
WSMR, New Mexico 2046 Strategic Plan (Army 2016a)	Overview of future vision for range personnel, infrastructure, facilities, and processes.	NA	No. Proposed Action does not affect airspace above WSMR.	NA
Fort Bliss Local Flying Area and Local Flying Rules (FB 95-1), Texas and New Mexico EA (Army 2018)	The Local Flying Area for Fort Bliss includes the airspace covered in this EIS. The preferred alternative includes a low-level helicopter training area just southeast of Lobos MOA, near Deming, New Mexico and the use of Talon MOA. Throughout the Local Flying Area, minimum flight altitude would be lowered from 3,000 to 500 AGL.	Ongoing, future	Yes. The Fort Bliss Local Flying Area coincides with airspace affected by the Proposed Action.	Airspace management, acoustic environment, natural resources, land management, recreation, and safety.
High Altitude Mountain Environmental Training Strategy from Fort Bliss (Army 2016b)	Fort Bliss was considering High Altitude Mountain Environmental Training Strategy operations within the Sacramento Ranger District of the Lincoln National Forest where helicopter training could occur at high altitudes in complex mountainous terrain and weather conditions.	NA	No. Project has been canceled.	NA

Table 5.1-1. Past, Ongoing, and Reasonably Foreseeable Actions (cont.)				
Action	**Description**	**Timeframe**	**Contribute to Cumulative Impacts**	**Resource Interaction**
Other Actions and Plans				
FAA's NexGen	FAA-led modernization air transportation system by implementing a range of new technologies to improve aircraft routing and monitoring in airspace and on the ground resulting in more efficient use of airspace, reduced delays, fuel costs, emissions, and noise. Program began in 2007 and will have all major components in place by 2025.	Past, ongoing, future	No. Ongoing changes to commercial aviation including routing not expected to affect use of SUA or ATCAAs.	NA
New Mexico Airport System Plan Update 2009 (New Mexico Department of Transportation 2009)	Plan provides a general summary of the needs of New Mexico's 51 publically owned public use airports.	NA	No. Specific activities and projects are not identified for any airport.	NA
The Southern New Mexico-El Paso Texas Joint Land Use Study (AECOM 2015)	The Joint Land Use Study area encompasses six counties in two states and the three military installations (Holloman AFB, Fort Bliss, WSMR) to address issues of compatibility and create tools to facilitate collaboration on issues affecting land use.	NA	No. Specific activities and projects are not identified.	NA
Comprehensive Plans: • Catron County, New Mexico (2007) • Chaves County, New Mexico (2016) • Eddy County, New Mexico (2008) • Grant County, New Mexico (2017) • Sierra County, New Mexico (2017) • Graham County, Arizona (2016) • Greenlee County, Arizona (2003) • Town of Silver City, New Mexico (2017)	Comprehensive Plans provide descriptions of the physical and economic features of counties and set forth long-term goals and plans to guide future development and activities.	NA	No. Specific activities and projects are not identified.	NA

Table 5.1-1. Past, Ongoing, and Reasonably Foreseeable Actions (cont.)				
Action	**Description**	**Timeframe**	**Contribute to Cumulative Impacts**	**Resource Interaction**
BLM Resource Management Plans/EISs: • Carlsbad Field Office (BLM 1988, 1997a, 2008, 2018) • Las Cruces District (BLM 2013) • Roswell Field Office (BLM 1997b, 2008) • Socorro Field Office (BLM 2010) • Safford Field Office (BLM 1991, 2017) • Pecos District (BLM 2014)	The BLM develops Resource Management Plans guide appropriate multiple uses of land and provide for management and protection of protected resources.	Past, ongoing	Yes. Management activities occur on BLM-managed lands, which lie beneath all of the existing and proposed MOAs and ATCAAs.	Past and present management captured in baseline conditions for natural resources, land management, recreation, and socioeconomics. Ongoing management expected to impact same resources.
Borderlands Wind Project Resource Management Plan/Final EIS (BLM 2020)	Proposed commercial wind energy project consisting of 40 turbines in Catron County, on approximately 40,350 acres of land managed by the BLM (Socorro Field Office), New Mexico State Land Office, and private landowners.	NA	No. The proposed development would be located just outside the project area, northwest of the proposed Cato and Smitty MOAs.	NA
USFS Forest Plans/EISs: • Lincoln National Forest (USFS 1986a) • Cibola National Forest (USFS 2016) • Gila National Forest (USFS 1986b, USFS 2019)	The USFS develops Forest Management Plans to guide land management activities to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations.	Past, ongoing	Yes. Management activities occur on USFS-managed lands, which lie beneath all of the existing and proposed MOAs and ATCAAs.	Past and present management captured in baseline conditions for natural resources, land management, recreation, and socioeconomics. Ongoing management expected to impact same resources.

Table 5.1-1. Past, Ongoing, and Reasonably Foreseeable Actions (cont.)

Action	Description	Timeframe	Contribute to Cumulative Impacts	Resource Interaction
Carlsbad National Park: • General Management Plan (NPS 1996) • Resource Protection Plan (NPS 2002) • Karst and Cave Management EA (NPS 2006)	Describe park resources management and protection.	Past, ongoing	Yes. Management activities occur on lands managed as Carlsbad Caverns National Park, the northern boundary of which lies beneath the proposed configuration of Talon MOA.	Past and present management captured in baseline conditions for natural resources, land management, recreation, and socioeconomics. Ongoing management expected to impact same resources.
New Mexico State University Unmanned Aircraft System Flight Test Center (New Mexico State University 2018; FAA 2016)	Aerostar Unmanned Aircraft System operates in Class E and G Airspace within the jurisdiction of the Albuquerque Center and Holloman AFB Radar Approach Control up to 1,500 AGL.	Past, ongoing	Yes. Airspace overlaps with proposed Lobos MOA and ATCAA.	Past and present management captured in baseline conditions.
Continental Divide National Scenic Trail Comprehensive Plan (2009)	The Continental Divide Trail crosses Federal lands administered by USDA, USFS, BLM, and NPS. The comprehensive plan is intended to set forth direction and guide the development and management of the Continental Divide Trail.	Past, ongoing	Yes. Management activities occur on lands managed by USFS beneath the proposed configuration of the Lobos MOA and Cato and Smitty MOAs.	Past and present management captured in baseline conditions for recreation.

Legend: AFB-Air Force Base; AGL-above ground level; ATCAA-Air Traffic Control Assigned Airspace; BLM-Bureau of Land Management; CATEX-Categorical Exclusion; DoD-Department of Defense; EA-Environmental Assessment; EIS-Environmental Impact Statement; MOA-Military Operations Area; NA-Non-Applicable; SUA-special use airspace; USFS-U.S. Forest Service; WSMR-White Sands Missile Range.

5.2 ANALYSIS OF CUMULATIVE EFFECTS

In accordance with CEQ guidance, the significance of cumulative effects is described in comparison to the environmental baseline and, where applicable, relative to regulatory standards and thresholds. The following analysis considers how the impacts of the actions in **Table 5.1-1** might affect or be affected by the Proposed Action and alternatives. The analysis considers whether such a relationship would result in potentially significant impacts not identified when the Proposed Action is considered alone.

5.2.1 Airspace Operations and Management

The proposed expansion and creation of new training airspace would contribute cumulatively to training airspace throughout New Mexico. The southern portion of New Mexico has a relatively substantial amount of training airspace (to include restricted areas, MOAs, and MTRs). Other actions such as the New Mexico Training Initiative, the Fort Bliss Local Flying Area, and the proposed Regional SUA Optimization project in Arizona have or would continue to modify airspace areas that have the potential to impact civilian aircraft. The past activities listed in **Table 5.1-1**, have affected the configuration and use of the airspace and the effects of those past actions have been included in the baseline conditions for this Proposed Action.

The proposed establishment of the Lobos MOA and expansion of the Cato and Smitty MOAs would be adjacent to other existing MOAs (Morenci and Reserve MOAs) creating a large contiguous block of airspace. However, all of these MOAs have separate using or scheduling agencies and are treated independently. The potential for operations within the adjacent MOAs to expand into the newly established Lobos, Cato, and Smitty MOAs was captured in the analysis in this EIS as potential transients.

Changes to helicopter operations within the Fort Bliss Local Flying Area would reduce the minimum altitude of helicopter operations from 3,000 to 500 AGL throughout the Local Flying Area, which includes the existing and proposed Talon MOA and part of the proposed Lobos MOA. This action would overlap with the New Mexico State Unmanned Aircraft System Flight Test Center airspace operations that would occur within the Lobos MOA and ATCAA. The proposed F-16 training operations would not be expected to interfere with or affect the helicopter or Unmanned Aircraft System activities. Helicopter operations within the entire Fort Bliss Local Flying Area would typically be approximately 16 sorties per week. These aircraft could operate within the active MOAs using VFR. The Angel Thunder Personnel Recovery/Rescue Training Exercise would take place biannually for three weeks, however, the proposed landing zones within the Gila National Forest for this exercise would not be located beneath the proposed Cato, Smitty, or Lobos MOAs. Therefore, this training activity is not expected to be affected by the proposed F-16 operations. These proposed actions would not generate a significant cumulative impact.

In summary, **the Holloman AFB SUA proposal** would not result in significant adverse impacts when evaluated and considered cumulatively with the other actions. The Air Force and FAA would ensure this outcome by following established operating procedures, conducting all flight operations in compliance with existing regulations and restrictions, and through continued coordination between the Air Force and FAA regarding operations within the airspace.

5.2.2 Acoustic Environment

As shown in **Table 5.1-1**, several actions have changed the aircraft based at Holloman AFB and the operations in the airspace affected by the Proposed Action in the past years. As a result of this and changes in airspace use by other users of the airspace, noise levels have varied. Other activities in the region may

produce localized noise, primarily from ground-based activities such as construction and extractive industry, as well as noise from low-flying civilian and military aircraft and helicopters. Noise levels resulting from military aircraft activities that overlap with the proposed airspace areas are represented in baseline numbers and the anticipated noise levels resulting from the Proposed Action and alternatives include these baseline levels (**Section 4.3**, Acoustic Environment). In addition, the potential transient aircraft that could use the proposed airspace have also been included in the Proposed Action and alternative modeling scenarios presented in this EIS. The proposed ADAIR sorties (approximately 314 in Talon MOA) would be accommodated in the transient estimate and would not be additive to the analysis as presented in this EIS. Noise from other military aircraft, helicopters, and UAS could have an additive effect to the noise environment in the proposed Talon and Lobos MOAs, however, the analyses for the other actions also indicated no significant impact to the acoustic environment (Air Force 2015a, 2015b, and 2017c; Army 2018a). Noise from other sources such as regional commercial aircraft, traffic along highways, oil and gas operations, and construction also contribute to localized noise impacts. The impacts of the Proposed Action and alternatives on the noise environment, when considered with past, ongoing, and reasonably foreseeable activities would not be significant nor would they result in noise exposure considered generally incompatible with Federal Interagency Committee on Urban Noise standards for residential, public use, or recreational and entertainment areas.

5.2.3 Air Quality

Past and ongoing activities have contributed to the attainment status of the counties that lie beneath the proposed airspace. All counties are in attainment, having air quality that meets the NAAQS; however, Grant County, New Mexico and Greenlee County, Arizona are designated as maintenance areas, having recovered from exceeding NAAQS for SO_2. The Proposed Action would not be expected to contribute to significant cumulative effects to air quality or to result in exceedances of the NAAQS, taking into account past, ongoing, and future activities.

The Proposed Action would not change the GHG emissions since the sorties are already occurring in other airspace areas within New Mexico and other states. A comparison of the contribution of GHG emissions for the three Proposed Action Alternatives and the No Action Alternative are presented in **Table 5.2-1**.

Table 5.2-1. Annual GHG Emission Estimates for Each Alternative

Total Annual Emissions in Tons	
Alternative	**CO_2e**
No Action Alternative	39,381
Alternative 1	164,899
Alternative 2	141,907
Alternative 3	162,379

Legend: CO_2e-carbon dioxide equivalent; GHG-greenhouse gas.

Implementation of Alternative 1 would result in the largest contribution of GHG emissions and implementing Alternative 2 would have the smallest contribution, with the difference between these Alternatives equal to 22,992 tons per year or a difference of 14 percent.

Climate change impacts on the Proposed Action would likely involve weather and other natural events that could impact training locations and/or training time, such as the increased presence of wildfires and more extensive, violent storms (USEPA 2016).

At this time, climate change presents a global problem caused by increasing concentrations of GHG emissions. While climate change results from the incremental addition of GHG emissions from millions of individual sources, the significance of an individual source alone is impossible to assess on a global scale beyond the overall need for global GHG emission reductions to avoid catastrophic global outcomes. Therefore, the quantitative analysis of CO_2e emissions in this EIS is for disclosing the local net effects (increase or decrease) of the Proposed Action and alternatives and for its potential usefulness in making reasoned choices among alternatives.

5.2.4 Natural Resources

The proposed pilot training in the SUA proposed by all alternatives could potentially disturb wildlife and special-status species inhabiting areas beneath the airspace. Because the Proposed Action and alternatives involve changes to airspace and no on-ground activities, potential disturbance to animal species resulting from noise and visual observation of aircraft were evaluated. No effects from chaff or flare would be anticipated. The proposed training would contribute only minor increases to the average acoustic environment and would not create a consistent, significant noise source in any location. The analyses in other past and future actions indicated a similar minor impact to natural resources. Post implementation noise levels for this Proposed Action, which would range from less than 35 to 57 DNL, take into account existing use of the SUA and potential transient activity; and so, direct and indirect effects described in Chapter 4 would be inclusive of ongoing and future use of the proposed SUA. As with ongoing operations, there would be the possibility that a location would be subjected to a low-level overflight and animals beneath such a flight would experience a sudden onset of high level noise.

Aside from aircraft operations, wildlife and special-status species beneath the proposed SUA are subject to both land management activities and conservation efforts on Federal lands managed by NPS, BLM, and USFS, which contribute positively and negatively to the overall effects to species. The Proposed Action would not be expected to result in significant cumulative impacts to natural resources.

5.2.5 Land Management

All of the proposed alternatives would add aircraft activity to expanded and proposed SUA, exposing more land to aircraft noise. While noise levels would be perceptible in most locations beneath airspace, they would be well below the threshold of 65 dB considered to be incompatible with residential and recreational land uses. As stated above in **Section 5.2.2** (Acoustic Environment), noise levels from ongoing Air Force activities that overlap with the proposed areas are included in calculations of noise resulting from the Proposed Action and alternatives. No future activities have been identified that would increase noise above the threshold; therefore, land use patterns would be expected to remain unchanged.

5.2.6 Recreation Resources

The proposed airspace modifications would not alter, prohibit, or otherwise limit the public's access to the recreational areas beneath the MOAs. Other actions affecting airspace or use of the area for aircraft activity would have the same conclusion. The proposed pilot training along with other training activities by other DoD units would generate noise within the MOAs or surrounding areas, which could detract from the public's enjoyment of outdoor recreational areas. Noise levels take into account existing military aircraft operations within the proposed SUAs; and, changes to the existing noise levels would generally be minimal and would not be expected to result in significant impacts to recreation resources.

5.2.7 Socioeconomics

Baseline socioeconomic conditions described in Chapter 3 are influenced by many factors, including those activities identified in **Table 5.1-1**. Land management activities on public lands, such as cattle grazing, extractive industry, and recreation contribute to local economies directly and indirectly through creating jobs and influencing spending. Jobs related to agriculture, mining, and recreation are among the most common in all counties beneath airspace. DoD actions, which have often involved construction and relocation of aircraft and personnel, can affect economies by affecting local spending and employment as well as demand for housing and services. The effects of past and ongoing actions are captured in the baseline socioeconomic conditions described in Chapter 3. The Proposed Action and alternatives would not be expected to affect population or housing and would have only minor, but unquantifiable, effects on spending based on potential reduced recreational visitation to National Forests beneath the airspace. Other actions that could detract from the enjoyment of recreational areas and indirectly reduce local spending would have a similar minor impact. Therefore, the Proposed Action is not expected to contribute significant cumulative effects.

5.2.8 Environmental Justice

The Proposed Action and alternatives would not result in significant impacts to any resources that would adversely impact the health or environment of minority or low-income populations or children living beneath existing or proposed airspace. The past and ongoing activities identified contribute to the baseline conditions against which the impacts of the Proposed Action and alternatives were compared. No ongoing or future activities have been identified that would create impacts that would disproportionately or adversely affect minority or low-income populations or children.

5.2.9 Safety

Training activities to be conducted in the proposed MOAs would not be expected to create any ground safety issues. While all alternatives would increase use of the SUA, the proposed operations would be similar in nature to the existing operations, would not constitute a novel or increased fire risk, and crash response procedures would remain the same. Likewise, other ongoing or planned military training in the area would adhere to safety regulations, reducing the potential for increased safety risks. However, continued increases in military training activity in the area could slightly increase the number of accidents overall. The safety risk to people under or immediately adjacent to the MOAs resulting from chaff and flare use would be negligible and would not contribute to significant cumulative impacts to safety.

5.2.10 Cultural Resources

The Proposed Action would not be expected to contribute to cumulative impacts to cultural resources. No ground disturbing activities would be proposed, no structural damage to NRHP-listed archaeological or architectural resources would be anticipated, and visual intrusion under any of the alternatives would be minimal and would not cause adverse impacts to the settings of cultural resources underlying the airspace. No traditional cultural properties were identified through government-to-government consultation for this EIS. Other ongoing or planned training activities would have a similar minimal impact to cultural resources and have or would be coordinated with the SHPO to ensure protection of these resources.

5.2.11 Hazardous Materials

Hazardous materials would be introduced into the environment in the case of an aircraft mishap under any of the ongoing or planned military training activities. Mishap impacts would continue to be mitigated by SOPs that identify potential hazardous materials, protect responding personnel and the environment, and provide guidelines for the ultimate cleanup and disposal of the crash residues. Therefore, impacts to hazardous materials would be minimal and would not be expected to contribute measurably to cumulative effects.

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6.0 OTHER CONSIDERATIONS REQUIRED BY NEPA

This section addresses irreversible and irretrievable commitments of resources, unavoidable impacts from implementing the Proposed Action, and short-term uses versus long-term productivity based on the technical analyses presented in **Section 4.0**, *Environmental Consequences*.

6.1 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

NEPA requires that environmental analyses include identification of any irreversible and irretrievable commitments of resources that would be involved if the Proposed Action is implemented. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and fossil fuel) that cannot be replaced within a reasonable timeframe. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

The Proposed Action would be limited to the reconfiguration of existing airspace and establishment of new airspace for current and anticipated future F-16 pilot training; no ground disturbing activities would occur. Training operations would involve consumption of nonrenewable resources, such as jet fuel and material used in defensive countermeasures; however, none of these uses would be expected to significantly decrease the availability of minerals or petroleum resources. With no ground disturbing activities, no irreversible or irretrievable effects are expected for natural, land, or cultural resources.

6.2 UNAVOIDABLE ADVERSE IMPACTS

NEPA requires a description of any significant impacts resulting from implementation of a proposed action, including those that can be mitigated to a less than significant level. Avoidance, minimization, or mitigation of adverse effects to natural, cultural, and other environmental resources are implemented to the greatest extent possible and practicable; however, all impacts may not be completely avoided and/or mitigated. Based on the analysis presented in **Section 4.0**, *Environmental Consequences*, implementing the Proposed Action or alternatives would result in the following unavoidable environmental impacts:

- An aircraft mishap could introduce hazardous materials into the environment; mishap impacts would be mitigated by SOPs that identify potential hazardous materials, protect responding personnel and the environment, and provide guidelines for the ultimate cleanup and disposal of the crash residues.
- Wildfires from flare usage could impact wildlife and their habitat. The risk of wildfires from flare usage would be mitigated by operational constraints, including the prohibition of flares during periods of "Very High" or "Extreme" National Fire Danger Ratings. During periods of "High" fire danger, aircraft would not use flares below 18,000 feet MSL.

Chapter 7 describes the best management practices and mitigation measures under consideration for this Proposed Action.

6.3 RELATIONSHIP BETWEEN SHORT-TERM USE OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. Choosing one option may reduce future flexibility in pursuing other options or committing a resource to a certain use may eliminate the possibility for other uses of that resource.

The Proposed Action would be limited to the reconfiguration of existing airspace and establishment of new airspace for current and anticipated future F-16 pilot training; no ground disturbing activities would occur. As such, there would be no short-term construction-related impacts or changes to land use as a result of implementing the Proposed Action. The Proposed Action would irreversibly dedicate energy resources (i.e., fuel for planes) for an extended period of time. These resources would not be available for other uses; however, these impacts would be considered negligible, as the resources associated with the Proposed Action are designated for this particular use.

The majority of activities addressed in this EIS would be categorized as long term actions. For example, although the use of training areas for individual training activities may be of short duration, the affected and proposed airspaces would continue to receive repeated use for the foreseeable future. Wildlife and special-status species inhabiting areas beneath the airspace may be temporarily disturbed by the new aircraft activity; however, noise levels would not be anticipated to exceed 57 DNL. The greatest change in DNL would occur at Loco Hills, New Mexico, where the estimated DNL from aircraft operations would be 56 DNL. While this represents a large change in DNL value from the baseline conditions, it would be near to the 55 DNL threshold set by USEPA for which adverse noise effects would not be expected to occur. Implementation of the Proposed Action is not expected to result in the types of impacts that would reduce environmental productivity, affect biodiversity, or permanently narrow the range of beneficial uses of the environment.

Land use below the affected airspace would experience projected DNL levels well below the 65 DNL threshold for land use restrictions. Additionally, with no ground disturbing activities proposed, cultural resources underlying the airspace would not be affected.

7.0 BEST MANAGEMENT PRACTICES AND MITIGATION MEASURES

7.1 BEST MANAGEMENT PRACTICES

As a Federal agency, the Air Force must adhere to all Federal laws and regulations as noted throughout this EIS. These laws and regulations have been developed in order to reduce the impact on the environment and ensure public safety. In addition, several best management practices would be implemented with the Proposed Action that would minimize, reduce, or avoid potential environmental and safety impacts. A summary of those best management practices of most interest to the public is provided in this section.

- Aircraft Operation and Airspace Management
    - As defined in 14 CFR 91.113, *Right-of-Way Rules*, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft. When there is a rule that gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear. Of particular interest for this Proposed Action:
        - An aircraft in distress has the right-of-way over any other aircraft.
        - A balloon has the right-of-way over any other aircraft.
        - A glider has the right-of-way over jet aircraft[10].
        - An aircraft towing or refueling another aircraft has the right-of-way over other engine-driven aircraft.
    - Life Flights and active ambulance flights are always given priority in airspace.
    - FAA can temporarily recall a MOA at any time when civil aviation needs exceed the military benefit or for safety of flight (i.e., weather diversions).
    - MOAs must exclude the airspace 1,500 feet AGL and below within a 3-nautical mile radius of airports available for public use.
    - Provisions must be made to enable aerial access to private and public use land beneath the MOA, and for terminal VFR and IFR flight operations (FAA Order JO 7400.2M).
    - Provisions must be made to accommodate instrument arrivals/departures at affected airports with minimum delay (FAA Order JO 7400.2M).
- Protection of public safety
    - As defined in 14 CFR 91.119, *Minimum Safe Altitudes,* aircraft must avoid congested areas of a city, town, or settlement or any open-air assembly of people by 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. Outside of congested areas, aircraft must avoid persons, vessels, vehicles, or structures by 500 feet.
    - Chaff and flares would not be used over populated places.
    - FAA Aeronautical Information Manual (paragraph 7-4-6), requests that pilots maintain a minimum altitude of 2,000 feet above the surface of the following: National Parks, Monuments, Seashores, Lakeshores, Recreation Areas, and Scenic Riverways administered by the NPS; National Wildlife Refuges, Big Game Refuges, Game Ranges, and Wildlife Ranges administered by the USFWS; and Wilderness and Primitive areas

[10] Per 14 CFR 91.114, A glider has the right-of-way over an airship, powered parachute, weight-shift-control aircraft, airplane, or rotorcraft. This rule has been paraphrased for this EIS.

administered by the USFS; these minimum altitudes would be required by the Air Force with implementation of this proposal.

- Reduce Fire Risks
    - Holloman AFB would not use flares in the proposed airspace during periods of "Extreme" or "Very High" fire danger ratings. During periods of "High" fire danger ratings, flares would not be released below 18,000 feet MSL.
    - Flares would not be released below 2,000 feet AGL under any conditions.

7.2 MITIGATION MEASURES

The purpose of mitigation is to eliminate potential negative impacts of an action on affected resources or to reduce an impact to less than significant. CEQ regulations (40 CFR 1508.20) state that mitigation includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

Mitigation Measures are specific to the Proposed Action and are developed in coordination with the cooperating agencies, regulatory agencies, and other stakeholders for this EIS. The Air Force will prepare a separate Mitigation and Monitoring Plan after the ROD is signed that details the specific and legally binding Mitigation Measures. Mitigation Measures have been developed for Alternative 1 (Preferred Alternative). The Mitigation Measures are divided into three groups to reflect when they will take effect. Group 1 mitigations are mitigations by avoidance. These mitigation measures constitute modifications to the structure of the airspace that are reflected in the Preferred Alternative, Alternative 1, and will be implemented automatically as part of the FAA aeronautical approval process. Group 2 mitigations will be implemented before the airspace is used or by agreed upon dates. Group 3 mitigations will be implemented when the airspace is being used. These Group 3 mitigations will be further described in the Mitigation and Monitoring Plan to be implemented in conjunction with airspace use once airspace is approved and published. These mitigations will be tracked through coordination with potentially affected parties, updated, and adjusted to accomplish the mitigation of avoiding or otherwise reducing the potential impact. Mitigation Measures include:

Group 1

- Southern boundary of the Talon MOA was adjusted to the north so that:
    - The boundary is four nautical miles from the centerline of the ATS route J66 to eliminate conflict with general aviation along this route.
    - The MOA will not overlap the northern boundary of Carlsbad Caverns National Park.
- Vertical obstructions that intrude into the 500-foot AGL floor of the proposed Talon Low A and B MOAs would be identified on nautical charts. Known obstructions include one tower on the edge of Low A and three towers beneath Low B as shown in Appendix I (Figure 2-1).
- The boundaries of the Talon Low A and B MOAs were modified during the proposal to:

  - Avoid conflicts with the approach/departure of Artesia Municipal Airport and Cavern City Air Terminal Airport.
  - Maintain a north-south corridor between Carlsbad and Roswell for general aviation operating below 12,500 feet MSL.

Group 2

- The Air Force would pay to improve FAA communication infrastructure needed to support air traffic control radio coverage of the Talon Low MOA area.

Group 3

- The Talon High C MOA and Bronco 3 MOA would not be activated at the same time to maintain one of the approach corridors to Roswell International Airport.
- A record of the amount and type of deployed chaff used in the optimized airspace will be maintained at Holloman AFB for up to six years, or until it is determined that such records are no longer needed to support any damage claims related to chaff.
- Since there are numerous Air Force installations in southern New Mexico using training airspace, in an effort to streamline the complaint process for the public, the Air Force has made arrangements that any complaints concerning aircraft overflights, chaff, and flares in areas east of WSMR (to include the proposed Talon MOA) should be sent to the Holloman AFB Public Affairs Office:

  Holloman AFB Public Affairs
  Website: https://www.holloman.af.mil/Contact-Us/
  Telephone number: 575.572.7381

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Chapter 6: Other Considerations Required by NEPA

No references are provided in this section.

Chapter 7: Best Management Practices and Mitigation Measures

No references are provided in this section.

9.0 LIST OF PREPARERS

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APPENDIX A
PUBLIC NOTICES

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A.1 Federal Register Notice of Intent

40572 **Federal Register** / Vol. 82, No. 164 / Friday, August 25, 2017 / Notices

ACTION: Notice of intent to issue an exclusive patent license.

SUMMARY: Pursuant to the provisions of agency regulations, the Department of the Air Force announces its intention to grant Sensible Spreader Technologies, LLC, a corporation of New Hampshire having a place of business at 844 Elm Street, Manchester, New Hampshire 03101, an exclusive license in any right, title and interest the United States Air Force has in: In U.S. Patent 8,428,993 entitled "Method and Apparatus for Risk Identification and Mitigation in Shift Work Fatigue", issued on April 23, 2013.

FOR FURTHER INFORMATION CONTACT: An exclusive license for this patent will be granted unless a written objection is received within fifteen (15) days from the date of publication of this Notice. Written objections should be sent to: Air Force Research Laboratory, Office of the Staff Judge Advocate, AFRL/RIJ, 26 Electronic Parkway, Rome, New York 13441–4514, Telephone: (315) 330–2087; Facsimile (315) 330–7583.

Henry Williams,

Acting Air Force Federal Register Liaison Officer.

[FR Doc. 2017–18053 Filed 8–24–17; 8:45 am]

BILLING CODE 5001–10–P

DEPARTMENT OF DEFENSE

Department of the Air Force

Notice of Intent To Prepare an Environmental Impact Statement for the Special Use Airspace Optimization Project, Holloman Air Force Base, New Mexico

AGENCY: Department of the Air Force, DOD.

ACTION: Notice of intent.

The U.S. Air Force is issuing this notice of intent (NOI) (40 CFR 1508.22) to advise the public of its intent to prepare an Environmental Impact Statement (EIS) to assess the potential environmental consequences associated with modifying existing or creating new special use airspace (SUA), and relinquishing to the National Airspace System (NAS) SUA incompatible for today's Air Force mission. SUA used by Holloman Air Force Base (AFB) dates back more than 30 years ago and was designed to support different aircraft with significantly different mission profiles and performance characteristics than the current aircraft (F–16C/D) flown at Holloman AFB. Optimizing Air Force controlled SUA would provide the scheduling flexibility necessary to conduct multiple, simultaneous training missions needed by the aircrews stationed at Holloman AFB, New Mexico to meet the pilot initial qualification training requirements. Two action alternatives identified as meeting the purpose and need for this proposed action will be analyzed in the EIS. Alternative 1 would reconfigure and expand the existing Talon Military Operations Area (MOA) and associated Air Traffic Control Assigned Airspace (ATCAA). Alternative 2 would modify the existing Cato/Smitty MOA/ATCAA and create a new Lobos MOA to the west of White Sands Missile Range. Each alternative includes aircraft activity down to 500 feet above ground level (AGL), supersonic activity at or above 30,000 feet mean sea level (MSL), and the use of defensive chaff and flares within certain parameters. The resulting SUA would provide adequate volumes of SUA to allow for more efficient and simultaneous training activities that currently occur disjointedly throughout several airspace areas in New Mexico and return sub-optimal airspace to the NAS for use by the public.

A No Action Alternative will be included in the EIS, whereby aircrews at Holloman AFB would continue to utilize existing SUA as it is currently configured. Aircrews would continue to be limited to SUA that was developed for legacy aircraft more than 30 years ago and does not have the optimum volume, proximity to the installation, availability, or other attributes to efficiently support the Holloman AFB flying mission. The analysis of the No Action Alternative will provide a benchmark to enable Air Force decision-makers to compare the magnitude of the environmental effects of the proposed action.

Scoping and Agency Coordination: To effectively define the full range of issues and alternatives to be evaluated in the EIS, the Air Force will determine the scope of the analysis by soliciting comments from interested local, state and federal elected officials and agencies, as well as interested members of the public and others. The public and interested parties can submit their comments through the project Web site *www.HollomanAFBAirspaceEIS.com*, by mailing comments to Holloman Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA 23666, or by attending one of the public meetings. The Air Force will also pursue government-to-government consultations with interested Native American tribes and pueblos.

Public Meeting Dates and Locations: Public scoping meetings will be held in Carlsbad, Truth or Consequences and Las Cruces, New Mexico at the following dates, times, and locations:

Tuesday, September 12, 2017, 6:00 p.m. to 8:00 p.m., Carlsbad Public Library, 101 S. Halagueno Street, Carlsbad, NM 88220.

Wednesday, September 13, 2017, 6:00 p.m. to 8:00 p.m., Truth or Consequences Civic Center, Ralph Edwards Auditorium, 400 W. 4th Avenue, Truth or Consequences, NM 87901.

Thursday, September 14, 2017, 6:00 p.m. to 8:00 p.m., Hilton Garden Inn, 2550 S. Don Roser Dr., Las Cruces, NM 88001.

Although comments can be submitted to the Air Force any time during the EIS process, scoping comments are requested by September 25, 2017 to ensure full consideration in the draft EIS.

SUPPLEMENTARY INFORMATION: The Air Force has preliminarily identified two broad alternatives to optimize existing training airspace at Holloman AFB. While the alternatives are independent of each other, the decision-maker may choose to implement one, both, or none of the alternatives based on the analysis provided in the EIS.

Alternative 1 would evaluate an expansion to the east of Holloman AFB of the Talon MOA and associated ATCAA. The Talon MOA is located in the vicinity of Carlsbad, New Mexico and covers approximately 1,848 square nautical miles. Under this alternative, the dimensions of the existing MOA/ATCAA would be expanded approximately 1,375 square nautical miles generally to the east. The floor of the MOA would be raised to 500 feet AGL from the current 300 feet AGL. Training within the expanded MOA/ATCAA would include supersonic flight at or above 30,000 feet and use of chaff and flares above 2,000 feet AGL.

Alternative 2 would evaluate the area west of Holloman AFB and White Sands Missile Range for reconfiguring and expanding the Cato/Smitty MOA and associated ATCAA and/or creating a new Lobos MOA/ATCAA. The Cato/Smitty MOA is located in the vicinity of Truth or Consequences, New Mexico and covers approximately 2,680 square nautical miles. Under this alternative, the dimensions of the Cato/Smitty MOA would be reconfigured and expanded to the southeast. Reconfiguring this MOA would result in returning the northern portion of the existing Cato/Smitty MOA back to the NAS. The new Lobos MOA/ATCAA would be created south of the reconfigured Cato/Smitty MOA and west of White Sands Missile Range. The proposed floor of the reconfigured

Cato/Smitty MOA and the new Lobos MOA would be 500 feet AGL (2,000 feet AGL over designated wilderness areas as currently observed). Training within the reconfigured and expanded Cato/Smitty and new Lobos MOAs would include supersonic flight above 30,000 feet and use of chaff and flares above 2,000 feet AGL.

FOR FURTHER INFORMATION CONTACT: For questions regarding the proposed action, scoping, and EIS development, contact Holloman AFB Public Affairs Office, at (575) 572–7383 or at: *49WG.PAOffice@us.af.mil.*

Henry Williams,

Acting Air Force Federal Register Liaison Officer.

[FR Doc. 2017–18069 Filed 8–24–17; 8:45 am]

BILLING CODE 5001–10–P

DEPARTMENT OF DEFENSE

Department of the Air Force

U.S. Air Force Scientific Advisory Board; Notice of Meeting

AGENCY: Air Force Scientific Advisory Board, Department of the Air Force.

ACTION: Meeting notice.

SUMMARY: The United States Air Force Scientific Advisory Board plans to hold its Fall Board meeting on September 20, 2017. A Portion of this meeting will be open to the public.

DATES: The meeting date is September 20, 2017, from 8:00 a.m. to 5:00 p.m.

ADDRESSES: The CENTRA Conference Center, 4121 Wilson Blvd., Suite 200, Arlington, VA 22203.

FOR FURTHER INFORMATION CONTACT: The Scientific Advisory Board meeting organizer, Major Mike Rigoni at *michael.j.rigoni.mil@mail.mil* or 703–695–4297, United States Air Force Scientific Advisory Board, 1500 West Perimeter Road, Ste. #3300, Joint Base Andrews, MD 20762.

SUPPLEMENTARY INFORMATION: Under the provisions of the Federal Advisory Committee Act of 1972 (5 U.S.C., Appendix, as amended), the Government in the Sunshine Act of 1976 (5 U.S.C. 552b, as amended), and 41 CFR 102–3.150, the Department of Defense announces the United States Air Force (USAF) Scientific Advisory Board (SAB) Fall Board meeting will take place on 20 September 2017 at the The CENTRA Conference Center, located at 4121 Wilson Blvd., Suite 200, Arlington, VA 22203. The purpose of this Air Force Scientific Advisory Board quarterly meeting is to welcome new members, prepare for Science and Technology Reviews of the Air Force Research Laboratory, and apportion time for Air Force senior leaders to brief the SAB on their most vital S&T issues. The meeting will occur from 8:00 a.m.–5:00 p.m. on Wednesday, 20 September 2017. The session that will be open to the *general public* will be held from 8:00 a.m. to 9:00 a.m. on 20 September 2017. In accordance with 5 U.S.C. 552b, as amended, and 41 CFR 102–3.155, a number of sessions of the Air Force Scientific Advisory Board Fall Board meeting will be closed to the general public because they will discuss classified information and matters covered by Section 552b of Title 5, United States Code, subsection (c), subparagraph (1).

Any member of the public that wishes to attend this meeting or provide input to the Air Force Scientific Advisory Board must contact the Scientific Advisory Board meeting organizer at the phone number or email address listed in this announcement at least five working days prior to the meeting date. Please ensure that you submit your written statement in accordance with 41 CFR 102–3.140(c) and section 10(a)(3) of the Federal Advisory Committee Act. Statements being submitted in response to the agenda mentioned in this notice must be received by the Scientific Advisory Board meeting organizer at least five calendar days prior to the meeting commencement date. The Scientific Advisory Board meeting organizer will review all timely submissions and respond to them prior to the start of the meeting identified in this notice. Written statements received after this date may not be considered by the Scientific Advisory Board until the next scheduled meeting.

Henry Williams,

Acting Air Force Federal Register Liaison Officer.

[FR Doc. 2017–18060 Filed 8–24–17; 8:45 am]

BILLING CODE 5001–10–P

DEPARTMENT OF DEFENSE

Department of the Air Force

U.S. Air Force Exclusive Patent License

AGENCY: Air Force Research Laboratory Information Directorate, Department of the Air Force, DOD.

ACTION: Notice of intent to issue an exclusive patent license.

SUMMARY: Pursuant to the provisions of agency regulations, the Department of the Air Force announces its intention to grant The Curators of the University of Missouri, a public corporation of Missouri having a place of business at the Office of Technology Management and Industry Relations, 1601 S. Providence Road, #124, Columbia, Missouri 65211, an exclusive license in any right, title and interest the United States Air Force has in: In U.S. Patent Application No. 14/982,030 entitled ''Method for Fast Camera Pose Refinement for Wide Area Motion Imagery'', filed December 19, 2015.

FOR FURTHER INFORMATION CONTACT: An exclusive license for this patent will be granted unless a written objection is received within fifteen (15) days from the date of publication of this Notice. Written objections should be sent to: Air Force Research Laboratory, Office of the Staff Judge Advocate, AFRL/RIJ, 26 Electronic Parkway, Rome, New York 13441–4514. Telephone: (315) 330–2087; Facsimile (315) 330–7583.

Henry Williams,

Acting Air Force Federal Register Liaison Officer.

[FR Doc. 2017–18052 Filed 8–24–17; 8:45 am]

BILLING CODE 5001–10–P

DEPARTMENT OF DEFENSE

Office of the Secretary

Government-Industry Advisory Panel; Notice of Federal Advisory Committee Meeting

AGENCY: Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics), Department of Defense (DoD).

ACTION: Federal advisory committee meeting notice.

SUMMARY: The Department of Defense is publishing this notice to announce the following Federal advisory committee meeting of the Government-Industry Advisory Panel. This meeting is open to the public.

DATES: The meetings will be held from 9:00 a.m. to 5:00 p.m. on Wednesday and Thursday, September 6 and 7, 2017. Public registration will begin at 8:45 a.m. on each day. For entrance into the meeting, you must meet the necessary requirements for entrance into the Pentagon. For more detailed information, please see the following link: *http://www.pfpa.mil/access.html.*

Teleconference and direct connect information will be provided by the Designated Federal Officer and support staff at the contact information in the **FOR FURTHER INFORMATION CONTACT** section.

ADDRESSES: Pentagon Library, Washington Headquarters Services,

A.2 Federal Register Notice of Availability of Draft EIS

Federal Register / Vol. 84, No. 212 / Friday, November 1, 2019 / Notices 58713

Dated: October 28, 2019.

Panagiotis Tsirigotis,

Director, Office of Air Quality Planning and Standards.

[FR Doc. 2019–23888 Filed 10–31–19; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[ER–FRL–9047–7]

Environmental Impact Statements; Notice of Availability

Responsible Agency: Office of Federal Activities, General Information 202–564–5632 or *https://www.epa.gov/nepa/.*

Weekly receipt of Environmental Impact Statements

Filed 10/21/2019 10 a.m. ET Through 10/28/2019 10 a.m. ET

Pursuant to 40 CFR 1506.9.

Notice

Section 309(a) of the Clean Air Act requires that EPA make public its comments on EISs issued by other Federal agencies. EPA's comment letters on EISs are available at: *https://cdxnodengn.epa.gov/cdx-enepa-public/action/eis/search.*

EIS No. 20190261, Draft, USAF, NM, Special Use Airspace Optimization Holloman Air Force Base, New Mexico, *Comment Period Ends:* 12/16/2019, *Contact:* Robin Divine 210–925–2730

EIS No. 20190262, Draft, USFWS, CA, Fort Ord Multi-Species Habitat Conservation Plan Public Draft EIS/EIR, *Comment Period Ends:* 12/16/2019, *Contact:* Steve Henry 805–644–1766

EIS No. 20190263, Final Supplement, NRC, FL, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 5, Second Renewal, Regarding Subsequent License Renewal for Turkey Point Nuclear Generating Unit Nos. 3 and 4, *Review Period Ends:* 12/02/2019, *Contact:* Robert Schaaf 301–415–6020

EIS No. 20190264, Final, APHIS, PRO, Rangeland Grasshopper and Mormon Cricket Suppression Program, *Review Period Ends:* 12/02/2019, *Contact:* Jim Warren 202–316–3216

EIS No. 20190265, Final, BIA, BLM, OK, Oklahoma, Kansas and Texas Final Joint EIS, BLM RMP, and BIA Integrated RMP, *Review Period Ends:* 12/31/2019, *Contact:* Patrick Rich 405–579–7154

EIS No. 20190266, Draft, BLM, CA, Crimson Solar Project Draft Environmental Impact Statement and Environmental Impact Report and Draft Land Use Plan Amendment to the California Desert Conservation Area Plan, *Comment Period Ends:* 01/30/2020, *Contact:* Miriam Liberatore 541–618–2412

EIS No. 20190267, Final Supplement, BLM, CA, Bakersfield Field Office Hydraulic Fracturing Final Supplemental EIS, *Review Period Ends:* 12/02/2019, *Contact:* Carly Summers 661–391–6000

Amended Notice

EIS No. 20190239, Draft, USFWS, OR, Deschutes Basin Habitat Conservation Plan, *Comment Period Ends:* 12/03/2019, *Contact:* Bridget Moran 541–383–7146. Revision to FR Notice Published 10/04/2019; Extending the Comment Period from 11/18/2019 to 12/03/2019.

Dated: October 28, 2019.

Robert Tomiak,

Director, Office of Federal Activities.

[FR Doc. 2019–23877 Filed 10–31–19; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[FRL–10001–58–OA]

Notification of a Public Meeting of the Chartered Clean Air Scientific Advisory Committee (CASAC)

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: The EPA Science Advisory Board (SAB) Staff Office announces a public face-to-face meeting of the Chartered Clean Air Scientific Advisory Committee (CASAC). The CASAC will discuss its Draft Report on EPA's *Policy Assessment for the Review of the National Ambient Air Quality Standards (NAAQS) for Particulate Matter (External Review Draft—September 2019)* and will peer review EPA's *Integrated Science Assessment for Ozone and Related Photochemical Oxidants (External Review Draft—September 2019)* and EPA's *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards (External Review Draft).*

DATES: The public face-to-face meeting will be held on Tuesday, December 3, 2019, from 9:00 a.m. to 5:00 p.m. (ET), Wednesday, December 4, 2019, from 8:30 a.m. to 5:00 p.m. (ET), Thursday, December 5, 2019, from 8:30 a.m. to 5:00 p.m. (ET), and Friday, December 6, 2019, from 8:30 a.m. to 3:30 p.m. (ET).

ADDRESSES: The public face-to-face meeting will be held at the Embassy Suites by Hilton Raleigh Durham Research Triangle, 201 Harrison Oaks Boulevard, Cary, North Carolina 27513.

FOR FURTHER INFORMATION CONTACT: Any member of the public wishing to obtain information concerning these public meetings may contact Mr. Aaron Yeow, Designated Federal Officer (DFO), at (202) 564–2050 or at *yeow.aaron@epa.gov.* General information about the CASAC, as well as any updates concerning the meeting announced in this notice, may be found on the CASAC website at *http://www.epa.gov/casac.*

SUPPLEMENTARY INFORMATION:

Background: The Clean Air Scientific Advisory Committee (CASAC) was established under section 109(d)(2) of the Clean Air Act (CAA or Act) (42 U.S.C. 7409) as a scientific advisory committee. The CASAC provides independent advice, information and recommendations on the scientific and technical aspects of air quality criteria and the National Ambient Air Quality Standards (NAAQS). The CASAC shall also: Advise the EPA Administrator of areas in which additional knowledge is required to appraise the adequacy and basis of existing, new, or revised NAAQS; describe the research efforts necessary to provide the required information; advise the EPA Administrator on the relative contribution to air pollution concentrations of natural as well as anthropogenic activity; and advise the EPA Administrator of any adverse public health, welfare, social, economic, or energy effects which may result from various strategies for attainment and maintenance of such NAAQS. The CAA requires that the Agency, at five-year intervals, review and revise, as appropriate, the air quality criteria and the NAAQS for the six ''criteria'' air pollutants, including particulate matter and ozone. EPA is currently reviewing the NAAQS for particulate matter and the NAAQS for ozone.

The CASAC is a Federal Advisory Committee chartered under the Federal Advisory Committee Act (FACA), 5 U.S.C., App. 2. The Chartered CASAC will comply with the provisions of FACA and all appropriate SAB Staff Office procedural policies. Pursuant to FACA and EPA policy, notice is hereby given that the Chartered CASAC will hold a public face-to-face meeting to discuss its Draft Report on EPA's *Policy Assessment for the Review of the National Ambient Air Quality Standards (NAAQS) for Particulate Matter (External Review Draft—September 2019)* and to peer review

A.3 Federal Register Notice of Extension

Federal Register / Vol. 84, No. 240 / Friday, December 13, 2019 / Notices 68169

Signed in Washington, DC, on November 26, 2019.

John Bashista,

Director, Office of Acquisition Management, Department of Energy.

[FR Doc. 2019-26908 Filed 12-12-19; 8:45 am]

BILLING CODE 6450-01-P

ENVIRONMENTAL PROTECTION AGENCY

[ER-FRL-9048-4]

Environmental Impact Statements; Notice of Availability

Responsible Agency: Office of Federal Activities, General Information 202-564-5632 or *https://www.epa.gov/nepa/*.

Weekly receipt of Environmental Impact Statements

Filed 12/02/2019 10 a.m. ET Through 12/09/2019 10 a.m. ET

Pursuant to 40 CFR 1506.9.

Notice: Section 309(a) of the Clean Air Act requires that EPA make public its comments on EISs issued by other Federal agencies. EPA's comment letters on EISs are available at: *https://cdxnodengn.epa.gov/cdx-enepa-public/action/eis/search*.

EIS No. 20190288, Draft, USFS, AZ, Pinto Valley Mine, *Comment Period Ends:* 01/27/2020, *Contact:* Judd Sampson 602-525-1914.

EIS No. 20190289, Draft, NOAA, FL, Coral Reef Conservation Program Programmatic Environmental, Impact Statement, *Comment Period Ends:* 01/27/2020, *Contact:* Elizabeth Fairey 301-427-8632.

EIS No. 20190290, Draft, USACE, NE, US-275 West Point to Scribner Expressway, *Comment Period Ends:* 01/27/2020, *Contact:* Phil Rezac 402-896-0896.

EIS No. 20190291, Draft, USFS, AZ, Tonto National Forest Plan Revision, *Comment Period Ends:* 03/12/2020, *Contact:* Kenna Belsky 602-225-5200.

EIS No. 20190292, Draft, USACE, LA, West Bank and Vicinity, Louisiana, General Re-Evaluation Report, *Comment Period Ends:* 02/07/2020, *Contact:* Bradley Drouant 504-862-1516.

EIS No. 20190293, Draft, USACE, LA, Lake Pontchartrain and Vicinity Draft General Re-Evaluation Report with Integrated EIS, *Comment Period Ends:* 02/07/2020, *Contact:* Bradley Drouant 504-862-1516.

Amended Notice

EIS No. 20190256, Draft Supplement, NASA, CA, Draft Supplemental Environmental Impact Statement for Soil Cleanup Activities at Santa Susana Field Laboratory, *Comment Period Ends:* 01/08/2020, *Contact:* Peter Zorba *msfc-ssfl-information@mail.nasa.gov*, Revision to FR Notice Published 10/25/2019; Extending the Comment Period from 12/9/2019 to 1/8/2020.

EIS No. 20190261, Draft, USAF, NM, Special Use Airspace Optimization Holloman Air Force Base, New Mexico, *Comment Period Ends:* 01/31/2020, *Contact:* Robin Divine 210-925-2730, Revision to FR Notice Published 11/01/2019; Extending the Comment Period from 12/16/2019 to 1/31/2020.

EIS No. 20190282, Draft, USA, LA, Amite River and Tributaries East of Mississippi River, Louisiana, *Comment Period Ends:* 01/13/2020, *Contact:* US Army Corps of Engineers 504-862-1014, Revision to FR Notice Published 11/29/2019; Correcting Lead Agency from USA to USACE.

Dated: December 9, 2019.

Robert Tomiak,

Director, Office of Federal Activities.

[FR Doc. 2019-26879 Filed 12-12-19; 8:45 am]

BILLING CODE 6560-50-P

EXPORT-IMPORT BANK

[Public Notice: 2019-6028]

Agency Information Collection Activities: Comment Request

AGENCY: Export-Import Bank of the United States.

ACTION: Submission for OMB review and comments request.

SUMMARY: The Export-Import Bank of the United States (EXIM Bank), as part of its continuing effort to reduce paperwork and respondent burden, invites the general public and other Federal Agencies to comment on the proposed information collection, as required by the Paperwork Reduction Act of 1995.

DATES: Comments must be received on or before February 11, 2020 to be assured of consideration.

ADDRESSES: Comments may be submitted electronically on *WWW.REGULATIONS.GOV* or by mail to Smaro Karakatsanis, Export-Import Bank of the United States, 811 Vermont Ave. NW, Washington, DC 20571.

SUPPLEMENTARY INFORMATION: The Export-Import Bank has made changes to the form to reflect an application process decoupled from the SBA's export working capital program. EXIM will also be moving forward to an electronic application submission process, which results in a stand-alone application versus the previous joint application with the SBA. Therefore, all references and information previously required from the SBA have been removed. There is one material change in the application to reflect EXIM's local cost support on short-term transactions, including working capital. Local costs are costs incurred in the buyer's country (*i.e.* local delivery, installation, taxes), eligible for EXIM cover, provided that: U.S. content requirements are met; included within the contracts; do not exceed 15% of export contract; and no local goods are included. Therefore, three questions are added to the application: Are local costs to be included under the working capital loan facility; if yes, how much in terms of USD or percentage per contract or invoice; and what is the nature of the local costs to be supported?

The application tool can be reviewed at: *https://www.exim.gov/sites/default/files/pub/pending/eib84-01.pdf*.

Title and Form Number: EIB 84-01 Application for Export Working Capital Guarantee.

OMB Number: 3048-0013.

Type of Review: Renewal.

Need and Use: This form provides EXIM Bank staff with the information necessary to determine if the application and transaction is eligible for EXIM Bank assistance under their export working capital guarantee program.

Affected Public

This form affects entities involved in the export of U.S. goods and services.

EXIM Bank

Annual Number of Respondents: 200.

Estimated Time per Respondent: 2 hours.

Annual Burden Hours: 400 hours.

Frequency of Reporting of Use: Annually.

Government Expenses

EXIM Bank

Reviewing time per year: 300 hours.

Average Wages per Hour: $42.50.

*Average Cost per Year (time * wages):* $12,750.00.

Benefits and Overhead: 20%.

Total Government Cost: $15,300.00.

Bassam Doughman,

IT Project Manager, Office of the Chief Information Officer.

[FR Doc. 2019-26516 Filed 12-12-19; 8:45 am]

BILLING CODE 6690-01-P

A.4 Scoping Press Release and Ads

News Release
HOLLOMAN AIR FORCE BASE

49TH WING PUBLIC AFFAIRS
(575) 572-5406/7381 • @49Wing
www.holloman.af.mil

Release No. 17-09-08
Sept. 08, 2017

HOLLOMAN TO SPEAK ON AIRSPACE OPTIMIZATION PROJECT

HOLLOMAN AIR FORCE BASE, N.M. – Holloman Air Force Base officials will speak at upcoming scoping meetings September 12-14 across New Mexico to discuss the Special Use Airspace Optimization Project.

The project is intended to optimize the special use airspace available for current and future pilot training at Holloman Air Force Base.

The airspace associated with the proposed action, and its alternatives, lies within the jurisdiction of the Federal Aviation Administration Albuquerque Air Route Traffic Control Center -- who is coordinating with the Air Force.

The Air Force is advising the public of its intent to prepare an Environmental Impact Statement, or EIS, to assess the results of modifying or creating new special use airspace.

Three public scoping meetings are scheduled to be held to receive public input. These meetings will be held:

- 6:00 p.m., Tuesday, Sept. 12 at the Carlsbad Public Library located at 101 S. Halagueno St., Carlsbad, NM, 88220.
- 6:00 p.m., Wednesday, Sept. 13 at the Truth or Consequences Civic Center located at 400 W. 4th Ave., Truth or Consequences, NM, 87901.
- 6:00 p.m., Thursday, Sept. 14 at the Hilton Garden Inn located at 2550 S. Don Roser Dr., Las Cruces, NM, 88001.

The public can submit comments online through the website www.HollomanAFBAirspaceEIS.com or by mail to Holloman Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA, 23666.

For more information about the proposed action, the scoping meetings or the EIS, contact the Holloman Air Force Base Public Affairs Office by phone at (575) 572-7383 or by email at 49WG.PAOffice@us.af.mil.

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List of Media Outlets that were sent the Press Release for the Special Use Airspace Optimization at Holloman AFB EIS Scoping Meetings	
Organization	***Point of Contact***
New Mexico Department of Cultural Affairs	Claudia Gallard , Secretary Gonzales' Assistant
New Mexico Representative (District 33)	Bill McCamley
New Mexico Representative (District 34)	Mary Helen Garcia
New Mexico Representative (District 35)	Jeff Steinborn
New Mexico Representative (District 36)	Phillip Archuleta
New Mexico Representative (District 37)	Terry McMillan
New Mexico Representative (District 39)	Rudy Martinez
New Mexico Representative (District 49)	Don Tripp
New Mexico Representative (District 51)	Yvette Herrell
New Mexico Representative (District 52)	Doreen Gallegos
New Mexico Representative (District 52)	Joseph Cervantes
New Mexico Representative (District 53)	Nate Cote
New Mexico Representative (District 54)	William Gray
New Mexico Representative (District 55)	Cathrynn Brown
New Mexico Representative (District 56)	Zachary J. Cook
New Mexico Representative (District 58)	Candy Spence
New Mexico Representative (District 59)	Nora Espinoza
New Mexico Representative (District 66)	Bob Wooley
New Mexico Senator (District 32)	Cliff Pirtle
New Mexico Senator (District 33)	Bill Burt
New Mexico Senator (District 34)	Ron Griggs
New Mexico Senator (District 35)	John Arthur Smith
New Mexico Senator (District 37)	William Soules
New Mexico Senator (District 38)	Mary Kay Papen
New Mexico Senator (District 42)	Gay Kernan
U.S. Senator	Tom Udall
U.S. Senator	Matt Padilla with Senator Udall's Office
U.S. Senator	Tiffany Cox with Senator Udall's Office
U.S. Senator	Martin Heinrich
U.S. Senator	Dara Parker with Senator Heinrich's Office
Albuquerque Journal	Lauren Villagran
Albuquerque Journal	Maddy Hayden
Albuquerque Journal	Charles Brunt
ACTUS	Staci Murphy
Alamogordo Daily News	Duane Barbati
Alamogordo Daily News	Jackie Devine
Air Force Times	Stephen Losey
Albuquerque AP	apalbuquerque@ap.org
Albuquerque Free Press	Brianna Stallings
Alamogordo Public School	Monica Steeby
Artesia Daily News	news@artesianews.com
Associated Press	Bob Christie
Associated Press	Russell Contreras

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Organization	***Point of Contact***
Burt Broadcasting Incorporated	Tammie Reynolds
Burt Broadcasting Incorporated	Joe Muench
Burt Broadcasting Incorporated	Rhonda Monroe
Bureau of Land Management	Deborah Stevens
CBS News - El Paso	Shelton Dodson
Cloudcroft News	Katy Ponder
Destination El Paso	info@destinationelpaso.com
Dona Ana County	Corrie Stone-Fielder
Dona Ana Sheriff's Office	Kelly Jameson
El Paso Inc.	news@elpasoinc.com
El Paso Times	borderland@elpasotimes.com
El Paso Times	Robert Moore
Ely Radio	Sunny Aris
Eastern New Mexico University	Janet Bresenham
Federal Bureau of Investigation	Frank Fisher
Forest Service	Loretta Benavidez
Fort Bliss Monitor	monitorbliss@gmail.com
Ink - Las Cruces	ink@zianet.com
KALH 95. 1 FM - Radio	kalhradio@gmail.com
KAZQ - Howard	howard@kazq32.org
KBUY 1360 AM KWES 93. 5 FM & 1450 AM	production@kwes.net
KDBC-TV (CBS) - El Paso - News Desk	aarodriguez@cbs4local.com
KEDU - 102. 3 & 94. 7- Ruidoso	kedu@kedu.us
KELP Radio - 1590 AM 89. 3 FM & 95. 9 FM	kelpradio@gmail.com
KENW/KMTH - FM - PBS ENMU	kenwfm@enmu.edu
KFOX	Samantha Lewis
KFOX-TV - El Paso	News Desk
KGRT-Radio - Las Cruces	radiolc@kgrt.com
KINN-Radio - Alamogordo	burtbroadcasting@bbiradio.net
KLAQ - Morning Show	buzz@klaq.com
KLOVE - El Paso	Felipe Aguilar
KLUZ-TV - Univision - Albuquerque	kluzdesk@entravision.com
KNew MexicoB - FM 96. 7 - Ruidoso	knmb@mtdradio.com
KNew MexicoZ/KRSY	alamotraffic@snmradio.com
KOAT-TV	Cary Schwanitz
KOAT-TV (ABC) - Albuquerque	News Desk
KOB - News Reporter	kobrnewsreporter@kob.com
KOB News	news@kob.com
KOB-TV - Albuquerque	Johnny Chandler
KOB-TV	Mike Anderson
KOB-TV (NBC) - Albuquerque	News Desk
KPRR-FM KTSM-FM KHEY-FM	Patti Diaz
KRGT-Radio - Las Cruces	E Garcia

List of Media Outlets that were sent the Press Release for the Special Use Airspace Optimization at Holloman AFB EIS Scoping Meetings	
Organization	***Point of Contact***
KRQE	Allison Martinez
KRQE - TV (CBS)	Bob Martin
KRQE-TV (NBC) - Albuquerque	News Desk
KRSY - 1230 AM	Mike Shinaberry
KRSY	Les Henke
KRSY	Nadia Sikes
KRSY	Virginia Lynch
KRWG	Angela Hardenburg
KRWG 90. 7 FM New MexicoSU	krwgfm@nmsu.edu
KRWG-TV	mrmundo@nmsu.edu
KSVP Radio	Mike Jaxson
KTDO - Telemundo - El Paso	Uriel Posada
KTEP (UTEP radio) EL PASO NPR	ktep@utep.edu
KTSM-TV (NBC) - El Paso	News Desk
KUNew Mexico	Elaine Baumgartel
KUNew Mexico-Radio	news@kunm.org
KUNew Mexico-Radio	programming@kunm.org
KUPR-Radio - Alamogordo	kupr917@yahoo.com
KVBA-TV - Alamogordo	bill@kvbatv.org
KVIA-TV - El Paso	Jamie Warren
KVIA-TV (ABC) - El Paso	abc7desk@yahoo.com
KVIA-TV (ABC) - El Paso	kvia@kvia.com
KYEE - 94. 3 FM - Alamogordo	News Desk
KYEE	Mike Mason
KZZX (BBI) - Alamo	kzzx@bbiradio.net
Las Cruces - New MexicoSU Round Up	Editor
Las Cruces News Bulletin	Editor
Las Cruces News Bulletin	Richard Coltharp
Las Cruces News Bulletin	vcnb@news-bulletin.com
Las Cruces PIO	Jennifer (Dombrowski) Martinez
Las Cruces PIO	Udell Vigil
Las Cruces Schools	Jo Galvan
Las Cruces Sun News	news@lcsun-news.com
Las Cruces Sun-News	Managing Editor
Las Cruces Sun-News	Jason Gibbs
Las Cruces Sun-News	Pulse Editor
Las Cruces Sun-News	S. Ramirez
Las Cruces Sun-News	Carlos Lopez
Magic 105 KVLC 101 KOBE - 1450 AM	amoore@bravomic.com
Mountain Monthly (Cloudcroft)	News Desk
MTD Radio	Will Rooney
New Mexico Attorney General	James Hallinan
New MexicoSF	Linda Wallace

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Organization	***Point of Contact***
Public Relations - National Park Service	Becky Wiles
Alamo - Bill Burt Radio	Bill Burt
Alamo-Radio	Bob Flotte
Bravo Mic Communications	K. C. Counts
Cool FM-Radio	coolfm@bbiradio.net
KPRR-FM-Radio	Bill Tole
Roswell Daily Record	vistas@roswell-record.com
Ruidoso News	Dianne Stallings
Ruidoso Free Press	eheathma@gmail.com
Ruidoso Freelance	Sue Hutchison
Socorro (New Mexico) El Defensor Chieftain	editorial@dchieftain.com
Southwest Carpet & Floor	Clay Henderson
Southwest Senior	Bud Russo
Telemundo 48 - Alejandro Pariente	apariente@zgsgroup.com
Telemundo - El Paso	ktdonews@gmail.com
Telemundo - El Paso	avelasquez@zgsgroup.com
U.S. Border Patrol	Joe Reyes
University of Texas at El Paso Prospector	Ana Sepulveda
USAF ACC 49 WG/HO	Martha Whipple
Vision Magazine	vision@rdrnews.com
White Sands Missile Range	Miriam Rodriguez
White Sands Missile Range	Adriana Salas
White Sands Missile Range	Montoya Camilla
White Sands Missile Range	usarmy.wsmr.atec.list.ranger@mail.mil
William Beaumont Army Medical Center	Amabilia Payen
49th Wing Commanders	49wg.all.commanders@us.af.mil
49th Wing Secretaries	49wg.secretaries@us.af.mil
49th Wing Chiefs	49.wg.group.chiefs@us.af.mil

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USA TODAY

MONEY

THURSDAY MARKETS

INDEX	CLOSE	CHG
Dow Jones Industrials	21,749.63	▲ 32.09
Nasdaq Composite	6,312.97	▲ 20.08
S&P 500	2,476.83	▲ 4.52
NYSE Composite	11,278.77	▼ 1.21
Russell 2000 Index	1,394.92	▲ 4.46
10-yr Treasury note	2.14%	▼ 0.01
Gold in London	$1,315.25	▲ 5.95
Light sweet crude	$47.51	▼ 0.06
Corn	$3.57	▼ 0.02
Wheat	$4.19	▼ 0.06
Soybeans	$9.53	▲ 0.04

LIFE

GOOD DAY FOR SPRINGSTEEN FANS

Good news for Bruce Springsteen fans who missed out on "Springsteen on Broadway" tickets: The limit said Wednesday he and the show will now run through Feb. 2, offering 10 more weeks of performances. The show at the Walter Kerr Theatre had been set to close Dec. 31.

Nation & World Watch

▶ Washington: US shuts more Russian facilities

The Trump administration retaliated Thursday against Russia's expulsion of U.S. diplomats by ordering the closure of the Russian consulate and an official residence in San Francisco, a chancery annex in the Washington, D.C., embassy, and a consular annex in New York.

The decision to close the three facilities was made by the president, White House press secretary Sarah Huckabee Sanders said.

▶ Austin, Texas: Ban on 'sanctuary cities' blocked

A federal judge has temporarily blocked most of Texas' tough new "sanctuary cities" law that would have let police ask people during routine stops whether they're in the U.S. legally and threatened sheriffs with jail time for not cooperating with federal immigration authorities.

U.S. District Judge Orlando Garcia in San Antonio handed down the ruling late Wednesday. Garcia wrote that Texas' law was pre-empted by existing federal statutes and therefore unconstitutional.

▶ Washington: Tubman's role on $20 bill in question

With a mission so that plan to put Harriet Tubman on the $20 bill.

The Trump administration is reconsidering an Obama-era initiative to make U.S. black history by replacing Andrew Jackson with the 19th-century American abolitionist as the face of the $20 bill, Treasury Secretary Steven Mnuchin told CNBC on Thursday.

"Ultimately we will be looking at the issue," he said. "It's not something I'm focused on at the moment."

Drinking water problems, fire intensify Harvey crisis

Flooding takes its toll on critical infrastructure

John Bacon and Aamer Madhani

HOUSTON — Floodwaters knocked out the water system in Beaumont and prompted a chemical fire in Crosby as severe southeast Texas struggled Thursday to regain some form of normalcy about a week after Hurricane Harvey roared into the region.

In Houston, firefighters began a block-by-block search for survivors in some of the city's most devastated areas. In Fort Arthur, officials tapped city dump trucks to expedite rescues.

"We continue to push the lifesaving operations are now time to evacuate people out of areas where the rivers have receded," said Brock Long, head of the Federal Emergency Management Agency. "This mission is going to continue."

In Beaumont, 100 miles east of Houston, flooding knocked out the main and secondary sources providing water to the city of more than 100,000 officials said they won't know the extent of the damage or how long repairs will take until floodwaters recede.

A boat sits near flooded homes Thursday in the aftermath of Tropical Storm Harvey in Beaumont, Texas.

The Neches River isn't expected to crest until Saturday, and City Manager Kyle Hayes said, scrambling to procure enough bottled water to avert a crisis. The Salvation Army was handing out water by the case while it lasted.

Baptist Beaumont Hospital shut down, airlifting and driving almost 100 patients to other facilities. Christus St. Elizabeth hospital remained open but urged residents to come only if there was a "critical, life-threatening medical need."

In Crosby, 25 miles northeast of Houston, chemicals sparked flames that spewed black smoke from the Arkema Inc. plant. The plant was flooded when more than 40 inches of rain fell in the area.

When the plant lost power and backup generators also failed, chemicals requiring refrigeration warmed up and began to "degrade," Arkema executive Richard Besnard said. Out of nine containers housed, and the others likely could face the same fate, Besnard said.

Authorities evacuated a 3½-mile area around the plant. Our Harris County sheriff's deputy was taken to a hospital after inhaling fumes, and 14 others drove themselves to the hospital as a precaution, the sheriff's Department said. All were released hours later.

Sheriff Ed Gonzalez said that the smoke was not toxic and that he saw no danger to the community.

In Rockport, where Harvey slammed ashore last Friday as a Category 4 hurricane, Vice President Mike Pence visited a church and spoke with survivors.

TRUMP PLEDGES $1 MILLION TO HARVEY RELIEF

President Donald Trump is pledging $1 million in personal money to Harvey storm-relief efforts. White House press secretary Sarah Huckabee Sanders made the announcement on a traveling Thursday. She said Trump is calling on reporters to help decide which specific organizations he should give to. Trump-hating boos criticized the past he giving he lives of his fortune to charitable causes (this raises other redistributions. And he hasn't followed through on previous charity pledges. Last year he failed to give a promised $1 million of his own money — plus an additional $1 million he said he'd raised — to veterans' organizations, and reporters asked questions to see if he later raised whether he'd succeed the charity.

Associated Press

Community calendar

The Alamogordo Daily News appreciates your input to the Community Calendar. To make sure items can receive proper attention, all information should be received by the newspaper at least five business days prior to the event. All coming events are on a space available basis and in chronological order. Events that are related to commercially motivated organizations are not listed. All the information must be available: contact number, location and sailing address, and not just a place name. Do not assume everyone knows. The person you want to reach may be new to the area. Also note it is impossible for the Daily News to answer all emails received in a single day.

Friday, Sept. 1

Launch Pad Lecture: For four decades, the Voyager spacecraft have been outreach by transmitting data to the Deep Space Network. What have they been reflecting around and where exactly are they going? Join Museum Curator Dan Taylor as he shares the journey and mission of these extraordinary, giant probes at 9 a.m. on the museum's first floor. A small sample of original photographs and graphic items is family, the rest of the solar system will be shown at the lecture. For more information, call 437-2840, toll free at 1-877-333-6589 or visit www.nmspaceworld.org.

Annual Day of Caring: The Annual Day of Caring is Sept. 9. This is a special day when volunteers from Holloman, Alamogordo and surrounding areas complete jobs requests for local seniors and disabled citizens that cannot help themselves. Volunteers and donations are still needed for the special day. Come to 1018 10th St. in Tularosa in Southern New Mexico at this, 1001 9th St., or call 575-437-8400 or check out their website at www.tularosacare.org under the events tab for more information on how you can help.

Annual Village Tack, Plant and Yard Sale: Tack, plant and yard sale fundraiser to be hosted Sept. 1 and 2 at Bonner Village, 1248 Hwy. 54/70. New and used saddles, livestock supplies, show helmets, open saddle blankets, dozens of living plant arrangements in grow bags, home decor, housewares, toys, books, movies, furniture, and more is on sale for sale. Proceeds benefit the non-profit Rio Grande animal shelter. For more information, email animal rescue@gmail.com.

Saturday, Sept. 2

Annual Village Tack, Plant and Yard Sale: Tack, plant and yard sale fundraiser to be hosted Sept. 1 and 2 at Bonner Village, 1248 Hwy. 54/70. New and used saddles, livestock supplies, show helmets, open saddle blankets, dozens of living plant arrangements in grow bags, home decor, housewares, toys, books, movies, furniture, and more is on sale for sale. Proceeds benefit the non-profit Rio Grande animal shelter. For more information, email animal rescue@gmail.com.

Amateur Radio Club: Drop-in ham radio public to the club and local ham from 7 a.m. to 11 a.m. at the Otero County Fairgrounds, 401 Fairground Road. Admission is free. Amateur radio license testing on site, for technician, general and extra class licenses. Grant levels are welcome. For more information, call Bill Horton at 871-6229 or email him at n5dt@msn.com. Website is http://www.qth.net/n5dt.

Labor Recognition Breakfast: The Democratic Party of Otero County will host the 14th Annual Labor Recognition Breakfast at 9 a.m. at Margo's Mexican Food Restaurant, 504 Hot Times. All are invited to encouraged to attend to celebrate the history and contributions of Labor and Labor Unions in the United States. Please RSVP by August 29 by calling 437-8558 or emailing mrsbell@gmail.com.

Chamber Music at the Cabin: Visit Cloudy Pines' fairy garden and workshop on chamber music opening Sept. 1-15. Cloudy Pines is located at 208 Fox Flaming Arrow – half way down the hill from the Lodge in Cloudcroft. A variety of musicians will be playing all across through the period. Visitors are welcome to visit 9 to 11 a.m. and 2 to 5 p.m. every day to wander through the garden and, if music is playing inside, to listen there. The point of the garden. To be sure music will be playing, call 361-237-1663. Event is free though donations are appreciated and benefit Cloudcroft School music program. For more information, visit facebook.com/cloudcroftpines or email cloudcroftpines@gmail.com.

The Air Force announces its intention to prepare an Environmental Impact Statement (EIS) to evaluate the potential environmental impacts of optimizing the special use airspace available for current and anticipated future pilot training at Holloman Air Force Base (AFB). Some of the training airspaces used by aircraft assigned to Holloman AFB were developed for legacy aircraft more than 30 years ago and do not have the optimum volume, proximity, times or attributes to support all training missions at Holloman AFB. The purpose of the Proposed Action is to establish readily available and adequately sized training airspace needed to support training missions while improving efficiencies.

Public involvement is an essential part of the EIS process. Therefore, the Air Force plans to host open-house style public meetings in Carlsbad, Truth or Consequences, and Las Cruces, New Mexico at the locations and times identified below. The public is invited to attend at their convenience; no formal presentations will be given. Air Force representatives will be present to provide information on the proposal, answer questions from the public, and receive comments on any issues or concerns related to the proposed action and alternatives. The Air Force requests that persons with hearing impairments notify them at least 7 days in advance of the meeting dates to ensure that sign language assistance can be provided.

Tuesday, September 12, 2017	Wednesday, September 13, 2017	Thursday, September 14, 2017
6:00 PM to 8:00 PM	6:00 PM to 8:00 PM	6:00 PM to 8:00 PM
Carlsbad Public Library	Truth or Consequences Civic Center	Hilton Garden Inn
101 S. Halagueno Street	Ralph Edwards Auditorium	2590 S. Don Roser Dr.
Carlsbad, NM 88220	400 W. 4th Avenue	Las Cruces, NM 88001
	Truth or Consequences, NM 87901	

Comments on the proposal can be made at the scoping meetings, by mail, or via the project website. Please mail written comments to Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA 23666 or electronically submit comments at www.HollomanAFBAirspaceEIS.com. The Air Force appreciates public comments and feedback throughout the environmental impact analysis process. To ensure full consideration in the draft EIS, comments should be submitted by September 25, 2017. For more information or requests for sign language assistance, contact Robin Divine at (210) 925-2735.

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Immigrants mobilize to avoid deportation

ASTRID GALVAN AND AMY TAXIN
ASSOCIATED PRESS

PHOENIX - An unlikely coalition of CEOs, Roman Catholic bishops, celebrities and immigrants has formed to put pressure on national leaders to save an Obama-era program that shields young immigrants from deportation.

Immigrant groups have been staging daily protests in the scorching Phoenix heat, mobilizing people with phone banks in California, and demonstrating outside House Speaker Paul Ryan's church and office. Roman Catholic archbishops around the country have been sending letters urging the president to maintain the program. The CEOs of Microsoft, Apple, Google, Facebook, Starbucks and others also joined the effort, saying the economy will take a hit if the program is eliminated.

The campaign comes as President Donald Trump is weighing whether to eliminate the Deferred Action for Childhood Arrivals program, which has allowed nearly 800,000 immigrants brought to the country illegally as children to remain in the U.S. and legally work. The White House says Trump is expected to announce the decision Tuesday.

Immigrants are bracing for the prospect of losing their jobs as their work permits end and possible deportation if the president does away with the program.

Eli Oh of San Jose, California, said he was among the first to apply for the program after working as a waiter under the table to pay for his nursing degree.

Oh, 28, has lived in the United States for nearly two decades since his Korean parents overstayed their visas. He works as a rapid response nurse in Northern California, where he responds to hospital emergencies, and fears he'll be unemployed if his work permit goes away.

"I went from saving lives of a hospital and delivering health care, and now I am like, I might have to drive Uber to pay rent," he said.

The issue is especially prominent in California, home to one of every four people covered by the program. In Los Angeles, immigrant advocates have planned a week of scripted phone calls, demonstrations and meetings with lawmakers. The efforts and others next week are aimed at putting pressure on elected officials and the public to save the program.

More than 200 people gathered outside of the federal office building in Los Angeles on Friday, calling on President Donald Trump to continue the program. They chanted, "If they don't let us dream, we won't let them sleep" and "The people united will never be divided."

In Arizona, a coalition of immigrant rights groups set up a protest camp this week in front of immigration and Customs Enforcement offices near downtown Phoenix in the midst of a heat advisory and temperatures of nearly 110 degrees.

Their daily protests come amid immigrant anger over Trump's pardon of Joe Arpaio, the former Phoenix-area sheriff found by a federal judge to have racially profiled Latinos with his immigration raids. Arpaio was convicted this year of misdemeanor contempt of court for violating a judge's orders to stop the immigration patrols.

Dozens of CEOs and executives who wrote a letter Thursday urging the program to be spared as its beneficiaries, known as Dreamers, are allowed to stay in the U.S.

Impact of Houston's economy is felt far beyond the region

PAUL WISEMAN
ASSOCIATED PRESS

The Houston that was battered by Hurricane Harvey is an economic powerhouse whose influence reaches far beyond its region, leading many to worry about when its economy will be able to stand up again.

Houston produces the plastic used in everything from sports cars to baby bottles and is part of a long-lying coastal region that supplies nearly a third of U.S. oil-refining capacity. As the fourth-largest U.S. city, with 2.3 million people, it is also headquarters for 26 Fortune 500 companies.

"There's nothing being sold, nothing being manufactured and nothing being shipped in a city with a $500 billion economy," said Patrick Jankowski, an economist with the Greater Houston Partnership, which promotes regional economic development.

IHS Markit says that "greater Houston is a major engine of the U.S. economy." Its port is the second-busiest in the United States. Its two airports handle 26 million passengers a year. And its world-class cancer center processes 12,000 cases a week, many trekked by patients flying in from abroad.

If it were an independent country, Houston would boast the world's 23rd-biggest economy, just below Sweden and just above Poland.

Forecasters aren't yet sure exactly how high the economic damage will go, how far it will spread or how long it will last. The more than 50 inches of rain that flooded Houston left much of the city underwater and its manufacturing base all but immobilized.

Macroeconomic Advisers, a forecasting firm, calculates that economic damage from Hurricane Harvey could shave between 0.5 and 1.2 percentage points off the nation's economic growth in the July-September quarter. Before the storm, the economy had been expected to grow at an annual rate of about 3 percent from July through September.

"The nation is going to find out how important Houston is to the rest of the economy," Jankowski said. "The dashboard in a Ford manufactured in Michigan or the plastic valve made in Indiana or the piece of costume jewelry in Rhode Island or a case for your computer in California — if it has plastic in it, it's highly likely the plastic originated in Houston."

Still, analysts note that the economic issues inflicted by Harvey are likely to be recouped once Houston's rebuilding begins. And some sectors of the area's economic base might have been less damaged than initially feared.

The IPC petrochemical plant in Houston contributes to the city's economic importance across the nation. Houston produces the plastic used in a variety of goods, from sports cars to baby bottles.

Giant puppet takes on woes, fears stuffed into 'gloom box'

MORGAN LEE
ASSOCIATED PRESS

SANTA FE, N.M. - High anxiety about White House politics, hurricane flooding and even the threat of nuclear war with North Korea is adding an extra spark to the annual burning of a giant, ghastly surrounds that serves as an effigy to gloom and doom.

The ritual burning of Zozobra was attracting tens of thousands of revelers Friday to a Santa Fe city park for a mixture of wholesome and ghoulish fun.

Inside the six-story puppet are reams of crumpled, handwritten notes about recent troubles and travails that people hope to leave behind. Worries this year included a combustible mix of disenchantment with politics and preoccupation over natural and manmade disasters.

In preparation for the burning, Holly Garcia, a 24-year-old humanitarian stuffed several notes into a slotted "gloom box" at a shopping center.

The first was about a hospitalized sister and a brother recovering from brain surgery. Then she ran a note about the U.S. president, and a hand-scrawled prayer for friends and former neighbors besieged by floods in League City, Texas — a community southeast between Houston and the Gulf of Mexico.

"I put down, 'Get rid of Donald Trump'" said Garcia, white still covering her blessings. "I'm very blessed personally, my immediate family."

Yuska Ashenji, a 66-year-old technology consultant, said he wanted to join others in washing away all internal feelings of bad will — and also perhaps get rid of an inept U.S. political system and start from scratch.

"I think it's going to take a lot more than Zozobra," he said.

The invention of Will Shuster — a painter from Philadelphia who migrated to the Southwest — Zozobra was first built and ignited in 1924, adding a madcap celebration to a Santa Fe's sparkling community "fiestas" that include historic and religious processions. The festival's name was derived from a Spanish word for anguish.

Modern pyrotechnics have transformed the nighttime burning, now preceded by hours of live music and performances on an adjacent stage. A team of a dozen puppeteers hearken on cords to flex the groaning marionette's arms, head and jaw.

The spectacle appeals to people's "better angels" in a year marked by disaster and political upheaval, said Ray Sandoval, who organizes Zozobra for the local Kiwanis Club to raise money for youth charities.

He aped credit card bills and a paid-off mortgage papers among the messages in the Zozobra stuffing this year — along with worries about nuclear war.

"We're getting a lot of political messages to be quite honest," Sandoval said. "People are really worried about the path of the country and their leadership. There are a lot of fears that are more hopeful for the country."

Workers prepare the Zozobra marionette for its annual burning in Santa Fe, N.M. High anxiety about White House politics, hurricane flooding and even the threat of nuclear war with North Korea is adding an extra spark to the annual destruction of the effigy to gloom and doom.

Inside the six-story puppet are reams of crumpled, handwritten notes about recent troubles and travails that people hope to leave behind.

Shopping mall security guard David Mace keeps watch over pieces of a giant Zozobra puppet in Santa Fe, N.M., on Wednesday.

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NMSU

Continued from Page 1A

On Wednesday, several regents, including Chairwoman Debra Hicks, countered allegations that the decision not to extend Carruthers' contract was politically motivated.

"It is a political decision? No," she said. "The decision is based purely on what the needs are for New Mexico State University students and what's best for our state moving forward."

Student enrollment

In particular, said Regent Kent Mitchell, is that enrollment has continued to drop at NMSU. She acknowledged that a stagnant state population is partly to blame, but she said NMSU has experienced deeper declines than other regional institutions. Enrollment declines have led to revenue losses of roughly $10 million per year, she said. While Carruthers has navigated the university through budget cuts, "you can't eat your way to success."

"You have to grow your way to success," she said.

Carruthers has been widely credited for steering NMSU through difficult circumstances, shrinking the university's workforce ahead of state financial cuts. The state Legislature is another major source of revenue, and has handed down cuts to universities statewide.

There's been a bright spot in NMSU enrollment with growth in freshman student admissions this fall, even as regents said, when enrollment across the class spectrum is considered, numbers of students are down.

Support stated

This month, at least four state legislators, the mayors of Las Cruces, Carlsbad and Grants Cibola, the university has friends' assistance, the Las Cruces Public Schools superintendent, and members of the student government at the university have publicly stated their support for Carruthers remaining at the helm of the university past 2018.

At the beginning of Wednesday's regents meeting on campus, a number of officials associated with the university, including the current and former faculty Senate chairs, and members of the public, spoke in favor of Carruthers.

Current faculty Senate Chair Christopher Brown read a letter from 11 faculty members who stated support for retaining Carruthers, provided said Carruthers' past experience as a state governor, business-college dean and businessman make him "uniquely qualified to serve as our president and chancellor."

Brown said Carruthers has provided stability and leadership that "NMSU sorely lacked for several years prior to his tenure."

"Most importantly, Chancellor Carruthers has been a very impressive and vocal voice for reform in the system of higher education in New Mexico, and he has been broadly acknowledged as such by elected political leaders all in the political spectrum," he said.

Regents Mitchell, Jerry Hutchinson, Mike Cleary and Hicks voted in favor of moving forward with the search for a new chancellor. Newly appointed Student Regent Morgan Vela abstained. Vela declined to say why she abstained.

Delayed start

Regents met in a work session starting at 8 a.m. Wednesday and went into a closed-door session to discuss Carruthers' contract. The open-door meeting started about 20 minutes late in the early afternoon. Regents and Carruthers filed into the meeting room with somber expressions.

In an impromptu news conference after regents' vote, Hicks said Carruthers contributed a lot to NMSU and has been the "greatest cheerleader" for the university.

"He has made significant changes to our university, and we all have seen those; they've been enumerated in the paper," she said. "He has done a great job in what we've asked him to do, and he's gone beyond what he signed on for, to am. He signed on for mediocrity, and he's created change. We as the board of regents, we want to build on that foundation to move forward."

NMSU student Wilkins J. Nieves, a student body senator and returns, also expressed support during the meeting for Carruthers.

"To say that I was disappointed in the regents' decision is an understatement," he said. "I began college in 2012, just a year before the chancellor assumed his duties here at NMSU. I have looked forward to seeing him at the podium when I graduate, and thankfully he will be here in May to congratulate and shake my hand at commencement."

'Very disappointed'

Las Cruces Mayor Ken Miyagishima said he was "very disappointed" with the news Carruthers would not receive a two-year contract extension. He said he believes the outcome of Wednesday's meeting would have been different if regents were elected, not appointed, positions, given the lack of support for Carruthers.

"I thought he did a fantastic job, considering what he had to work with, with issues including race and dealing what part's done by him is unfortunate," Miyagishima said. "That's tough. Those are tough decisions. I just think he did a great job. I'm disappointed it didn't turn out differently."

Though the city doesn't have jurisdiction on the NMSU campus, Miyagishima said the two are closely related.

"In Las Cruces, we're very proud of the university," he said. "They have tremendous impact on our quality of life in the city and our economic well-being. We do have a stake in it, and we would hope the regents would put its universe which is the best interests of all concerned, including the city."

What's next?

Though the regents voted to search for a new chancellor, they didn't lay out specifics yet for the process. Hicks said the board will have to create a job description, set parameters for the search and appoint a search committee. The ideal time for would have a new chancellor on board just prior to Carruthers' departure on mid-2018, she said.

Carruthers, a former New Mexico governor and former dean of the NMSU Business College, was named NMSU's president and chancellor in 2013. He earns $272,450 per year.

Other actions

The Board of Regents OKed construction of a new, 200-bed dormitory to replace the former Monagas Hall, which has been demolished.

The regents also approved a lease-option agreement with Corona Wind Energy to lease land to the company for a wind-energy farm, which would be into the proposed Sandia transmission line.

The regents voted to enter into a letter of intent with a second company that hopes to build a solar energy farm north of Las Cruces on university land. It would tie into El Paso Electric Co.

Diana Alba Souter may be reached at 575-541-5462, dalba@currentargus.com or @AlbaSouter on Twitter.

'The Everly Brothers Experience' is coming

DEJANAY BOOTH
CURRENT-ARGUS

Dylan, left, and Zachary Everly, along with Bobbygirl Drummond, started "The Everly Brothers Experience" in January 2016. The brothers are set to perform in Artesia.

The Everly Brothers, Dylan and Zachary, will don tuxedos' suits and perform in Artesia as a tribute to the Everly Brothers.

"This will be our first time coming to Artesia (New Mexico) with our Everly project," Dylan Zmuda said. "I unfortunately say, not only are we excited to celebrate the Everly's history and music with Artesia's community of early rock 'n' roll music appreciators but we are thrilled to be able to catch a glimpse of Artesia's local culture during our brief stay."

"The Everly Brothers Experience" features songs such as "Wake Up Little Susie" and "Cathy's Clown."

Duo Don and Phil Everly performed rock 'n' roll music to worldwide recognition, beginning the late 1950s.

The brothers broke up in the 1970s and pursued solo careers before they reunited in the '80s.

Phil Everly died in 2014.

Zmuda said he and his brother were fascinated by '50s and '60s music as children after watching their father, Adrian Zmuda, play Johnny Nocarello in "Grease 2." The 1982 film was set in 1960.

The brothers' mother made a slightly more humble living as a teacher.

Both of their parents' careers and life choices have a strong impact on the brothers today.

"We come from a family of entertainers. We grew up living in the entertainment industry and value education," Dylan Zmuda said.

Before they began touring for the tribute show "The Everly Brothers Experience," the brothers performed original music, but decided in 2016 to bring back music from the '50s and '60s.

"Our goal is to celebrate the honor and history and the music itself," Zmuda said. "We wouldn't be doing it if we didn't put the music and history in the forefront, and have a good time doing it."

"The Everly Brothers Experience" will be 7 p.m., Sept. 8, at the Cecilia Dorsey Fleming Arts Center in Artesia.

Tickets are $28 and available at artesiaartscouncil.com or call the box office at 575-746-4212.

DeJanay Booth can be reached at 575-628-5586, dbooth@currentargus.com and @DeJanay Booth on Twitter.

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LA CUEVA 6
SHOWTIMES FRI 9/1/17 THRU SUN 9/3/17

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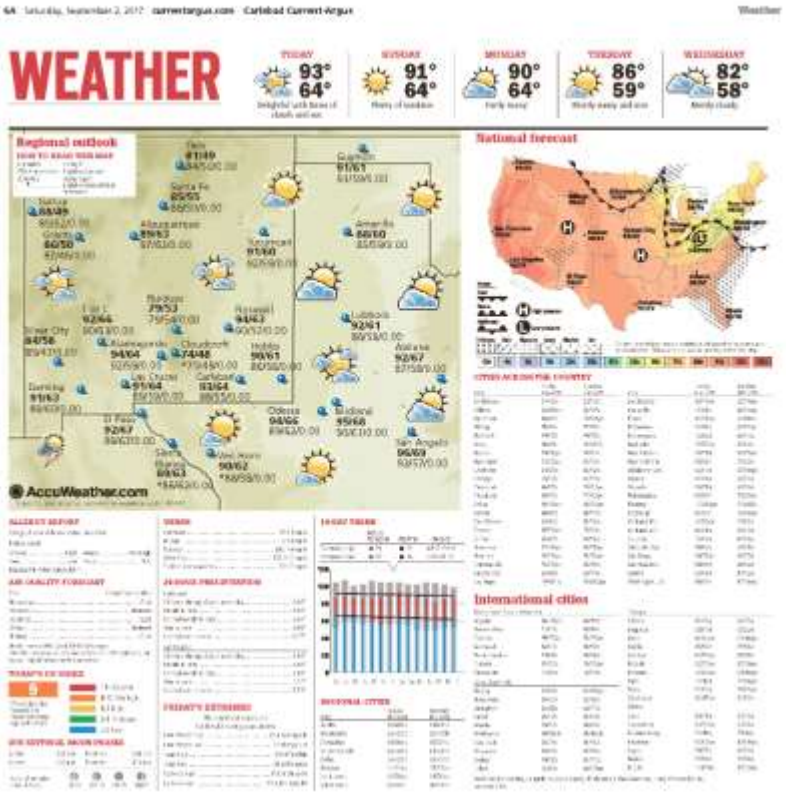

WEATHER

TODAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY
93° 64°	91° 64°	90° 64°	86° 59°	82° 58°

Regional outlook

National forecast

AccuWeather.com

Source: Mueller team has draft letter on Comey firing

JONATHAN LEMIRE AND ERIC TUCKER

WASHINGTON (Associated Press) — Special counsel Robert Mueller's team of investigators is in possession of a letter drafted by President Donald Trump and his aides, but never sent, that lays out a rationale for firing FBI Director James Comey, according to a person familiar with the investigation.

The letter was written in the days before the May 9 firing of Comey, but was held after objections from the president's lawyer and others, according to two other people familiar with the process who were not authorized to discuss it publicly and spoke on condition of anonymity.

On that day, the White House released a different letter announcing Comey's firing, one signed by Deputy Attorney General Rod Rosenstein that cited the handling of the Hillary Clinton email investigation as a basis for Comey's dismissal.

The earlier letter could serve as key evidence for Mueller's team, which is now investigating whether Trump fired Comey to impede the FBI investigation into his campaign associates' ties to Russia. The White House has said Trump was acting on the Justice Department's recommendation when he fired Comey, though the president said in a television interview days later that he was thinking of "the Russia thing" when he made the decision and had planned to fire Comey "regardless of recommendation."

The new letter, which was first reported by The New York Times, could provide additional context on Trump's thinking and weigh on his personal state of mind as he prepared to oust Comey.

The Justice Department turned the letter over to Mueller's team, according to a person who was not authorized to publicly discuss the situation and spoke on condition of anonymity. A statement from the Justice Department said the department had been fully cooperative with Mueller's investigation and would continue to do so.

One week after Comey was fired, Rosenstein appointed Mueller as special counsel to oversee an investigation into potential coordination between the Trump campaign and Russia. That investigation is also looking into the financial dealings of several Trump associates.

Puppet

Continued from Page 1A

Yinka Adeaga, a 40-year-old technology consultant, said he wanted to join others in crushing years of universal feelings of bad will — and altogether hope get rid of an inept U.S. political system and start from scratch.

"I think it's going to take a lot more than Zuzu," he said. "We're a country that doesn't want to carry for its people."

The invention of Will Shuster — a painter from Philadelphia who migrated to the Southwest — Zozobra was first built and burned in 1924, adding a smoking celebration to a Santa Fe's sterilizing community. "Desiree" that includes theatrics and religious processions. The term will name was derived from a Spanish word for anguish.

Modern pyrotechnics have transformed the nightmare burning, was preceded by hours of live music and performances on an adjacent stage. A team of a dozen puppeteers became accords to flex the groaning marionette's arms, head and jaw.

The spectacle appeals to people's "better angels" as a roar marked by disaster and political upheaval, said Roy Sandoval, who organizes Zozobra for the local Kiwanis Club to raise money for youth charities.

He signed cards and bills and sped off marriage papers setting the messages to the Zozobra stuffing this year — along with worries about nuclear war.

"We're getting a lot of political messages to be spoke honest," Sandoval said. "People are really worried about the path of the country and their leadership. There are a lot of them that are sure hopeful for the country."

Cash

Continued from Page 1A

ner, citing the example of former Louisiana Gov. Edwin Edwards and his unsuccessful run for governor in 2010.

Pearce is the sole Republican candidate for governor, with a crowded field contending for the Democratic nomination that includes U.S. Rep. Michelle Lujan Grisham of Albuquerque. Campaign finance filings indicate Lujan Grisham spent nearly all her federal account dollars on last year's election, and had $300,000 in a state campaign account as of April.

Attorneys for Pearce say the congressman sought assistance last year that he would be able to transfer federal campaign funds by consulting with the Secretary of State's Office, then under the leadership of Republican Brad Winter.

Pearce took the answer to mean that a full transfer of federal funds to a state campaign account would be allowed, while the current secretary of state says the advice was just the opposite.

"Winter told Congressman Pearce' different months ago that he can't transfer his millions of federally raised dollars into a New Mexico account for Governor, and Secretary of State Toulouse Oliver gave him the exact same answer in July," Keefe said.

Allen

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This Week's Discount Feature

LA CUEVA 6

SHOWTIMES FRI 9/1/17 THRU SUN 9/3/17

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Memorial service for Higbie to be held

ADRIANA M. CHAVEZ

LAS CRUCES – The life of Virginia Higbie, former dean of the College of Health and Social Services at New Mexico State University who helped shape the college's successful programs, will be celebrated during a special memorial service next week.

The service will begin at 4 p.m. Tuesday, Sept. 5, at the NMSU Spiritual Center, on the west side of the Educational Services building near the campus duck pond. Light refreshments will be served.

Higbie, who died on June 15, 2016, served as the college's dean from 1988 to 2000, and also served as interim dean in 2008. She was instrumental in developing the college's successful graduate and undergraduate programs in social work, nursing and public health sciences. She also worked with the state Legislature to secure funding for the CHSS building.

"Virginia Higbie was a wonderful person who I had the pleasure of knowing for a long time," said NMSU Chancellor Garces Carruthers. "She was really the architect of the College of Health and Social Services that we know today. I can't think of a better colleague during my time at NMSU. She was always incredibly forward thinking."

Higbie, a resident of New Mexico since 1970, served as the second dean of the College of Health and Social Services. During her first 12 years as dean, the college experienced considerable enlargement of its units which then included the undergraduate/graduate programs in nursing, social work and health sciences as well as the administration of NMSU's four branch community colleges, initial graduate off-campus delivery of courses to White Sands Missile Range and to Kirtland Air Force Base, a small but robust community education program, the Weekend College, the Center for Educational Development and the Institute for Gerontological Research and Education.

Higbie

During this period, the college experienced rapid growth in enrollment, expansion of degree offerings including the first graduate programs of the college and the attainment of national accreditation for nursing, social work and health sciences.

College of Health and Social Services Dean Donna Wagner said Higbie's dedication to professional programs was instrumental in shaping the college into what it has become today.

"Dean Higbie was passionate about NMSU and the College of Health and Social Services," Wagner said. "She left a legacy for both and we are grateful for her work."

Because of her commitment and dedication to the college, her family and friends established the Virginia C. Higbie Endowed Scholarship in 2008. Since then, seven NMSU College of Health and Social Services students have benefitted from the scholarship.

"When I think of Dean Higbie, two words come to mind – passion and conviction," said Greg Fant, NMSU associate vice president and deputy provost. "She was passionate about students, health care and NMSU. Always upbeat, she communicated her passion effectively. NMSU is a better place because of her legacy."

Bernadette Montoya, NMSU vice president of Student Affairs and Enrollment Management, said she served under Higbie's leadership when Montoya was just starting her career in higher education.

"In this capacity, Dean Higbie provided leadership to the community colleges, and at the time, I served as an academic advisory at the Grants campus," Montoya said. "I valued her authenticity, admired her focus on policy and academic integrity, and learned to value the responsibility we each have as academic leaders."

For more information about the memorial service, contact Nohema Pérez at 575-646-3306 or email nohemap@nmsu.edu.

Adrianna M. Chavez writes for New Mexico State University Communications. She may be reached at 575-646-3307 or achavez@nmsu.edu.

The 2016 and 2017 cohort of Doña Ana Community College dental hygiene students pose

DACC dental hygiene students to travel to India

LAS CRUCES – Students in the Doña Ana Community College's Dental Hygiene Program are planning a trip to provide oral exams to people in India.

From Dec. 29, 2017 to Jan. 12, 2018, students will provide dental hygiene preventive services as well as dental exams and radiographs to children and some geriatric patients in the city of Shahdol, at the Shriam Hospital, according to a DACC news release.

DACC students will work in conjunction with fellow dental hygiene students, students from pre-nursing, pre-dental, public health and other associated health programs from the United States and from India.

Others invited to participate include students from New Mexico State University, El Paso Community College and the University of New Mexico. Community dentists, hygienists, and assistants have also been encouraged to go and will earn continuing education credits as a result. This will be the first time some Indian patients will receive dental services.

This trip marks the 40-year anniversary of the dental hygiene program at DACC.

"It is important for our students to experience a different culture and see the differences between health care in the U.S. and in other countries," DACC Dental Hygiene Program Director Elmer Gonzales said. "The cultural exchange of ideas, perspectives, and techniques will have a long lasting, positive impact on our students."

Gonzales added: "This is a great way for students to provide services, learn another culture and make connections with other dental professionals while celebrating our anniversary."

The first week will entail providing direct patient care at the hospital, while the second week will consist of cultural immersion and sightseeing at some of the wonders of India in Bandhavgarh, Orissa, Agra, Fatehpur, Jaipur and Hauly Dalu. Students will also engage in seminar type conversations on different topics with fellow health care professionals throughout the second week.

To help raise funds for the trip DACC students are using the NMSU crowdfunding platform. The fundraising goal is $10,000, and all donations are appreciated and are tax-free through the NMSU Foundation.

Donations can be made at: https://fundraise.nmsu.edu/donation/material-for-gloves

Advocate: City not helping homeless

ALBUQUERQUE, N.M. – A homeless advocate claims the city of Albuquerque has pulled out as a sponsor for his group's annual pre-Thanksgiving Dinner over criticisms of Mayor Richard Berry.

Jay Junction founder Jeremy Reynolds said late Wednesday that the city recently notified him it would no longer give the group financial aid at the Albuquerque Convention Center for the event that attracts 1,200 each year.

"It was absolutely shocked," Reynolds said. "We were informed that they wouldn't sponsor the event anymore, and I really think it's because I've been vocal about Barry. He's not a hero of the homeless he tries to portray himself."

He said Berry has publicly clashed over the mayor's policies addressing homelessness. Reynolds has said Albuquerque should do more to battle chronic homelessness and help those fighting drug addiction.

Berry spokeswoman Rhiannon Samuel declined to address the accusations leveled by Reynolds. She said the city sponsors a number of events around homelessness and can't fund them all.

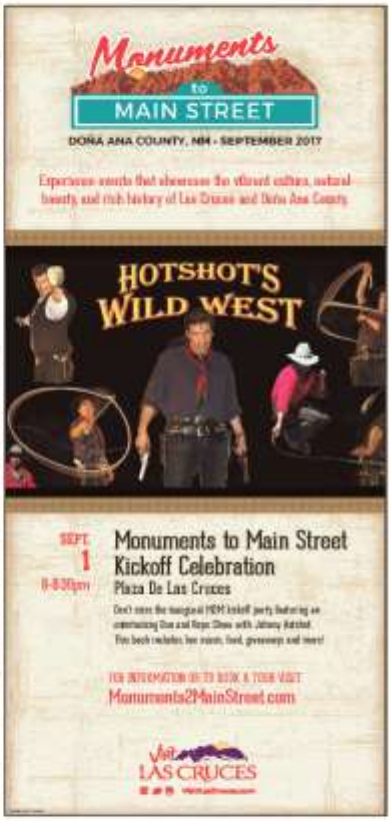
Peterson Properties has agreed to pay the $6,000 fee to the Albuquerque Convention Center, Reynolds said.

NM offers grace period for Houston oil firms

SANTA FE, N.M. – New Mexico's state government is bracing for a financial hit from flooding in Texas as Houston-area oil and natural gas businesses likely struggle to make royalty and tax payments.

State Land Commissioner Aubrey Dunn on Wednesday warned that Hurricane Harvey's destruction will disrupt revenues due to New Mexico for oil and gas operations on state and federal land.

Dunn offered a one-month grace period for Houston-based companies to pay royalties and interest for operations on New Mexico state trust land, extending a late-September deadline into October.



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Venezuela's strife to vie for pope's attention in his visit to Colombia

JOSHUA GOODMAN AND MICAH RENFROE
AP

BOGOTA, Colombia - The Jesuit Refugee Service in Bogota opened its doors for families displaced by Colombia's three-ongoing internal conflict. So as peace came within reach two years ago, its work seemed to be coming to an end, and the Southwestern center contemplated shutting the 25-bed shelter.

Now it's bursting at the seams again, this time due to a flood of Venezuelan refugees.

The plight of so many struggling people from the neighboring nation is likely to elicit at least some of Pope Francis' attention when he arrives in Colombia on Wednesday.

While the trip is meant as a celebration of Colombia's historic peace deal with leftist rebels, pressure is building on the first Latin American pontiff to speak out against the Venezuelan government for the worsening turmoil in that country during his six-day visit.

Whether it's running soup kitchens in poor barrios of Caracas or attempting to mediate a dialogue between the government and opposition, the Roman Catholic Church has gradually been drawn into Venezuela's crisis — frequently leading to clashes with supporters of President Nicolas Maduro and causing friction within the church hierarchy.

Venezuelan bishops are traveling to Colombia to meet with Francis during his visit, though it's not clear what he will say.

Sister Teresinha Monteiro, a Brazilian-born nun who runs the shelter in Bogota, said she hopes Francis will "interfere with the hand of God" to end Venezuela's social nightmare, which she expects will only worsen.

Her shelter, built 22 years ago, has never been busier, and the nuns recently had to throw a dozen extra mattresses onto a cramped second floor to accommodate the surge of Venezuelans, who make up all but two of the current 40 residents.

Unable to provide a roof for all the Venezuelans arriving in Bogota, Montoro oversees volunteers who patrol Bogota's bus terminal, handing out kits of toiletries and bus fare to those with no place to go.

"Society is needs hope ... but the situation is so critical," said Monteiro, who is taking a group of Venezuelan migrants to Francis' outdoor Mass in Bogota's Simon Bolivar Park on Thursday. "Maduro or a white wants to demonstrate that he's strong, the owner of the country, and doesn't care about anybody else."

Francis has repeatedly expressed concern about events in Venezuela and is kept briefed on the country's deteriorating political and economic situation by the Vatican secretary of state, Italian Cardinal Pietro Parolin, who was the papal ambassador in Caracas between 2009 and 2013.

But many in the Venezuelan opposition were skeptical of his effort last year to sponsor dialogue with the government, seeing it as playing into Maduro's strategy of buying time, and felt validated when the talks broke down with little to show for them.

Francis, who had had with Latin America's conservative church hierarchy as archbishop of Buenos Aires, has long been seen as being close to some of the region's leftist leaders. Meanwhile, Maduro, who met with Francis at the Vatican when the dialogue effort kicked off, has long accused local bishops of siding with the opposition and ignoring the pope's orders to build bridges.

A major turning point for the aligning the Vatican and local prelates came during Holy Week in April, as protests were returning to Venezuela with a vengeance. A mob of government supporters stormed a church in downtown Caracas, roughing up worshippers and assaulting the capital's archbishop, Cardinal Jorge Urosa, as he was delivering a sermon calling for the government to ease "the repugnant repression" against anti-government protesters. Similar attacks have taken place elsewhere. One church in San Cristobal was vandalized with graffiti reading "Death to the Priests" and blasting the outside of the ruling socialist party.

Alarmed by the rising levels of violence amid protests that claimed 120 lives, local bishops took the unusual step of traveling to Rome to brief Francis on how bad the situation had become. The June visit was all the more significant because the bishops themselves initiated it instead of being invited by the Vatican.

"Today in Venezuela, there's no ideological conflict between left and right," the bishops said in their greeting to Francis. "There's a battle between a government that has become a dictatorship serving its own interests and an entire people who want freedom and are searching desperately, at the risk of their own lives, for bread, medicine, security, work, elections, freedom and autonomous political power."

The lobbying appears to have paid off. In an Aug. 1 statement, the Vatican joined the U.S. and other governments in condemning Maduro's plans to rewrite the constitution as an illegitimate power grab, saying it was "fomenting a climate of tension and confrontation." It demanded that all sides — "and in particular the government" — respect basic human rights and the Constitution, a clear sign that it was holding Maduro accountable.

A Venezuelan migrant arranges his clothing at the Center for Migrants, where he's staying temporarily, in Bogota, Colombia. "The try to instill hope ... but the situation is so critical," says Sister Teresinha Monteiro, a Brazilian born nun who runs the shelter.

An image from police body cameras shows officers arrest Alex Wubbels having restrained by a Salt Lake City police officer.

'This cop bullied me,' says nurse about video of Utah hospital arrest

SALLY HO AND LINDSAY WHITEHURST
AP

SALT LAKE CITY - A Utah nurse said she was scared to death when a police officer handcuffed and dragged her screaming from a hospital after she refused to allow blood to be drawn from an unconscious patient.

After Alex Wubbels and her attorneys released dramatic video of the arrest, prosecutors called for criminal investigation and Salt Lake City police put Detective Jeff Payne on paid leave Friday.

"This cop bullied me. He bullied me to the utmost extreme," Wubbels said in an interview with The Associated Press. "And nobody stood in his way."

The Salt Lake City police chief and mayor also apologized and changed department policies in line with the guidance Wubbels was following in the July 26 incident.

Wubbels, a former alpine skier who competed in the 1998 and 2002 Winter Olympics, said she adhered to her training and hospital protocols to protect the rights of a patient who could not speak for himself.

"You can't just take blood if you don't have a legitimate concern for something to be tested," Wubbels said. "It is the most personal property I think that we can have besides our skin and bones and organs."

Payne didn't return messages left at publicly listed phone numbers, and the Salt Lake Police Association union did not respond to messages for comment. The department and a civilian board also are conducting reviews.

"I was alarmed by what I saw in the video with our officer," police Chief Mike Brown said.

Police body-camera video shows Wubbels, who works in the burn unit, calmly explaining that she could not take blood from a patient who had been injured in a fatality car accident, citing a recent change in law. A 2016 U.S. Supreme Court ruling said a blood sample cannot be taken without patient consent or a warrant.

Wubbels told Payne that a patient had to allow a blood sample to detect some intoxication or by order of a court. Otherwise, she said police needed a warrant. Police did not, but Payne insisted.

Nurse Alex Wubbels followed hospital policy when she told Salt Lake City police Detective Jeff Payne that he could not get a blood sample without a warrant or consent from the patient, according to her attorney.

The dispute ended with Payne saying, "We're done, you're under arrest" and pulling her outside while she screamed and said, "I've done nothing wrong!"

He had called his supervisor and discussed the time-sensitive blood draw for more than an hour with hospital staff, police spokeswoman Christina Habib said.

"It's not an excuse. It definitely doesn't forgive what happened," she said. Payne wrote in a police report that he grabbed Wubbels and took her outside to avoid causing a "scene" in the emergency room. He said his boss, a lieutenant whose actions also were being reviewed, told him to arrest Wubbels if she kept interfering.

The detective left Wubbels in a hot police car for 20 minutes before realizing that blood had already been drawn as part of treatment, said her lawyer, Karra Porter. Wubbels was not charged.

Wubbels and her attorneys on Thursday released the video they obtained through a public records request to call for change. She has not sued, but that could change, said attorney Jake MacEachran.

Salt Lake County District Attorney Sim Gill said that the video was concerning and asked the police chief to ask for a criminal investigation.

The department is open to the inquiry that will be run by Salt Lake County's Unified Police, Judd said. Gill's office will review the findings.

In response to the incident, Judd said the department updated its "roundcheck" policy last week to mirror what the hospital uses. She said officers have already received additional training.

The agency has met with hospital administration to ensure it does not happen again and to repeat him.

The hospital said it's proud of the way Wubbels handled the situation.

The patient was a victim in a car crash and Payne wanted the blood sample to show he had done nothing wrong, according to the officer's written report.

The patient, William Gore, is a reserve police officer in Rigby, Idaho, according to the city's police. They thanked Wubbels for protecting his rights.

Gore is a semi-truck driver and was on the road when a pickup truck fleeing from authorities slammed into him and his truck burst into flames, police reports say.

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State settles suit by ex-Health Dept. official

SANTA FE, N.M. – The state of New Mexico has paid nearly $165,000 to settle a lawsuit from a former Health Department bureau chief who alleged she was retaliated against for raising concerns about chronic understaffing in the agency that inspects hospitals, nursing homes and other health care facilities.

The Santa Fe New Mexican reported that the settlement ends the lawsuit brought by Assistant Attorney Angela ...

Her lawsuit alleged her supervisors began to impede the work of her agency in 2010 by failing to fill vacant positions, which resulted in a backlog, and instead insisted on hiring outside contractors to perform the work.

The Health Department denied the allegations in a response filed to the lawsuit, saying Espinoza-Trujillo's "unsatisfactory work performance and unprofessional behavior" were the cause of any discipline she received.

La Plata

La Plata principal Louis Alcorn stands in front of the school's new motto.

That change is coming in the culture of the school environment at the middle school level. This transformation is turning La Plata into a PBIS school which stands for Positive Behavior Intervention and Support.

"In short, the staff is working hard to make La Plata a more positive environment," Brown said. "For example: When a student runs down the hall, the staff no longer yells 'Stop running in the halls.' Instead, the staff now asks the student to please walk and be safe."

Brown added that it may seem like a small change, but the outcomes are great.

La Plata is also teaming up with the Juvenile Probation and Parole Office and other community organizations to target truancy of students. Instead of being punitive, the new program is trying to be supportive.

"Teachers meet a student in the dean in order to properly educate them and this program is aimed at doing just that," Brown said. "The school district has also hired curriculum coordinators and instructional coaches to support teachers with new instructional strategies to enhance the students' educational opportunities."

Jose Darrow Elementary School received an A and Brown hopes in the near future other schools can follow and have the success that the students and staff accomplished there. He stated that the school district is working hard to put the past to rest.

"As we overcome various issues and concerns of the past, we choose to focus on the future and move in a forward direction in improving our schools," Brown said. "As is the case at all locations in our district, La Plata Middle School is laying the foundation by focusing on building quality relationships with students. This includes our staff serving as mentors, providing a welcoming car when needed, and assuring our students that they have an adult advocate interested in their success. Clearly, as we are making our way out of the valley, we, at Silver Schools are cutting more path on our pathway to the mountaintop."

La Plata Middle School earned an F for the third straight year in the New Mexico Public Education Department Report Card. But positive changes are already occurring at the school. Administration and staff are mentioned hard to bring the school up to par with the district goal of at least a B to meet next year's report card.

Rural

...series with NRG consultants, Lisa Jimenez, Kendra Milligan and Renee Dungan. Together, the NRG Team has over 75 years' experience in the nonprofit sector and written hundreds of local, state and federal grants resulting in millions of dollars in awards.

The grant writing series is offered over three months to allow competitors ample time to learn grant writing basics, locate a potential grant appropriate to your specific organization or project and to submit a strong proposal.

Wilger adds, "Our grant writing series is designed to improve the skill level of all participants, including those with no grant writing experience to those with a lot of experience. We will share tips and tricks learned after writing and winning hundreds of grants over the past 35 years. We allow participants to focus on the unique needs of their organization and will provide individualized feedback so that their final items confident and leave with a polished and finishable proposal."

Participants can attend the grant writing series for $295 plus registration fee or a single session for $100 plus registration fee. Registration is required for the workshops.

NRG offers a cadre of services to aid rural and frontier nonprofits to stay healthy and robust, including a yearly calendar of trainings, free weekly curbside consultations, and the upcoming grant writing workshop series.

For more information, call NRG at (575) 397-0028 or email NRG@nrgwest.org. Visit the NRG website for the full listing of available trainings and services at www.frontierandrural.org.

Grant writing workshop facilitators Sarah Talbott-Turner Wilger and Lisa Bennett together have more than 50 years of experience in the nonprofit sector and have written hundreds of local, state and federal grants resulting in millions of dollars in awards.

Grammy award-winning artist to play at Light Hall

SUN NEWS STAFF REPORTS

SILVER CITY — Grammy winning singer songwriter and multi-instrumentalist Tim O'Brien will perform with Jan Fabricius Wednesday, September 13 at 7:00 p.m. in Light Hall Theater on the Western New Mexico University campus.

The performance will highlight O'Brien's trademark guitar, fiddle, and banjo playing, along with his vocals and harmony by Fabricius.

O'Brien has been touring nationally since 1986, devoting his repertoire to the classic sounds of old time and bluegrass music. Nationally known artists including Kathy Mattea, Nickel Creek, and Garth Brooks have covered his songs.

O'Brien has released 15 solo albums, as well as collaborations with his sister Mollie O'Brien, songwriter Darrell Scott, and noted old time musician Dirk Powell. His performance is recorded with Steve Earl, Mark Knopfler, Bill Frisell, and Steve Martin.

Forming his own record label, Howdy Skies Records in 1998, O'Brien went on to launch digital download label Short Order Sessions with his partner Fabricius in 2015.

Grammy award winner Tim O'Brien, right, will perform with Jan Fabricius on Wednesday, Sept. 13, at Silver City.

The event is sponsored by the Western Institute of Lifelong Learning (WILL), WNMU Office of Cultural Affairs, and AMP Concerts.

Tickets can be purchased by calling 575-538-6499 or online at wnmu.edu/cultural.

Traffic Advisory

As part of the Cobre Haul Road Project, construction activities may cause traffic delays due to road closures along Highway 152 during the following times:

Monday through Friday
September 7 – 29, 2017
between 11:00 a.m. and 2:00 p.m.

Delays are expected to be approximately 30 minutes. We apologize for any inconvenience this might cause.

This schedule will be updated as work progresses. Please check the **Freeport-McMoRan Information Line at (575) 912-5150** for updates.

Safety for residents, the public and our work crews is paramount.

Thank You.

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6A Friday, September 8, 2017 sunnews.com Silver City Sun-News

Police blotter

The following information was obtained by the Silver City Police Department for Sept. 5.

Suspicious Vehicle: Police were called to the 1200 block of 40th Street.

Unwanted Subject: A woman called to advise she was told the male subject was in the 300 block of Cole Street, but she was afraid to go inside and check on the subject and her brother.

Request Officer: A walkin at the Grant County Sheriff's Office complained that a 12-year-old male and his mother were harassing her by text messages.

Private Property Accident: Police were dispatched to Firal New Mexico Bank on North Hudson Street.

Welfare Check: A caller advised that a 9 or 10-year-old boy was dropped off from a blue SUV in the 600 block of Maple Street. He was crying hysterically and said he had nowhere to go.

Stolen Motor Vehicle: A caller advised that someone took their moped near the Gospel Mission on South Texas Street and went in the direction of Bullard Street.

Fraud/Embezzlement: Wells Fargo Bank on Pope Street reported a female cashing a fraud check.

Larceny: Police were dispatched to the Silver City Police/Fire Department on North Hudson Street.

Request Officer: A walkin at the Grant County Sheriff's Office requested formal probation for her 27-year-old son who is facing drugs and is currently on informal probation.

Unwanted Subject: A business in the 1600 block of North Bullard Street advised a homeless male was sleeping in their eating area.

Sept. 6

Suspicious Vehicle: Police were called to Dollar Tree on East Highway 180.

Suspicious Vehicle: Police were dispatched to Kentucky Fried Chicken on East Highway 180.

Welfare Check: A caller from the 2500 block of Leslie Road advised that she keeps seeing people who don't let her sleep and feels they're trying to steal her hair.

Domestic Disturbance: A woman in the 2200 block of North Cliffton Street advised police that her son, who is possibly on drugs as usual, had a fortlla burning on the stove and nearly set the kitchen on fire.

Private Property Accident: Police were dispatched to Walmart on East Highway 180.

Shoplifting: Walmart advised a male subject ran from Loss Prevention, escaping with a trash can full of stolen goods.

Suspicious Vehicle: A caller from the 3000 block of Little Walnut Road notified police of a pick-up across the street, possibly belonging to squatters setting up camp there.

Shoplifting: Albertson's Store #904 on East Highway 180 reported a male subject near the deli/bar Department took off to have stopd had from the store.

Shoplifting: Autozone on North Silver (Ingleby Boulevard reported a cellphone taken by a male who has already left.

Court Assist: Police were called to the Magistrate Court on East Pine Street.

Welfare Check: A caller from the 900 block of Hill Street advised someone "kicked out" a Malibu, the vehicle involving three females.

Unwanted Subject: Wells Fargo Bank on Pope Street advised that a male subject carrying a bat refused to leave.

Welfare Check: A landlord advised she was concerned about the kids of her tenant whom she is evicting for delinquent back rent for a premises on Kudpo Road.

Domestic Disturbance: A caller from the 700 block of 13th Street notified police of a fight in a Chevy.

Welfare Check: A caller from North Bullard Street in downtown notified police of a Nissan with multiple occupants now headed toward Hudson Snappy with a 6- or-7-year-old girl sitting on the window seal.

Criminal Trespass Warning: Police were dispatched to the 1000 block of Virginia Street where a dispute had broken out.

Intoxicated Person: Police were called to the 700 block of Market Street to investigate a male subject.

Reckless Driver: Police were called to the 200 block of North Hudson Street to investigate an Audi and a Charger.

Suspicious Vehicle: A caller from Sunset Vista Adult Residential Care on Pyrite Avenue advised there is a vehicle where no one should be parked, later determined to belong to a resident's son.

Domestic Disturbance: A woman advised her 8-year-old son, who is on medication, broke some items which she is keeping over in the house, including his younger brother.

WNMU

Continued from Page 1A

tion status, their ethnicity, their gender, or any other attributes associated with various classes of people.

"To any students of ours, I say to you that you are welcome here," Shepard said. "You need not fear persecution from us. We will continue to educate you as best we can. We may have to make some modifications given the changing law, but if you are in my classroom or any other classroom on this campus, I am concerned about only one thing... your education. I will do all I can legally do to make sure you continue to get the best education that we can provide."

Shepard also wanted to speak out to the community surrounding the university, he stated that components grow a long way as well as he wanted to remind them that the U.S. has ridden the backs of immigrants for many years.

"No matter your political views, I encourage you to provide compassion," Shepard said. "Our country has been made great on the backs of immigrants. Our country has been made great because we have a democratic process that is geared toward protecting the minority voice no matter how great it sounds."

Western New Mexico University MEChA Club members held a rally outside the Fine Arts Center Theater in support of DACA students.

Western New Mexico University president Joseph Shepard.

"To any students of ours, I say to you that you are welcome here."

JOSEPH SHEPARD

Shepard also encouraged the community to let that democratic process work in the next six months. He stated that Congress has an obligation to enact legislation to the solution of the immigration issue, no matter which side of the argument that you fall on.

"Each of you also has an opportunity to express in your own ways your beliefs on this important issue," Shepard said. "I ask only two things of you - respect the variety of opinions that will come forth on this topic and show compassion for each other.

"These are not easy times," Shepard continued. "But, we as a nation will persevere. I am proud to be an American. I am proud to be a Mustang. And, I am proud to be an educator of all who seek to enhance their lives and those lives around them."

Hurricane

Continued from Page 1A

trapped in their homes and I knew they were going to be hungry and I felt like if we could help we have a responsibility to do so."

Carrillo quickly went into action and utilized social media along with other owners of businesses to spread the word about helping. He hooked up his dump trailer to his diesel pickup and told patients to spread the word that he would be in the parking lot of Walmart accepting donations to take to Texas.

"Jarod Lackey of Nichols Welding jumped on board with me and the guys at City Cars," Carrillo said. "In just a few days we had received thousands of items. People came from all over Grant County. Cliff, Bayfarers, Mimbres, all around Silver. A couple even came from Bulan to bring some stuff. Runyon Construction, Chavez Construction and Farworth donated a pallet of water each."

Carrillo said the traffic became overwhelming and he had to take a few days off of work to be able to accomplish all the running around and getting the different items people were willing to donate. When it was all said and done, Carrillo and company had accumulated 13,700 pounds of donated items that went from food to water, toys and diapers.

Several people from Grant County came together to help donate items to victims of North coast Harvey.

"There was a lot of stuff," Carrillo said. "We (his nephew Vincent and him) took off last Thursday and drove to Lubbock, Texas. There we stopped at the Southern Plains Food Bank. They have a campaign going on and they are making boxes with a bunch of items. They will be giving them to victims in the Corpus Christi area."

Carrillo said they were met with nothing but love and tons of gratitude.

"They were so thankful and welcomed us with open arms," Carrillo said. "They were really grateful that we came all the way down there with all of our stuff."

Carrillo said that there is still a storage container full of stuff that didn't fit on his truck and trailer. He is waiting to see what Hurricane Irma does when it makes land fall in the U.S. and more than likely he will make a trip to Florida to go and distribute the rest of the items.

"I'm really grateful that everyone was able to come together in a time if so much hate/tension going around," Carrillo said. "We are all Americans and we love one another. We proved that as we came together. The hate that is going around is a small percentage here in America."

Hurricane Harvey was the first major hurricane to make landfall in the U.S. since Wilma in 2005. It ended a record 12-year period with no major hurricanes making landfall in the U.S. During the first-day period of Harvey, more than 40 inches of rain fell over Eastern Texas. Harvey became the wettest tropical cyclone on record in the U.S. It displaced more than 30,000 people and prompted more than 17,000 rescues.

FEMA director Brock Long called Harvey the worst disaster in Texas history. Economic losses are estimated between $70 to $90 billion and there are at least 68 confirmed deaths. Houston remained to be the most impacted area.

Students

Continued from Page 3A

cluding nursing faculty, Martin family members, and the WNMU Foundation collaborated in the selection process.

"Martin family scholarships are important friends to the WNMU Foundation, said Kristi Crocker. "The family's unwavering commitment to helping Western's nursing students financially has helped these students to be focused on their studies and achieve their educational goals. The awards have had a positive impact on the lives and future of these students."

Vaccination Clinic

Saturday, September 9th 2017 • 9 a.m. - noon

Rabies shots
1 year $13.00
2 Year $23.00
3 YEAR Rabies $23.00
Cat 4 year $16.00
Please call for availability of Bordetella and feline Leukemia. $20.00
Microchipping - $25.00
Dewormer $10.00 to $25.00 depending on size of animal.
All dogs and cats within Silver City and all dogs in Grant County require a license.
Spayed or neutered animal
1 year $2.50
3 year $7.00
Intact male/female animal
1 year $20.00
3 year $56.00

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A.5 Public Draft Notice of Availability Ads

A6 ALBUQUERQUE JOURNAL NATION FRIDAY, NOVEMBER 1, 2019

Chicago teachers reach deal to end strike

Educators win pay raises, smaller classes

BY MONICA RHOLINSKI
THE WASHINGTON POST

Teachers in Chicago, home to the nation's third-largest school system, reached a deal with the city Thursday that is set to return 300,000 students and 35,000 teachers to classrooms Friday, ending one of the largest teacher strikes in recent history.

The agreement outlines salary increases for teachers and provides $35 million to reduce class sizes — one of the Chicago Teachers Union's priorities. It also calls for 100 new nurses and social workers so that one will be assigned to each school by 2021. The pact also extends the school year five days — a sticking point for teachers, who lost six days of pay during the strike. Teachers will also get a 16% raise over the life of the five-year contract.

Mayor Lori Lightfoot, hailing the first major win of her administration, had sought to end the school year without additional days.

Teachers have been on strike since Oct. 17 after reaching an impasse with Lightfoot. Classes were canceled for 11 days in a school system in which three-quarters of students come from low-income households. Nearly 10,000 students in 2018 were homeless.

The announcement of a deal came amid a surge of teacher activism that has sparked strikes and walkouts coast to coast. This year, teachers in Los Angeles, the nation's second-largest school district, went on strike in January and teachers in Oakland, California, followed suit in April. In Chicago, the strike represented the latest chapter in a long history of teacher activism. Teachers last walked out in 2012 and nearly went on strike in 2016.

Chicago teachers this year bargained over familiar issues, including salaries, staffing, class size, and nurses and social workers. They also sought to boost pay for classroom aides, many of whom qualify for public benefits, and to force the city to set up programs that increase teacher diversity.

Related to wide-ranging demands that extended beyond the classroom, including policies to encourage more affordable housing in a city that critics say caters to the wealthy at the expense of working-class residents. The city's black population has shrunk by a quarter since 2000.

Lightfoot repeatedly said the city could not afford teacher demands.

Members of the Chicago Teachers' Union rally in downtown Chicago on Thursday. A deal has been announced that ends the strike by the city's teachers that began on Oct. 17.

Facebook pressured to ban political ads

BY MAE ANDERSON AND RACHEL LERMAN
ASSOCIATED PRESS

SAN FRANCISCO — Twitter's move to ban political campaign ads is ratcheting up pressure on Facebook and Mark Zuckerberg to follow suit. But so far, that doesn't appear likely to happen.

Facebook's policy is to accept paid political ads from candidates without fact-checking them or censoring them, even if they contain lies.

And Zuckerberg doubled down on that stand Wednesday following Twitter's announcement, reiterating that "political speech is important" and that Facebook is loath to interfere in it.

Twitter, Facebook and other social media sites have come under fire over Russia's use of such platforms to spread misinformation and sow political division in the U.S. during the 2016 presidential campaign. That issue has heated up again in recent weeks along with the 2020 race for the White House.

Twitter chose to respond with a ban on all political advertising, suggesting that social media is too powerful that false or misleading messages pose a risk to democracy.

The timing of the announcement, the same day as Facebook's quarterly earnings report, seemed designed to goad Zuckerberg.

"The pressure is going to be extremely strong on Facebook to do something similar, and if they don't, then the image of Facebook will only increase," said Tim Bajarin, president of consultancy Creative Strategies.

Democratic presidential candidate Pete Buttigieg said, "I think other online platforms would do well to either accept basic responsibility for truth or question whether they should be in the business at all."

But Zuckerberg stood firm.

Mark Zuckerberg

Costs stable but more uninsured with Obamacare

Analysis finds millions don't know ACA subsidy could help them

BY RICARDO ALONSO-ZALDIVAR
ASSOCIATED PRESS

WASHINGTON — More Americans are going without health insurance and middle-prices plus prevent choice next year under the Obama health law aren't likely to reverse that.

As sign-up season starts Friday, the Affordable Care Act has shown remarkable resilience, but it has also fallen short of expectations. Here's why Democrats want to move on.

President Donald Trump means trying to dismantle the program, known as Obamacare.

During President Barack Obama's tenure, open enrollment involved a national campaign to get people signed up. The program's complexity was always a problem, and many lower-income people still don't understand they can get financial help with premiums.

That can translate to several million uninsured people unaware they qualify for help. An analysis Thursday from the consulting firm Avalere Health found that low-income residents in 36% of counties served by HealthCare.gov can find a basic "bronze" plan at no net cost, factoring in subsidies.

For John Gold, a self-employed graphic designer from Maine, heath care that's stable, affordable and comprehensive still feels more like a goal than a reality. He's been covered by the ACA since 2014.

"It's a great start, but it's not the be-all and end-all of health care," he said.

Gold's income increases, and when he makes too much to qualify for subsidized premiums, he must pay full freight. He's in his 50s, so his monthly cost is higher, about $900. On top of this, the plan comes with a $6,000 deductible.

Nevertheless, Gold said he wasn't looking at the cheapest alternative the Trump administration is touting, though it can cost up to $95 less.

With the economy strong, it's unusual for progress to falter on American uninsured rate, Vox the Census Bureau report. Of the 25½ million people were uninsured in 2018, an increase of nearly 1.3 million from 2017, and the first time the rate went up in a decade.

John Gold, a self-employed graphics designer, visits a farmers market outside his office in Portland, Maine, on Wednesday. Gold plans to shop for plans for 2020 again.

Ga. governor proposes cost saving health care overhaul

Proposal to help those with ACA

ATLANTA — Georgia Gov. Brian Kemp unveiled a plan Thursday that aims to reduce premiums for residents who don't want insurance under the Affordable Care Act and give the state control of billions of dollars in federal health care funds.

The proposal could eventually lead to subsidies for cheaper coverage that doesn't include all the benefits required by the ACA.

The plan does not address Medicaid coverage. The Kemp administration is expected to announce its Medicaid plans next week.

Kemp said his proposal would give Georgia more flexibility "more stability and predictability."

"For many Georgians, health insurance is the biggest and most unpredictable expense in a family budget," he said.

The ACA imposed rules for the state and federal governments to pay a portion of insurance companies' costs to treat their sickest patients, a relatively small group that favors the biggest bills. The so-called reinsurance program would allow the companies to lower much premiums for all customers.

The reduction could be as much as $800 in areas of Georgia where premiums now exceed $1000, according to estimates from the governor's office.

Under a second part of the governor's plan, state residents could bypass health coverage and sign up for insurance directly through an insurance provider or broker outside Kemp's plan does not affect the current ACA open enrollment for 2020 plans, which starts Friday.

That change would give Georgia residents access to more health care coverage options, though all plans would have to cover preexisting conditions, the governor's office said. Georgia would also control $22 billion in federal subsidies each year for the Affordable Care Act.

Critics say those plans can offer cheaper benefits, saddle people with a high out-of-pocket costs, and undercut "Obamacare" by attracting healthy consumers and leading to higher premiums for older, sicker people.

Using ACA tax credits for short-term plans would "further destabilize the market," said Laura Harker, a senior policy analyst at the Georgia Budget & Policy Institute.

The proposals would require approval from the Trump administration. The governor's office says it has been talking to the White House about them.

The Affordable Care Act — President Barack Obama's signature health law — allowed states to seek waivers from the federal government to change certain provisions.

The latest states have had this type of waiver approved by the federal government, including Alaska, Colorado, Delaware, Hawaii, Maine, Maryland, Minnesota, Montana, New Jersey, North Dakota, Oregon, Rhode Island and Wisconsin, according to data from the Kaiser Family Foundation. Twelve of those approved plans asked to use federal funding to help prevent state-based reinsurance programs.

Georgia would spend a little over $500 million to $600 million annually on reinsurance programs, with the remainder coming from city federal government, according to the governor's office.

The Kemp administration says the second part of its plan would "continue to align the health care coverage and reform subsidies. Hopefully, this reform [of] would allow them to see other types of health plans, including short-term plans and association health plans not compliant with the Affordable Care Act.

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City/Town	Date	Location
Hobbs, NM	Monday, November	13 Allen Garden Inn Hobbs, 3620 Lovington Highway Hobbs, NM 88240
Roswell, NM	Tuesday, November	19 Roswell Convention and Civic Center 912 N. Main Street Roswell, NM 88201
Artesia, NM	Wednesday, November 20	Artesia Public Library, 205 West Quay Avenue, Artesia, NM 88210
Cardenas, NM	Thursday, November 21	New Mexico State University, Carlsbad Airport (Room 103, 1500 University Drive, Carlsbad, NM 88220
Socorro, NM	Monday, December 2	Macey Center, 801 Leroy Place, Socorro, NM 87801
Truth or Consequences, NM	Tuesday, December 3	Commission Chambers, 405 W. Third Street, Truth or Consequences, NM 87901
Silver City NM	Wednesday, December 4	Grant County Chamber of Commerce, 3031 Highway 180 East Silver City NM 88061
Las Cruces, NM	Thursday, December	Ramada by Wyndham Las Cruces Hotel and Conference Center Las Cruces, NM 88005

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Holloman AFB Library	590 4th Street, Holloman AFB
Artesia Public Library	205 W Quay Avenue, Artesia NM
Thomas Branigan Memorial Library	200 E. Picacho Avenue, Las Cruces, NM
Truth or Consequences Public Library	300 Library Lane, Truth or Consequences, NM
Carlsbad Public Library	101 S. Halagueno Street, Carlsbad, NM
Hobbs Public Library	509 North Shipp Street, Hobbs, NM
Silver City Public Library	515 W College Avenue, Silver City, NM
Socorro Public Library	401 Park Street, Socorro, NM
City of Roswell Public Library	301 N Pennsylvania Avenue, Roswell, NM
Marshall Memorial Library	1101 S. Diamond St., Deming, NM
Fabian Public Library	167 Kansas City Rd, Ruidoso, NM
Lordsburg Hidalgo Library	200 E. 3rd St., Lordsburg, NM

Warren vows no middle-class tax hike for $20T health plan

Moderates call plan 'mathematical gymnastics'

BY WILL WEISSERT AND RICARDO ALONSO-ZALDIVAR
ASSOCIATED PRESS

WASHINGTON — Elizabeth Warren on Friday released the first details of how she would pay for her sweeping proposal. Democratic presidential candidate Sen. Elizabeth Warren greets supporters before a Democratic Party Liberty and Justice Celebration Friday in Des Moines, Iowa.

© 2019 THE DES MOINES REGISTER AND TRIBUNE COMPANY

Democratic presidential candidate Sen. Elizabeth Warren greets supporters before a Democratic Party Liberty and Justice Celebration Friday in Des Moines, Iowa.

Her plan would raise taxes on the middle class, a risky effort that hits the goal of universal coverage against skepticism about new taxes.

The details of Warren's "Medicare for All" plan are in regard criticism that the Massachusetts Democrat and presidential candidate has been vague about how she would pay for her sweeping proposal. Her rollout is on until now whether she would impose new taxes on the middle class, as fellow progressive Bernie Sanders has said he would, that would hurt her in recent presidential debates.

However, her detailed proposal was quickly attacked by moderate rivals, including former Vice President Joe Biden, whose campaign said it amounts to "mathematical gymnastics." Some independent experts also questioned whether her numbers were realistic.

In a 20-page outline published Warren said a commission of her plan would require employers to contribute to government almost all the $20 trillion she estimates they would refer to our spend on private insurance for employees.

"We can generate almost half of what we need to cover Medicare for All just by asking employers to contribute slightly less than they are projected to pay today, and through existing taxes," she wrote.

Warren said Friday that her plan was drafted with help from top health care experts and economists. "If Joe Biden doesn't like that ... I'm just not sure where he's going," she said.

Companies with fewer than 50 employees that don't already sponsor coverage would be exempt from the proposal. And in a nod to unions, whose support will be key in the Democratic primary, Warren said that employers already offering health benefits under collective bargaining agreements would be allowed to keep those benefits as they are.

Biden, who favors building on the Affordable Care Act, slammed Warren's plan as eliminating private insurance coverage and said it will amount to a net increase on workers.

Halloween horror: 4 killed at Northern California party

More than 100 people gathered at rented Airbnb home

BY STEFANIE DAZIO AND DAISY NGUYEN
ASSOCIATED PRESS

HUGHSON, Calif. — Four people were killed and at least four injured at a Halloween party shooting at a Northern California home rented by a woman who falsely claimed she wanted the Airbnb so her authentic family members could escape wildfire smoke, police and a person with knowledge of the reservation said Friday.

Gunshots were reported at about 10:45 p.m. Thursday at the large home in the wealthy San Francisco suburb of Orinda where more than 100 people had gathered, police said. The home, surrounded by trees and on seven grassy, hilly acres in Antioch, by a woman who told the owner her unwell family members needed a location with fresh air, the person with knowledge of the transaction told the Associated Press.

A one-night rental on Halloween was suspicious enough that before agreeing to rent the home, the owner reminded the renter that no parties were allowed, said the person.

The renter, whose name and home state have not been disclosed, told the owner that her family members were unwell and needed a place to escape the smoky air. A giant wildfire burning in Sonoma County about 60 miles north of Orinda earlier in the week forced tens of thousands to evacuate and fueled the air over a wide area.

Michael Wang, who owns the 4,000-square-foot, four-bedroom house, said he was the last one to the rental Thursday night after neighbors contacted them about the party. The renter said there were only sixteen people at the home. However, Wang said he could see more people on video from his doorbell camera.

"We called the police. They were on the way to go there to stop them, but before we got there, the neighbor already sent us a message saying there was a shooting," he told the San Francisco Chronicle in a phone interview. "When we arrived there, the police were already there."

Though no suspect was identified as of midday, Orinda Police Chief David Cook said at a news conference there is no danger to the rest of the public.

"We don't have any reason to believe that they stayed in the area," Cook said.

Cook did not address a possible motive or whether more than one person was involved in the shooting.

Trump changes permanent residence

Post-presidency home will be Fla., not N.Y.

BY ZEKE MILLER
ASSOCIATED PRESS

WASHINGTON — President Donald Trump will follow in the well-heeled path of many other retiring American New Yorkers who have been drawn to Florida's year-round sun, wealthy and low taxes.

Trump tweeted late Thursday that he will make Palm Beach, Florida, his permanent residence after leaving the White House, rather than returning to Trump Tower in New York. The move also subtly announces Trump as the glitzy world of Palm Beach and away from the pressures of public life in Manhattan.

Trump, who was born in New York and is a real-developer-turned-reality-star personality, has formal ties, and the city "will always have a special place in my heart!" But he complained that he had been "treated very badly by the political leaders of both the city and state" despite paying "billions of dollars in city, state and local taxes each year."

"[A]nd will not be forgotten!" he continued, he tweeted.

The move marked the first reaction by Trump to contemplate his post-presidency or a time when he is embroiled in an impeachment fight in Washington and a trying reelection campaign next year. Trump said he hopes the White House remains his home for another five years, but that Florida would be his primary residence.

The New York Times reported that Trump had filed "declaration of domicile" papers with Florida, claiming his "permanent home and principal home" is his Mar-a-Lago resort.

Trump won Florida's 29 electoral votes in 2016 by just over 110,000 votes, less than 1% of the state's total. Aides believe his likeliest path to a second term in 2020 relies on a repeat victory in the swing state and have invested in efforts to shore up support.

The move brings Trump to a state with no income or inheritance taxes.

Many providing substantial support to the president and his heirs.

Beto O'Rourke

O'Rourke announces he's ending campaign

ASSOCIATED PRESS

WASHINGTON — Beto O'Rourke, the former Texas congressman, announced Friday that he was ending his Democratic presidential campaign, which failed to recapture the enthusiasm, interest and financial bonanza of his 2018 Senate race.

In an online post, O'Rourke said, "My service to the country will not be as a candidate or as the nominee." He was scheduled to address supporters later Friday at an event in Iowa, where many of his supporters were blindsided by his announcement.

O'Rourke was urged to run for president by many Democrats, who were energized by his narrow Senate loss last year in Texas, a reliably Republican state.

"Though it is difficult to accept, it is clear to me now that this campaign does not have the resources to move forward successfully," he wrote on Medium. "Acknowledging this now is in the best interests of those in the campaign, it is in the best interests of this party as we seek to unify around a nominee, and it is in the best interests of the country."

O'Rourke did not endorse another Democrat. But he said the country will be well served by any of the other candidates.

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City/Town	Date	Location
Ruidoso, NM	Monday, November	Inn of the Mountain Gods Resort, 4520 Lovington Highway, Ruidoso, NM 88345
Roswell, NM	Tuesday, November	ENMU Roswell Conference and Civic Center, 2102 N. Main Street, Roswell, NM 88201
Artesia, NM	Wednesday, November 20	Artesia Public Library, 205 West Quay Avenue, Artesia, NM 88210
Carlsbad, NM	Thursday, November 21	New Mexico State University, Gymnasium (Room 102), 1500 University Drive, Carlsbad, NM 88220
Socorro, NM	Monday, December 2	Macey Center, 801 Leroy Place, Socorro, NM 87801
Truth or Consequences, NM	Tuesday, December 3	Commission Chambers, 405 W. Third Street, Truth or Consequences, NM 87901
Silver City, NM	Wednesday, December 4	Grant County Chamber of Commerce, 3031 Highway 180 East, Silver City, NM 88061
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Artesia Public Library	205 W Quay Avenue, Artesia NM
Thomas Branigan Memorial Library	200 E. Picacho Avenue, Las Cruces, NM
Truth or Consequences Public Library	325 Library Lane, Truth or Consequences, NM
Carlsbad Public Library	101 S. Halagueno Street, Carlsbad, NM
Hobbs Public Library	509 North Shipp Street, Hobbs, NM
Silver City Public Library	515 W College Avenue, Silver City, NM
Socorro Public Library	401 Park Street, Socorro, NM
City of Roswell Public Library	301 N Pennsylvania Avenue, Roswell, NM
Marshall Memorial Library	110 S. Diamond St., Deming, NM
Ruidoso Public Library	107 Kansas City Rd., Ruidoso, NM
Lordsburg Hidalgo Library	208 E. 3rd St., Lordsburg, NM

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Roswell, NM	Tuesday, November 19	Roswell Convention and Civic Center, 912 N. Main Street, Roswell, NM 88201
Artesia, NM	Wednesday, November 20	Artesia Public Library, 205 West Quay Avenue, Artesia, NM 88210
Carlsbad, NM	Thursday, November 21	New Mexico State University, Gymnasium (Room 103), 1500 University Drive, Carlsbad, NM 88220
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Thomas Branigan Memorial Library	200 E. Picacho Avenue, Las Cruces, NM
Truth or Consequences Public Library	325 Library Lane, Truth or Consequences, NM
Carlsbad Public Library	101 S. Halagueno Street, Carlsbad, NM
Hobbs Public Library	509 North Shipp Street, Hobbs, NM
Silver City Public Library	515 W College Avenue, Silver City, NM
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Lordsburg Hidalgo Library	208 E. 3rd St., Lordsburg, NM

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Hobbs Public Library	509 North Shipp Street, Hobbs, NM
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Small

from PAGE 1

not mention Trump

The Las Cruces Democrat told local Democrats last fall that Trump and his potential impeachment by a Democrat-controlled House had not been issues on the campaign trail. Asked by the News-Sun during a question-and-answer session why she didn't mention the president in her remarks on Sept. 13, 2019, at the Hobbs Country Club, Torres Small she had not been asked about the potential impeachment of Trump or any of her candidate forums. "I have to tell you actually, that is the first time that's been asked in a forum because that is not what is on people's mind, and I'm not surprised that it's from the reporter," she told the audience of about 30 people last fall. "What's on people's mind is what's affecting our pocketbooks, and what's affecting our kids. First, let me make that statement that that's what my focus is going to be on because that's what matters day to day. In terms of impeachment, as an attorney, I believe in due process and I also believe that no one is above the law. So I would support the integrity of an independent investigation, and would look at the results that come out of that. But it is way too premature to talk about that now."

Former U.S. Rep. Steve Pearce, R-Kirtland, now the chairman of the Republican Party of New Mexico, said Thursday's House impeachment inquiry resolution was predictable.

"Since before the President was nominated, the Democrats have been spending their time on how to impeach him," Pearce said. "First it was the Russian hoax, and their tactics continued. Then it was the bad testimony of Robert Mueller that led them to pivot to this impeachment sham. The attack on the President is like a Soviet-style secret process. There's no due process here at all, and this won't get through the Senate."

GOP contenders

Roswell businesswoman Claire Chase, one of three Republicans vying to face Torres Small in the 2020 general election, said Democrats are only seeking to reverse the 2016 presidential election, when Trump won 31 states and part of Maine.

Chase

"Make no mistake: Xochitl Torres Small and the Democrats are not impeaching President Trump because of Ukraine; they are moving to impeach him because he is governing exactly the way he said he would — and that terrifies them," Chase said in a statement. "After years of empty promises, the American people backed the establishment political class and elected President Trump to do the job that career politicians lacked the courage to do. Now, because the Democrats simply cannot come to terms with our President's success or losing an election three years ago, they want to deny voters a voice in 2020."

Chase also said Torres Small's vote on impeachment was cautious.

"Xochitl Torres Small turned her back on her constituents today and I am running for Congress to ensure the 2nd District will have a trusted ally of President Trump in the House so our nation can continue growing our economy, strengthening our borders, and protecting our conservative values for another four years," Chase added.

Alamogordo Republican Yvette Herrell, who lost to Small by 3,722 votes in 2018, said Thursday's vote showed the true liberal with Torres Small.

Herrell

"Xochitl Torres Small just proved once and for all that her anti-semitic rhetoric and bipartisan posturing have been a charade all along," Herrell said in a statement. "Today, Torres Small was forced to actually take a public stand, and she chose to vote to proceed with Donald Trump, Xochitl Torres Small and her socialist allies in Congress should focus on collaborating with President Trump to improve Americans' lives instead of working overtime to remove the President from office."

Chris Mathys of Las Cruces is also seeking the Republican nomination for the 2nd Congressional District.

"I am truly saddened Congresswoman Torres Small voted for impeachment," Mathys said in a statement. "While hundreds of thousands of illegal aliens invade our country using our tax dollars for free healthcare, welfare, housing and education she has done nothing to stop this injustice to American taxpayers. She has now embarked with (Congresswoman) Alexandria Cortez and the Squad along with Nancy Pelosi to impeach our elected president. Congresswoman Torres Small needs to work for New Mexicans and quit playing political games."

Mathys

Battle lines

House Speaker Nancy Pelosi spent months urging caution on moving forward with an impeachment resolution. She and other Democratic leaders had feared a premature vote would wound the re-election prospects of dozens of their members, including freshmen and lawmakers from districts Trump won or seats held previously by Republicans.

Torres Small is one of 31 House Democrats who represent congressional districts won by Trump in 2016. Within the 2nd Congressional District, Lea County was Trump's largest area of support, where Trump beat Clinton by more than a 4-to-1 margin, 11,486 votes to 2,865. Trump beat Clinton by over 3-to-1 margins in Chaves and Eddy counties.

Trump tweeted Thursday: "Now is the time for Republicans to stand together and defend the leader of their party against these smears."

In the House inquiry vote, the only Democrats "no" votes were by Reps. Jeff Van Drew, a New Jersey freshman, and veteran Collin Peterson of Minnesota, one of the House's most conservative Democrats. Both are battling for re-election in Republican-leaning districts.

"The impeachment-obsessed Democrats just flushed their majority down the toilet," said Michael McAdams, an NRCC spokesman.

Impeachment process

The House is at least weeks away from deciding whether to vote on actually impeaching Trump. If it does, the Senate would hold a trial on whether to remove him from office. The GOP-run chamber seems highly unlikely to remove Trump from the White House.

Rep. Devin Nunes, R-Calif., likened Democrats to a "cult," accusing them of bouncing from "one outlandish conspiracy theory to another." Rep. Maxine Waters, D-Calif., pointedly said she looked forward to Republicans "prioritizing country over party. Just as we took an oath to do."

Pelosi decided to have the vote following a GOP drumbeat that the inquiry was biased because lawmakers hadn't voted to formally commence the work. The rules direct House committees "to continue their ongoing investigations" of Trump.

Democrats hope Thursday's vote will undercut GOP assertions that the process has been invalid. They've acted that there is no constitutional provision or House rule requiring such a vote.

The rules require the House Intelligence Committee — now leading the investigation — to issue a report and release transcripts of its closed-door interviews, which members of both parties have attended.

The Judiciary Committee would then decide whether to recommend that the House impeach Trump.

Republicans could only issue subpoenas for witnesses to appear if the committees holding the hearings approve them — in effect giving Democrats veto power.

Attorneys for Trump could participate in the Judiciary Committee proceedings. Democrats would retain leverage by empowering panel Chairman Jerrold Nadler, D-N.Y., to deny requests by Trump representatives to call witnesses if the White House continues to "unlawfully refuse" to provide testimony or documents Congress demands.

Impeachment inquiry

Elsewhere at the Capitol on Thursday, three Democratic House panels led by the Intelligence Committee questioned their latest witness into the allegations that led to the impeachment inquiry: that Trump pressured Ukraine to produce dirt on his Democratic political rivals by withholding military aid and an Oval Office meeting.

Tim Morrison, who stepped down from the National Security Council the day before his appearance, testified — still behind closed doors — that he saw nothing illegal in Trump's phone call with the Ukrainian president that is at the center of the Democrat-led investigation.

The Democrats are still waiting to hear if Morrison's successor, John Bolton, will testify. They have subpoenaed former national security adviser Bolton, who quit the administration after disagreements with Trump over his handling of Ukraine.

Thursday's House debate was laced with high-minded appeals to defend the Constitution and Congress' independence, as well as partisan taunts.

"What are we fighting for? Defending our democracy," said Pelosi. She addressed lawmakers with a poster of the American flag beside her and opened her comments by reading from the preamble to the Constitution.

She also said the rules would let lawmakers decide whether to impeach Trump, "based on the truth. I don't know why the Republicans are afraid of the truth."

But her counterpart, Minority Leader Kevin McCarthy of California, cast the process as a skewed attempt to railroad a president whom Democrats have detested since before he took office.

"Democrats are trying to impeach the president because they are scared they cannot defeat him at the ballot box," he said.

Award

from PAGE 1

didn't catch on. It was a complete surprise," Wright told the News-Sun. "I didn't think my wife had it in her to do this, but it's nice to see friends around. I think I enjoy seeing friends around more than anything else."

In addition to fellow pilots, Wright saw a number of the members of his church, the Church of the Nazarene, come into McDonald's and take a seat.

Since the FAA award is named after the founding fathers of American aviation, Orville and Wilbur Wright, Yeagen started his presentation by asking for clarification whether there's a familial relationship with the retired Hobbs ophthalmologist.

"We don't think so," Wright laughed. "We might be, but nobody has ever connected the dots." He told the News-Sun research that guesswork question, but had been unable to find a relationship.

Yeagen explained the master pilot award, which includes a lapel pin for the pilot and another for his spouse, as well as a certificate, honors individuals who have exhibited professionalism, skill and aviation expertise for at least 50 years while piloting aircraft.

Once the award has been issued, the recipient's name, city and state is added to a published "Roll of Honor" on the FAAs safety website.

Wright's first solo flight occurred in 1956. In addition to his medical practice, he served as an aviation medical examiner. He often transported patients when the need arose. Wright retired from the medical practice about 15 years ago, but at age 72, he still flies, usually taking his wife with him.

Flicking came naturally to Wright.

"When I first started out, my dad had a plane. With my last name being Wright, I always wanted to learn to fly," Wright said. "I read the history. My dad had flown. My uncle had flown. It was a family thing."

After growing up in northern New Mexico, Wright attended universities around the country, gaining his education and learning to fly. He settled in Hobbs in the early 1980s.

"My dad said the only reason I moved to Hobbs was so I could fly up there (Albuquerque) to see him. It wasn't true, but he thought so," Wright told the News-Sun. "I moved to Hobbs to work. I had gone to school all around the country and wanted to move back to New Mexico. In 1982, Hobbs was booming and the rest of the state was in a recession, so it was financial."

Wright and his wife have been married just six years.

"You won't believe this," Sandy told the News-Sun with a twinkle in her eye. "But we met on the Internet. His wife had died and my husband had died. We met on Christian Singles."

After applying the pin on Wright's lapel, Yeagen explained the Bikle photocopy that every pilot has two loves — flying and a spouse. Therefore, the FAA provides plans for spouses in honor of the hours spouses sing home supporting and waiting for their husband or wife to return.

Yeagen asked Sandy how many hours she had waited.

"Since," she laughed. "I go with him." With a chuckle and no further comment, Yeagen handed the pin to Wright for the husband to pin it on Sandy's collar. After all, she did support his affection for flying.

To earn the award, a pilot must be a citizen of the United States, must be licensed by the U.S. Civil Aviation Authority or Federal Aviation Administration, must have flown for at least 50 years since his or her first solo flight and must have not had any aircraft certificate revoked.

The Wright Brothers "Master Pilot" Award presented to Wright reads "in appreciation for your dedicated service, technical expertise, professionalism, and many outstanding contributions to further the cause of aviation safety."

Curtis C. Wynne may be contacted at reporter2@hobbsnews.com.

Vote Evelyn Rising

Candidate for New Mexico Junior College Board Member, District 6

As an NMJC board member, I hope to:

- Continue promoting policy changes to double student enrollment and transfers to four-year universities
- Be instrumental in the continuation of building a stronger Lea County Workforce
- Highlight issues of diversity, inclusion and equity across a range of human differences
- Bring my vantage points as a first-generation college graduate and knowledge of education

VOTE TUESDAY, NOVEMBER 5, 2019

Paid for by Evelyn Rising

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The Hobbs boys' cross country team runs as a pack while winning the 2019 district meet Friday in Carlsbad. The Eagles took first place with 33 points, beating runner-up Clovis by five points.

District

from PAGE 7

"That was a tight one," Collier said. "Clovis has a heck of a team. They have some studs."

Adolfo Mendoza led the Eagles with a third-place finish. The senior turned in a time of 16:50. Jorge Martinez kept pushing Mendoza to finish fourth at 16:52.

"It was hard and I was tired," Mendoza said. "I started losing my mental strength and all that, but if it wasn't for (Martinez), I wouldn't have been up there."

"It was hard. It wasn't the best, but I gave it everything I had," Martinez added. "(Running together) is so much easier than working by yourself. You get mentally tougher when you know that you have someone next to you, working as hard as you."

Daniel Kasey took seventh in 17:28, while Michael Dominguez (17:32) was ninth and Manuel Mata (17:51) was 13th. Antonio Farias finished 20th at 18:01 while Jose Mendoza ran an 18:08 to place 37th.

Diago Vega injured himself a week ago and attempted to run, but left the race shortly after the one-mile mark. The Eagles also raced without Brandon Cortes.

"We will have to see how he is when it comes to state," Collier said.

Hobbs has just over a week to prepare for the NMAA Class 5A state championship at Rio Rancho High School on Saturday, Nov. 9. The Lady Eagles are scheduled to run at 10:30 a.m., while the Eagles are scheduled to run at 12:45 p.m.

Lady T-Birds

from PAGE 7

40 turnovers with 26 being steals. NMJC was every statistical category except three-point shooting, the Lady T-Birds made three to Phoenix College's five.

NMJC finished with six players scoring in double-digits with starter Daunyel Lair leading with 21 points and seven steals, and Hobbs native Amaya Lewis with 18 points and five steals off the bench. Starters Eliana Cabral had 15 points and four assists, and Zaira Dorsey had 11 points and six rebounds. The second unit had Calinna Pomeroy with 12 points, and Maria Claudia Dos Santos with 10 points and seven rebounds.

The Lady T-Birds controlled the game from the first quarter. They used a full-court and half-court pressure to force the Lady Bears ball handlers to make a pass to the top of the key and into one of the post players. The guards would apply pressure with their forward or center and force the Phoenix College post player to try and win on the dribble, make an errant pass, or take a contested shot. On most possessions the Lady T-Birds came out with a steal for a breakaway or the ball went out of bounds on the turnover.

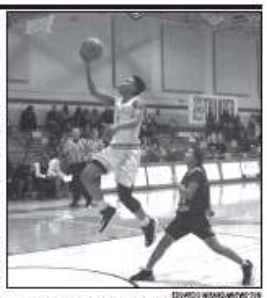
When NMJC did not use the full or half court press, they relied on the on-ball defends of the guards to keep the Lady Bears from developing any offensive rhythm. The aggressive play on defense resulted in 12 steals and 34 fouls in the first half. By the end of the game NMJC had 26 steals and 59 fouls, and control of the pace and game. The speed and defense never allowed the Lady Bears to feel comfortable in Caesar Activity Center.

The Lady T-Birds offense will revolve around their transition game off turnovers, and they showed flashes of what the half court offense can be. When the guards penetrate into the paint, they were able to either get a layup, a foul call, or make a pass to the post player for an easy layup. Lair and Cabral each had four assists in the game, including a no-look pass from Lair to Dorsey that got cheers from the fans.

The only negative was the 3-for-31 shooting from the three-point line for NMJC. Brenda Cossa scored the first prey of the night on the first shot of the game, and Pomeroy made the final love in the fourth quarter. Saunders is concerned by his team's poor shooting as he felt the team took too many ill advised shots early in the possession. He believes his team can shoot better than the 36.7 percent on Friday night.

The Lady T-Birds now face Central Arizona at 6 p.m. in the second night of the Estacado Thunderbird Classic and finish against Tyler College at 3 p.m. Sunday.

"The next two games we play are nationally ranked teams," Saunders said. "Central Arizona is a high as 10th and Tyler was in the national tournament with us last year. For us it's learning to play better possession balls and play under control. Get our legs involved and playing the way we need them to play."



New Mexico Junior College Daunyel Lair scores a layup off a steal against Phoenix College Friday night in Caesar Activity Center. The Lady T-Birds won 106-36 in their opening game in the Estacado Thunderbird Classic.

T-Birds

from PAGE 7

"We have such a long way to go," he said. "I need to kick at the fifth and break down the issues. It's an issue we have been working on, but we are giving up too many straight line drives. Not make no mistake, it will get fixed. I just hope we don't have to learn from a loss."

The Thunderbirds struggled in the half court offense against the Indians. The Thunderbirds were unable to create open shots when McCook was able to get back into its zone defense. The team moved the ball at the top of the key, but could not find a matchup to exploit or run a screen to create a give and go or give and pop play. The offense came from isolation plays and effort. Thunderbird forward Terrance Lewis led the team with a double-double, scoring 13 points and grabbing 14 rebounds. He was a bright spot in the offense as he attacked the boards on both ends and his ability to handle the ball like a guard allowed him to use his quick first step to create a lane for the basket. He ended the Thunderbirds four minutes scoring drought in the second half with a two-handed dunk and brought the fans back into the game with seven minutes left to play.

With Lewis' double-double, the Thunderbirds had five players finish with double digit scoring. Keaton Harvey had 16 points and Joseph Jared had 10 points as the only other starters to reach double digits. Rafael Jenkins and Matt Tracy each had 11 points off the bench. Tracy hit three trays off caught and shoot plays while Jenkins had four steals leading to easy buckets in transition.

"It's a process as well," Adams said on his team's half court offense. "We had a lot of injuries so certain guys have not played and some don't know it because of injuries. Its an area of not understanding what they are suppose to be doing."

He believes the team had more confidence in the half court offense because they are not counting-able in it. He believes after a week's time, the team should be playing better half court offense than what they showed Friday night against McCook. Additionally, Adams was proud to see his guys sit back down and respond well to get the win. He credited the experienced players on stepping up to keep the Indians from making a big run in the second half to tie the game.

The Thunderbirds will face Phoenix College tonight at 6 p.m. and then finish the Estacado Thunderbird Classic going up against Northern Oklahoma at 5 p.m. Sunday.

"A lot better defense, a lot better team defense, and guarding the ball. Offense understanding, flowing, and executing better," Adams said on what he wants to see from his team against Phoenix College tonight.

Eagles

from PAGE 7

to. As Trevino made a spectacular one-handed catch, the senior wide-out fell across the goal line and into the end zone.

"It went to Fresano and actually hit him right in the helmet," Stevens said. "It ricocheted off his helmet and into the air and luckily Trevino was alert and made the catch."

The Cavemen responded with another score, pairing the Eagles in a 13-7 hole. Hobbs had a chance to tie the game, but on the first play of the second half with the Eagles facing a third-and-nine, Lewis' pass was intercepted and returned for a 95-yard touchdown.

"That was an errant pass," Stevens said. "The guy was wide open. For whatever reason, the ball slips or what, I don't know, but it was a little high and a little left and the receiver gets his hand on it barely and it gets picked and taken back."

Hobbs turned the ball over on downs on its next play and Carlsbad scored again, building a 21-7 lead. Carlsbad added another touchdown before halftime, sending the Eagles into the break down 35-7.

"That was a huge pivotal point. It swung momentum their way," Stevens said. "We were matching them score for score and that turnover put them up by two scores and really changed the game."

The Eagles scored on their first drive on the third quarter, going 95 yards on 10 plays. Fresano scored on a 15-yard pass from Lewis, cutting the Eagles' deficit to 10-14.

However Hobbs' defense just couldn't stop Carlsbad through Trailing 43-14, Lewis threw two more interceptions in the fourth quarter. The first was caught in the end zone and the Cavemen turned it into seven points 31 plays later.

Eagles running back Damien Navarro got into the end zone on a two-yard run, for a 47-20 score. The Eagles then recovered the onside kick and things were looking better with 9:41 to play. However, four plays later, Lewis threw another interception, his third of the game, and Carlsbad returned it as well for a 45-yard touchdown return.

On Hobbs' final possession, the Eagles covered 68 yards in five plays leading to a three-yard touchdown pass from Lewis to Trevino with 1:15 left in the game.

Lewis finished the night completing 27 passes for 180 yards, three touchdowns and three interceptions. Trevino caught five passes for 76 yards and two scores while Fresano had 11 catches for 143 yards and a score. Navarro hauled in seven receptions for 127 yards.

"We threw the ball well at times," Stevens said. "We had a couple of unfortunate interceptions that led to touchdowns that gave them points. Offensively, I thought we moved the ball well. I thought we did a lot of good things."

Navarro also scored on his only carry of the game. Jaycani Royal led the team in carries with 12 while piling up 53 yards. Corbin Thompson had two carries on the Eagles final possession for 35 yards.

Hobbs finishes the 2019 season with a 2-8 mark while going 2-4 in district play. Carlsbad improved to 6-4, 3-3 in district

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Holloman AFB Library	596 4th Street, Holloman AFB
Artesia Public Library	205 W Quay Avenue, Artesia NM
Thomas Brendgan Memorial Library	300 E. Picacho Avenue, Las Cruces, NM
Truth or Consequences Public Library	325 Library Lane, Truth or Consequences, NM
Carlsbad Public Library	101 S. Halagueno Street, Carlsbad, NM
Hobbs Public Library	509 North Shipp Street, Hobbs, NM
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Ruidoso Public Library	107 Kansas City Rd., Ruidoso, NM

as the Cavaliers scored again play Lordsburg Hidalgo Library 308 E. 3rd St., Lordsburg, NM

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City/Town	*Date*	*Location*
Hobbs, NM	Monday, November 18	Hilton Garden Inn Hobbs, 4620 Lovington Highway Hobbs, NM 8824
Roswell, NM	Tuesday, November 19	Roswell Convention and Civic Center, 912 N. Main Street, Roswell, NM 88201
Artesia, NM	Wednesday, November 20	Artesia Public Library, 205 West Quay Avenue, Artesia, NM 88210
Carlsbad, NM	Thursday, November 21	New Mexico State University, Gymnasium (Room 103), 1500 University Drive, Carlsbad, NM 88220
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Truth or Consequences, NM	Tuesday December 3	Commission Chambers, 405 W. Third Street, Truth or Consequences, NM 87901
Silver City, NM	Wednesday, December 4	Grant County Chamber of Commerce, 3031 Highway 180 East, Silver City, NM 88061
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ALAMOGORDO NEWS.COM | SATURDAY, NOVEMBER 9, 2019 | 7A

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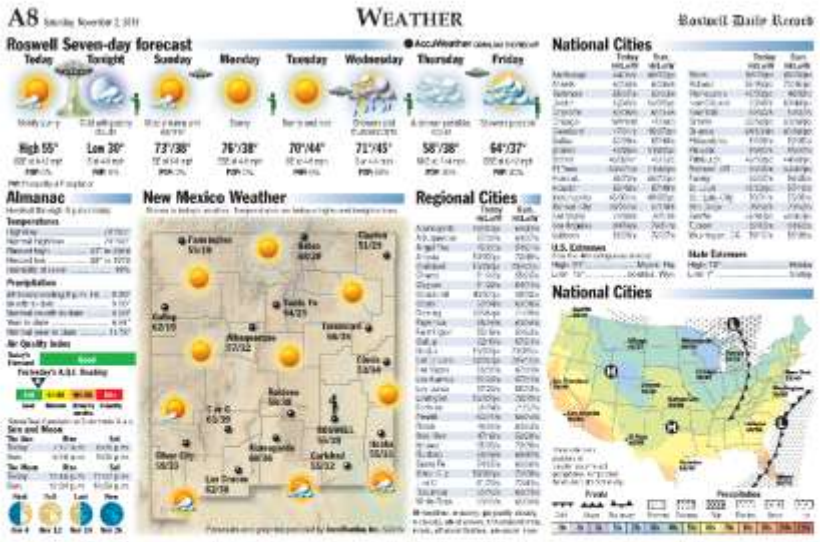

A8 WEATHER Roswell Daily Record

Roswell Seven-day forecast

Today	Tonight	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
High 55°	Low 30°	73°/38°	76°/38°	70°/44°	71°/45°	58°/38°	64°/37°

Almanac

New Mexico Weather

Regional Cities

National Cities

Miranda Lambert is bold, funny and ready to rock again

By Kristin M. Hall
Associated Press

NASHVILLE, Tenn. — Miranda Lambert is back, as told and fun as she ever was, with a new album of rock and roads-influenced country hits that reflect a woman happily cracking jokes on her latest and emerging from a rough chapter of her life and career.

"I kind of have my fire back and I'm not as worried and lonely as I was four years ago," Lambert said of "Wildcard," her seventh album dropping Friday.

This is her first solo record since nailing out the one-third 2010 double album "The Weight of These Wings," a highly personal and extremely acclaimed record that came after her divorce from Blake Shelton and was release of the year at the Academy of Country Music Awards.

"I'm 33. I went through a divorce," Lambert said. "I'm thankful that fans allowed me that time to do that. I'm just going through stuff everybody else goes through."

New Lambert, who surprised many earlier this year by announcing her marriage to New York City police officer Brendan McLaughlin, is returning to the rock 'n' roll sound that she dropped on her 2005 debut "Kerosene" with the help of Nashville producer Jay Joyce. Joyce had played guitar on her first three records, but this was the first time he took the lead as producer for Lambert.

"Writing for this record, I don't know, I felt like the color came back, all the imaging reflects that and the songs reflect that," said Lambert. "Even the word color is a little bit brighter."

Joyce, who has worked with Eric Church, Lil Big Town and Brothers Osborne, pushed her out of her comfort zone on songs like "Locomotive," a Jack Ingram-Terry Hoffdo rocker in which Lambert laments through Xanax and guitars and fireworks.

"Guys like to kind of rail it to a point way too brilliant until I wasn't sure I could pull it off, but we're through, we did," said Lambert.

She also wrote with Luke Dick who has written songs with Dierks Bentley and Kip Moore, and as a side gig, fronts a new wave punk band called Republican Party. Lambert and her longtime songwriting pal Natalie Hemby would go to the Red Nashville house with a couple of booze and snacks for nighttime writing sessions and Dick would rile up different rocker inspirations.

He gripped her a bit of a shirt, new wave rock song called "Mess With My Head" that he initially thought might work for his band.

"I'm a kid of the '80s and I gravitate sometimes toward things that I grew up on, whether it's the Cars or Joan Jett or whatever," Dick said. "I've always thought Miranda was the closest thing to Joan Jett country has."

Lambert's universal will and self-effacing humor come out on songs like "Whiskey Tissues" or "Pretty Broken" — on which Lambert declares, "I'm pretty from the back, kinda pretty in the face."

"My strong suit as a writer I feel like is sarcasm," Lambert said proudly. "Whether it's sad or happy or fun, I've kind of built a career on being kinda sad with a little smile."

She's had to build up that thick skin after years of being mocked by tabloids, whether it was about her marriage and divorce to Shelton, her weight or her subsequent successes. Now she admits it all as free game.

"My game plays with him been with me for 15 years, Scotty [Wray Sexton] ran you broke, and said, 'I had road at the Ryman that you're pregnant. Congrats again.'" Lambert said, who noted that the fan spread about her are almost always about her getting pregnant. "Guys, sometimes I just eat cheeseburgers. That's all it is."

But even as Lambert and other female stars of the genre, including Kacey Musgraves, Carrie Underwood and Ashley Monroe, are putting out the most incisive music of their careers, their music is mostly ignored by country radio, while the airplay charts are churning with dozens of male country artists.

Lambert has been touring out other female artists on her Roadside Ram and Pink Couture tour for years, has her own female role, the Pistol Annies, and created a college scholarship for female artists. But the Grammy winner can't wrap her head around radio's lack of support.

"I'm on the road, you and I see how much it helps when someone knows your new single," Lambert said. "But also I have brought this whole period of 'Weight of These Wings,' and was sang at the year and album of the year and I didn't have anything on the radio at all."

Lambert also continues actually welcomed Underwood for the Country Music Association's highest prize, entertainer of the year. Garth Brooks, Chris Stapleton, Keith Urban and Eric Church will compete with Underwood at the Nov. 13 show.

"I'm a huge fan of everyone in that category," Lambert said. "But if you think about someone who hosted the CMAs pregnant, then started an all-female tour and then had a baby and then went right back on the road three months later ... she has a brutal, brutal schedule underneath and it lifts up women. She does Monday Night Football, it just feel like as a whole constitution of the year should be someone that celebrates in all facets of music."

Lambert, who has seven CMA Awards from other female artist, is nominated for female vocalist of the year, a trophy she has won seven times, and will be performing her new single, "It All Comes Out in the Wash," which Lambert said kind of sums up her new album.

"The whole theme of the record is it all comes out in the wash," Lambert said. "There are really bad times in everybody's journey, but somewhere you're gonna smile again and I think this record reflects that."

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City/Town	Date	Location
Tucumcari, NM	Monday, November 30	Gilliam Conference Room, 1620 Lexington Highway, Tucumcari, NM 88401
Roswell, NM	Tuesday, November 17	Pioneer Conference and Civic Center, 912 N. Main Street, Roswell, NM 88201
Artesia, NM	Wednesday, November 18	Artesia Public Library, 205 West Quay Avenue, Artesia, NM 88210
Carlsbad, NM	Thursday, November 19	Pecos Music Room/Cafeteria, Carlsbad High, 800 West Mermod Drive, Carlsbad, NM 88220
Socorro, NM	Monday, December 7	Happy Lanes, 401 Leroy Place, Socorro, NM 87801
Truth or Consequences, NM	Tuesday, December 8	Commission Chambers, 405 W. Third Street, Truth or Consequences, NM 87901
Silver City, NM	Wednesday, December 9	Grant County Chamber of Commerce, 1103 Highway 180 East, Silver City, NM 88061
Las Cruces, NM	Thursday, December 10	Hacienda by Woodfin, Las Cruces Hotel and Conference Center, Las Cruces, NM 88005

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Artesia Public Library	205 W Quay Avenue, Artesia NM
Bottom Branigan Memorial Library	2810 E. Pinacate Avenue, Las Cruces, NM
Truth or Consequences Public Library	325 Library Lane, Truth or Consequences, NM
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Hobbs Public Library	509 North Shipp Street, Hobbs, NM
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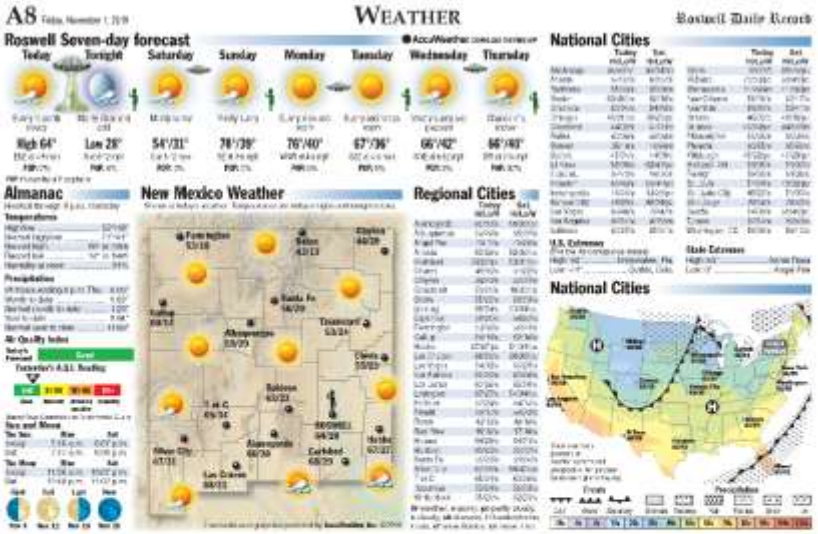

A8 Friday, November 1, 2019 WEATHER Roswell Daily Record

Roswell Seven-day forecast

Today	Tonight	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
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National Cities

Almanac

New Mexico Weather

Regional Cities

National Cities

Cynthia Erivo on becoming Harriet Tubman

By Jake Coyle
AP Film Writer

TORONTO — British actress Cynthia Erivo is extremely small in stature. In person, she is earnest and genial. In performance, the 32-year-old can appear achingly vulnerable. And if you're not paying attention, she will twist you over.

Don't you are she growing will, anyway.

Erivo's inner and outer strength can be stealthy but overwhelming. It was her Tony-winning transformation as Celie in "The Color Purple" on Broadway that first brought her to the attention of American audiences. Ever since, the explosiveness of Erivo's voice — an operatic yet heartrending sequence that ushers with perseverance and grace — has intercausing jaws to reconsider earths.

Now, other glimpses of her on-screen power last year in Steve Buscemi's "But Those at the El Royale" and Steve McQueen's "Widows," Erivo gave her first leading performance in the starred Tubman film, "Harriet." In the charismatic abolitionist she seamlessly integrated were fiery of herself.

"She was a small woman who was extraordinarily complex. She should not have been able to do what she did. She achieved true meaningful and epochal things. Nobody thought she was as strong as she is," says Erivo. "As a 5 foot 1 woman wandering about the Earth in my skin color, people do that a lot. I have a physical ability that people don't see on the outside, but when people do see, it's different."

Kasi Lemmons' "Harriet," which opens in theaters this weekend, is the first feature film centered on the Underground Railroad conductor. It's a role that brings a new spotlight to Erivo, a fast-rising star whose soaring voice and classical poise has already earned her, along with the Tony, a Grammy and an Emmy. At 32, she's already within EGOT striking distance.

Meeting earlier this fall in Toronto shortly before Thanksgiving, Erivo was fully conscious of the moment she finds herself in, but also focused to live fully across it as her own. "Harriet," and her performance, as Tubman, aren't about her," she said. "I was also aware Tubman, she said, said "Cynthia getting out of the way.

"There were definitely days that I knew it wasn't just me," Erivo says. "It felt like she was there."

For many accustomed to the more cautious children's book version of Tubman, "Harriet" is a fresh and authentic portrait of the woman known as the by the "Moses." It focuses on Tubman's initial escape from slavery in Maryland and her subsequent route that led more than 70 people to freedom. It's a strikingly young as and former Tubman, beginning with her relationship to her husband, John Tubman.

"The one thing I wanted to make sure: it was that people got to see her as a woman," says Erivo. "We get to see her in love. We see her lose that love and we see what that does to her from that she has to figure out what next. We see realizes that essentially what happened to she went back for her husband and things went south."

Only recently did a picture of a more youthful Tubman surface, believed to be taken in the 1860s, not the later in-life images that most know her by. The previously, put on display at the Smithsonian's National Museum of African American History and Culture in Washington earlier this year, helped guide the production.

"I look at her fingers. They're long and lean. She's beautiful to it," says Erivo. "And we see her as a different kind of dress. We can be reminded that as a free woman, she dressed like that. She was able to wear fine clothing. And she looked beautiful."

Lemmons, the "Eve's Bayou" filmmaker, used that image as a guide in capturing Tubman's worn, outward and strength. Visually, a lot was riding on Erivo's performance of Tubman, a reluctant casting off her success in "The Color Purple."

"As soon as we started talking cameras and I saw her step into this role, any of my anxiety about her ability to portray Harriet instantly melted away," Lemmons says. "I was completely taken with her dedication and commitment and her talent. I mean, she's a star and everyone is about to know this. She's a real movie star."

Mick, actor Brackbill greeted the film when the first trailer was released. Such a quintessentially American role, some said, should have gone to an African American actress. Erivo, the daughter of Nigerian immigrants to England, was born in London and currently lives in New York. Erivo responded to the criticisms on social media at the time, explaining her passion for the role and the nuances on racial character within cases people on both sides of the Atlantic.

"It frees its own tough," she says. "But I have an understanding of where it comes from. I do really believe it's a case of people being unseen, people feeling like there isn't enough. Three stories. They're not guns and they don't even around as often as they should. Because of that, I exaggerate."

"We do really have to have a conversation about the differences between African Americans and African people," Erivo added. "We have to come together to talk about the similarities that we've gone through. I don't know that there is a deep understanding between us

Erivo started performing at 11 and, after studying at the Royal Academy of Dramatic Art, appeared in numerous West End productions. Around the age of 15, while dancing, she began a regular workout regime that turned Erivo into a muscular dynamo. She sometimes posts videos from the gym, both of her vocalizing and at the bar.

"I'm encouraging others for the dance group and I to say, 'You have to be fit for the dance and not let the dance name you fit.' And I just sort of applied that to everything," says Erivo. "I try to continuously remember we only [illegible] when we come in any."

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Roswell, NM	Tuesday, November 19	Roswell Convention and Civic Center, 912 N. Main Street, Roswell, NM 88201
Artesia, NM	Wednesday, November 20	Artesia Public Library, 205 West Quay Avenue, Artesia, NM 88210
Carlsbad, NM	Thursday, November 21	Pete Silva Civic Pavilion, Jamboree Room, 816, 1500 Riverside Drive, Carlsbad, NM 88220
Socorro, NM	Monday, December 2	Happy Lanes, 401 Leroy Place, Socorro, NM 87801
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RYSA
Roswell Youth Soccer Association

The Roswell Youth Soccer Association will be holding its annual general meeting (AGM) on Saturday, November 9th at Cielo Grande Recreation Area at 2:00 pm.
The purpose of this meeting is to introduce changes to the league's bylaws to be voted upon as well as to elect new board members. The positions that will be up for election are as follows:
Vice President, Registrar, Referee Coordinator, Field Manager, Director of Competitive Soccer, Secretary, At Large Member.
A person is eligible to run in one ballot based on the following qualifications: they are a registered coach, the parent/guardian of a registered player in good standing or a current Director in good standing.
For more information visit roswellsoccer.org or facebook

B12 • November 8, 2019

Classifieds & Legals

Miscellaneous

POR SALE. Acapulco theatre, alfalfa mower and John Deere corn shucker. If interested, please call 575-740-0507 (Manny). 11/8

FOR SALE: Heavy-duty Oak Bedroom Set, includes: Headboard, footboard w/keepsy, dresser w/mirror, chest of drawers w/ shelves. Call 575-894-6599 and leave a message and I will return your call. 11/8

HAIRFLIS IS MAKING our chile and pork tamales. Dozen is $14. Chile relleno as well for $27 a dozen. Please make your order before the 25th of November. Food will be ready for pickup on the 26th of November. To place an order, please call ahead of time to 575-746-4832 or 575-403-0682. Thank you. 11/22

FOR SALE: Electric Dryer- $180. Used Corrugated Roofing, 26' pieces-$80. Call 575-894-0816. 11/15

FOR SALE: 60 Gal. pressure tank-$60. Water softener system & hot, cold hose kinking canopy-$15. 27ft. Class "C" RV Cover-$30. If interested call.. 575-743-0058 11/15

REAL ESTATE LOANS. Credit not a problem. Any type of property. Chris (575) 644-9406. 1/3

FOR SALE: Stamp collection-mixed office, 28" ladies Schwinn bike-$40, RV thule/caddy-$40. DND card table w/ 4 chairs-$25, old pool table light-$750, fiberglass manikin for '77 Stang/Torq-actor & hitch-$80. Call Bob 575-894-6186. 11/15

APPLYING FOR Social Security Disability or Appealing a Denial Claim? Call Bill Gordon & Associ...Social Security Disability Attorneys. 1-800-390-6201 FREE Consultations. Local Attorneys Nationwide | Mail: 2400 N. St. NW, Washington, D.C. Office: Broward Co. FL | *NOW Bar || 11/8

STAY IN your home longer with an American Standard walk-in bath & Receive up to $1,500 off, including a free toilet, and a lifetime warranty on the tub and installation! Call us at 1-855-326-0126 or visit www.walkintubquote.com/nm 11/8

HAVE YOU or your child suffered serious LUPUS IS-SUES from INJUSting or Vaping? Let our attorneys fight for you! Get the justice you deserve! Call 888-406-3127. 11/8

Miscellaneous

BATHROOM RENOVATIONS. Easy, one day updates! We specialize in walk-in tubs, Grab bars, no-slip flooring & seated showers. Call for a free in home consultation 800-518-0292 11/8

STRUGGLING WITH your private student loans payment? New relief programs can reduce your payments. Loans your options. Good credit not necessary. Call the Helpline 855-907-0287. (Mon-Fri 9am-6pm Eastern) 11/8

COMPUTER & IT training programs! Train at home to become a Computer & Help Desk Professional now! Call CTI for details! 877-480-5381 (M-F 8am-6pm ET) 11/8

OVER $90K in debt? Be debt free in 24 to 48 months. No upfront fees to enroll. A+ BBB rated. Call National Debt Relief 855-930-7596. 11/8

AT&T INTERNET. Starting at $40/month w/12-mo agmt. Includes 1 TB of data per month. Don't worry about your high-speed internet thing. Ask us how to bundle and save! Go & svc restrictions apply. Call us today 1-888-779-3265 or visit www.mainstayadvising.com/NM. 11/8

GET DIRECTV! Only $35/month! 155 channels & 1000s of shows/movies on demand! Get select all included packages.) Plus, stream on up to 5 screens simultaneously at no extra cost. Call DIRECTV 1-866-798-6898. 11/8

DISH NETWORK $59.99 for 190 channels. Add high speed internet for only $19.99/month. Best technology. Best value. Smart HD DVR included. Some restrictions apply. Call 1-855-434-4006. 11/8

ANYTIME, ANYWHERE. No lanes to refill. No delivery fees. The all-new Kroger Clear Oil is only 2.89/jug.* FAA approved! Free info kit: 888-870-8006. 11/8

STOP STRUGGLING on the stairs! Give your life a lift with an Acorn Stairlift! Call now for $250 off your stairlift purchase and free DVD & Brochure! 1-866-971-4843. 11/8

ARE YOU behind $10k or more on your taxes? Stop wage & bank levies, liens & audits. Let Red Ivy relieve payroll issues & resolve tax debt fast. Call 844-713-4903. 11/8

GET A SIM: AT&T Wireless Authorized Retailer. Ask how you a Samsung Phone on AT&T Next! Limited time offer. Make For Your Thing. (Thing's well-qualified credit, clients and who's approved. Call Now! 1-866-771-4062 or visit www.mobilewizard.com/NM. 11/8

EARTHLINK HIGH Speed Internet. As Low As $19.95/month (for the first 3 months.) Reliable, High Speed Fiber Optic Technology. Stream Videos, Music, and More! Call EarthLink Today 1-866-693-8003. 11/8

VIASAT SATELLITE Internet. Up to 12 Mbps plans starting at $30/month. Get fastest speeds out to 36 Mbps! & unlimited data plans start at $100/month. Call Viasat today! 1-855-280-8627 11/8

A PLACE for mom has helped over a million families find senior living. Our trusted, local advisors help find solutions to your unique needs at no cost to you. Call 855-645-5766. 11/8

DIRECTV NOW. No Satellite. No Hassle! $40/month. 65 channels. Stream Anywhere. News, Live Events, Sports & On Demand Titles. No Annual Contract. No Commitment. 1-866-719-0967. 11/8

GOT AN older car, van or SUV? Do the humane thing. Donate it to the Humane Society. Call 1-877-929-1711. 11/8

SAVE ON your next prescription! World Health Link. Price match guaranteed. Prescriptions required. CMN certified. Over 1000 medications available. Call today for a free price quote. 1-888-636-7044 ext 4040

DONATE YOUR car, truck or boat to Heritage for the Blind. Free 3-day vacation, tax deduction, free towing, all paperwork taken care of. Call 1-877-513-0103. 11/8

TWO GREAT offers from AT&T Wireless! Ask how to get the Next Generation Samsung Galaxy S10e FREE. FREE iPhone with AT&T's Buy One, Give One. While supplies last! CALL 1-866-777-4062 or www.thecellphonesenow.com/NM 11/8

LEGAL NOTICE

Sierra County Commissioners' Special Meeting Agenda Commission Chambers 855 Van Patten, Truth or Consequences, NM 87901 Tuesday, November 12, 2019

Call to Order 10:00 AM Specific Meeting

Roll Call: James E. Duran-Chairman; Shelly K. Trujillo-Clerk; Travis Day-Vice Chair; Ramon Pino-Member; Elliott K. Hudson-Member

Pledge of Allegiance

New Mexico State Flag Pledge (I salute the flag of the State of New Mexico and the Zia symbol of perfect friendship among united cultures.)

Introduction of Guests

Approval of Agenda

Public Comment: Limited to 3 Minutes

Board of Finance: New Business:

Canvass of Votes

Adjourn.

Next proposed Scheduled Meeting: Tuesday, November 19, 2019, at 10:00 AM. Items for the agenda must be submitted to the Sierra County Administrator Office no later than 10:00 a.m. Wednesday, one (1) week prior to the regular meeting.

If you are an individual with a disability who is in need of a reader, amplifier, qualified sign language interpreter, or any other form of auxiliary aid or service to attend or participate in the hearing or meeting please contact the Sierra County Manager, at 855 Van Patten, Truth or Consequences, New Mexico 87901, phone (575) 894-6215 at least one (1) week prior to the meeting or as soon as possible. Public documents, including the agenda and minutes, can be provided in various accessible formats. Please contact the Sierra County Manager if a summary or other type of accessible format is needed.

Pub.: Nov. 8, 2019

LEGAL NOTICE

Notice of Public Meeting Sierra County Flood and Drainage Control Project Tuesday November 12, 2019 1:30 pm

Albert J. Lyons Center, 2693 South Broadway, T or C, NM

Sierra County in conjunction with Wilson and Company are holding a public meeting to provide information on the Flood and Drainage Control Plan for Sierra County. Community members are invited to participate in the upcoming public meeting to discuss concerns about drainage and flooding issues within Sierra County.

Pub.: Nov. 1 & 8, 2019

LEGAL NOTICE

STATE OF NEW MEXICO COUNTY OF SIERRA IN THE PROBATE COURT SIERRA COUNTY

JUDGE: Honorable Thomas Pestak

No. 2748

IN THE MATTER OF THE ESTATE OF Stanley P. Hayward, DECEASED

NOTICE TO CREDITORS

NOTICE IS HEREBY GIVEN that the undersigned has been appointed personal representative of the estate of the decedent. All persons having claims against the estate of the decedent are required to present their claims within four (4) months after the date of the first publication of any published notice to creditors or sixty (60) days after the date of mailing or other delivery of the notice, whichever is later, or the claims will be forever barred. Claims must be presented either to the undersigned personal representative at the address listed below, or filed with the Probate Court of Sierra County, New Mexico, located at the following address:

108 N. Date St., Suite 9 Truth or Consequences, NM 87901

Dated: Oct. 28, 2019

/s/Margaret E. Kim

2127 Frost Lane

Brookville, OH 44145

216-375-7865

MKim7823@gmail.com

Pub.: Nov. 1, 8 & 15, 2019

LEGAL NOTICE

PUBLIC NOTICE by the Board of Education of the Truth or Consequences Municipal School District

Regular Board Meeting November 14, 2019

Notice is hereby given the Board of Education of the Truth or Consequences Municipal School District No. 2, County of Sierra, State of New Mexico, will hold a Regular Board Meeting at 5:30 PM, on Thursday, November 14, 2019 in the New Board Room at 610 N. Date Street.

Agendas may be requested from the District Office 72 hours before the meeting time. Please contact Jennie at 575-894-6990 or jtarrant@tcsschools.net

Everyone is invited to attend.

Pub.: Nov. 8, 2019

LEGAL NOTICE

U-Store-It Self-Storage 801 N. Highway 51 Truth or Consequences NM 87901 (575) 894-2341

Publication of Notice of Lien Sale

In accordance with the New Mexico Self Storage Lien Act (§§ 71-1), U-Store-It 801 N. Highway 51 Truth or Consequences, NM will sell the contents of the following storage units, to satisfy a storage lien and related charges, by conducting a public disposal sale at 2PM November 2019 @ 10:30 in thereafter.

The contents of the units will be sold to the highest offer. Sale will be conducted at U-Store-It at 801 N. Highway 51 Truth or Consequences, NM87901. U-Store-It Self Storage may withdraw any unit from the sale prior to the time of the sale.

Rodriguez, Corena unit 228, 108 Los Puntos P.O. Box 114, Elephant Butte, NM 87935

Household Goods & Miscellaneous Items

Gonzalez, Nicanor Olivera unit 106, 1362 N. Date St. # 26, Truth or Consequences NM 87901 AKA 618 N Highway 51, Truth or Consequences NM 87901

Household Goods & Miscellaneous Items

Robidoux, Sara Unit 138, 185 Gunnel St. Truth or Consequences, NM 87901

Household Goods & Miscellaneous Items

Bourgeois, Sharon E Unit 318, HCR 31 Box 27 Caballo, NM 87931; Personal Representative of estate: Michelle Griffen 3118 West Street Clifton, AZ 81547 & 306 N. Sheldon Rincon IL 61880

Household Goods & Miscellaneous Items

Pub.: Nov. 1 & 8, 2019

LEGAL NOTICE

STATE OF NEW MEXICO COUNTY OF SIERRA SEVENTH JUDICIAL DISTRICT COURT

IN RE: The Petition for Change of Name of Mary Delia Montoya No. D-721-CV-2019-00113

NOTICE

TAKE NOTICE that in accordance with the provisions of 40-8-1 through 40-8-5, NMSA 1978, Mary Delia Montoya will apply in the Honorable Mercedes C. Murphy, District Judge for the 7th District of the State of New Mexico, at:

7th Judicial District Court for the County of Sierra

311 N. Date Street

Truth or Consequences, Sierra County, New Mexico 87901

on the 26 day of November, 2019, at 9:00 a.m. during a regular term of the Court, or as soon thereafter as the matter may be heard, the matter of The Petition for Change of Name for Delia Mary Montoya, a person over the age of 14, from Mary Delia Montoya to Delia Mary Montoya.

Mary Mena, Clerk of Court

/s/Diana Lucero

Deputy Court Clerk

Submitted by

Delia Montoya

Petitioner, pro se

Pub.: Nov. 8 & 15, 2019

LEGAL NOTICE

The Sierra County Board of Commissioners hereby gives public notice that the County Commission Meeting & Public Hearing for Sierra County Animal Control Ordinance No. 19-06 for November 19, 2019 is to be held at the 855 Van Patten, Truth or Consequences, New Mexico is being moved to the Albert J. Lyons Recreation Center located at 2693 S. Broadway, Truth or Consequences, NM and to begin at 6:00 p.m.

For further information you may contact the Sierra County Administrative Office at (575) 894-4215.

Respectfully,

Sophia Sanchez, Human Resource Admin Director

Pub.: Nov. 8 & 15, 2019

Subscribe To THE SENTINEL!

NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR SPECIAL USE AIRSPACE OPTIMIZATION

The United States Air Force (Air Force) has prepared a Draft Environmental Impact Statement (EIS) to analyze the potential effects of modifications of training airspace. Public input is requested on the accuracy and adequacy of this Draft EIS analysis.

Proposed Action: The Air Force proposes to modify the dimensions and altitudes of training airspace in the vicinity of Holloman Air Force Base (AFB). The modified airspace would support ongoing training missions by accurately depicted at Holloman AFB and improve airspace availability and scheduling flexibility for training activities. The Draft EIS was prepared in accordance with the Federal Aviation Administration, National Park Service, and Bureau of Land Management.

Public Meetings: Public involvement is an essential part of the EIS process and your comments are requested. Public meetings will be held from 4:30 PM to 6:30 PM at the locations identified below. All meetings will start with an open house from 4:30 PM to 6:00 PM, at which time Air Force representatives will be available to answer questions about the proposal. A formal meeting will begin at 6:00 PM with a brief presentation by the Air Force on the Proposed Action and alternatives and the findings presented in the Draft EIS. Following the presentation, the floor will be opened for verbal comments from the public. The Air Force requests that persons with hearing impairments notify them at least 7 days in advance of the meeting, date to ensure that sign language interpreters can be available.

City/Town	Date	Location
Dulce, NM	Monday, November 18	Albert Gordon Jicarilla Public, 3625 Lorenzo Highway, Dulce, NM 87528
Roswell, NM	Tuesday, November 19	Roswell Convention and Civic Center, 912 N. Main Street, Roswell, NM 88201
Artesia, NM	Wednesday, November 20	Artesia Public Library, 205 West Quay Avenue, Artesia, NM 88210
Carlsbad, NM	Thursday, November 21	New Mexico State University, Continuing Education Room 103, 1500 University Drive, Carlsbad, NM 88220
Socorro, NM	Monday, December 2	Library Center, 401 Canty Place, Socorro, NM 87801
Truth or Consequences, NM	Tuesday, December 3	Community Chambers, 405 W. Third Street, Truth or Consequences, NM 87901
Silver City, NM	Wednesday, December 4	Grant County Chamber of Commerce, 1103 Hyatt Dr. 100 Silver City, NM 88061
Las Cruces, NM	Thursday, December 5	Rotunda by Wyndham Las Cruces Hotel and Conference Center, Las Cruces, NM 88005

Public Comments: Comments can be made at the public hearings, by mail, or via the project website. Please send written comments to Holloman AFB Airspace EIS, 1801 Bailie Drive Ste. Suite B, Hampton, VA 23666 or electronically submit comments at www.HollomanAFBairspaceEIS.com. The EIS can be reviewed or downloaded at the project website, copies/ copies of the EIS can be reviewed at the libraries listed below. To ensure full consideration of all comments in preparing the Final EIS, comments should be submitted by December 31, 2019. For more information or requests for sign language assistance at the hearings, contact Robin Dixon at (210) 925-3704.

Holloman AFB Library	746 4th Street, Holloman AFB
Artesia Public Library	205 W. Quay Avenue, Artesia NM
Texas Rangers Memorial Library	300 E. Pecos Avenue, Las Cruces, NM
Truth or Consequences Public Library	325 Library Lane, Truth or Consequences, NM
Carlsbad Public Library	101 N. Halagueño Street, Carlsbad, NM
Hobbs Public Library	509 North Shipp Street, Hobbs, NM
Silver City Public Library	515 N. College Avenue, Silver City, NM
Socorro Public Library	401 Park Street, Socorro, NM
City of Roswell Public Library	301 N Pecos Street, Roswell, NM
Mansfield Memorial Library	128 S. Diamond St., Deming, NM
Hobbes Public Library	107 Barron 114 St. Hobbes, NM
Lordsburg Hidalgo Library	208 E. 7th, Lordsburg, NM

American Legion Donates Supplies

The American Legion Auxiliary Unit 44 completed the delivery of our "Give-42" school supplies to Mariano Christian School and the T-or-C Middle School on Thursday, October 24, 2019. The American Legion Committee also presented the 2019-20 essay contest to both schools. We appreciate your support of our programs. (Courtesy Photos)

Newsletter From House 38

By Rebecca Dow

JUDICIAL OVERREACH HARMS RURAL COMMUNITIES

Last month, a U.S. District Court Judge suspended firewood collection permit sales, timber sales, thinning and prescribed burns in our national forests in New Mexico and Arizona. Suspending woodcutting in the 42-to-end rather national forests put jobs and livelihoods at risk!

This was yet another example of judicial overreach. Most of us are interested in balanced conservation measures that care for our wildlife and the habitat they live in, however, there was nothing balanced about this ruling.

Thanks to the advocacy efforts of many of you, last week the court issued an order approving the recently filed stipulation to modify the ongoing court-ordered injunction, allowing select timber management activities to resume. According to the USDA Forest Service, "activities to restore (including the cutting of the U.S. Capitol Christmas tree, personal Christmas tree cutting, the cutting of personal use forest products such as vigas and latillas, special product collection by tribes for ceremonial purposes, and the cutting of certain hazard trees."

For the 650 people who make their living partnering with the federal government to perform forest management, we will continue advocating for you. The fight is not over!

OUR MOST VULNERABLE CHILDREN DESERVE TO BE A PRIORITY

I had the honor of co-sponsoring House Joint Memorial 30, which directed the New Mexico Children, Youth, and Families Department (CYFD) to create the Child Protective Services Task Force. Since its passage, I have been actively pushing the Department to move forward with the taskforce, identify the systematic failures and develop solutions to fix them immediately.

Earlier this month, CYFD announced the creation of the taskforce and the appointment of its members. The committee will begin its work on November 20 and continue to meet over the next year to develop recommendations to improve the safety and well-being of children and youth in the care of child protective services.

TEACH PLUS SURVEY FOR EDUCA

TORS

Teach Plus is conducting a survey of current New Mexico teachers and wants to hear from you about your perspective related to high quality programming and recommended support, student learning in your classroom.

The Teach Plus survey states "Recent legislative funding increases include $112.2 million dollars for school districts and charter schools that serve a high number of students classified at-risk, [in NM-Title I, eligibility, English Language Learner (), a mobility measure]. Following the Yazzie / Martinez verdict, which ruled, the state did not provide the resources necessary for teachers and students to succeed in certain subgroups.

This is a major opportunity to ensure that extra support are made available to our students in most need. However, one big problem standing in the way: appropriate classrooms and students! Are dollars being used on programming that is deemed effective by educators? As districts decide how funds will be spent and the state progresses monitoring of the spending, we must work to ensure classroom teachers share their perspectives related to effective programming and supports for their students."

If you are an educator please take the time and fill out the survey. If you are not an educator, but know one, please send this survey to them!

FIGHTING TO INCREASE RURAL HEALTH CARE ACCESS

Earlier this year there was an effort to restrict the scope of physician assistants in New Mexico. A constituent contacted me, explained the negative impacts of the proposal, and asked me to hold a town hall to discuss.

I met with the New Mexico Medical Board to explain the critical role that physician assistants serve in increasing access to health care for rural communities across our state. Eventually, the medical board reviewed and did not move forward with the harmful proposal.

This month, I was delighted to learn that The New Mexico Academy of Physicians Assistants was honoring me for my efforts. As a citizen legislator it is always nice when people recognize my efforts, even more so when that effort is received by folks from home, where I'm ultimately working for.

Heroin, Opioid Crisis Help

The Harmonix group recently finished their choir of heroin and opioid drugs has become a national health crisis. Learn to recognize the signs of heroin abuse and get your views and help if they are in risk.

Visit www.zoomerangmobilization.org/page/content/stop-heroin-before-it-starts to learn about the overdose reversing drug known.

Call today for free screenings or referrals at 1-866-433-1754.

LEGAL NOTICE

Sierra County Board of Commissioners hereby gives public notice of a Special meeting to be held on Tuesday, November 12, 2019 at 10:00 am for consideration of the Canvassing of the 2019 Regular Local Election Votes. The meeting will be held in the Sierra County Commission Chambers, 855 Van Patten, Truth or Consequences, NM 87901.

For Additional information contact the County Administration Office at (575) 894-6215.

Publish: Denise Bolton
Executive Assistant
Pub.: Oct. 25 & Nov. 1, 2019

LEGAL NOTICE

City of Elephant Butte Lodger's Tax Board Meeting. Thursday November 7, 2019 at 9:00am at City Hall 105 Wallar St. Elephant Butte, NM 87935.

Pub., Nov. 1, 2019

LEGAL NOTICE

STATE OF NEW MEXICO
COUNTY OF SIERRA
SEVENTH JUDICIAL DISTRICT COURT
No. D-721-CV-2019-00127

IDAHO HOUSING AND FINANCE ASSOCIATION,
Plaintiff,
v.
ANTHONY J. BOMBELA, KRISTAL BAKER, CHESTER I. ANDERSON, BARBARA M. ANDERSON,
Defendants.

NOTICE OF Suit

STATE OF NEW MEXICO to the above-named Defendant Krystal Baker.
GREETINGS

You are hereby notified that the above-named Plaintiff has filed a civil action against you in the above-entitled Court and cause, the general object thereof being to foreclose a mortgage on property located at 2901 Cook St., Truth Or Consequences, New Mexico, said property being more particularly described as:

South 90.00 feet of the North 180.00' of Lots 1 and 2, Block 6, Fremont's Subdivision, an Addition to Hot Springs, in the City of Truth and Consequences, Sierra County, New Mexico.

Unless you file and serve a pleading or motion in response to this complaint in said cause on or before 30 days after the last publication date, judgment by default will be entered against you.

Respectfully Submitted,
WERSTIUK & RILEY P.S.
/s/ Elizabeth V. Fitzsimmons
Fitzsimmons
Elizabeth V. Fitzsimmons
5801 Osuna Road NE, Suite A-103
Albuquerque, New Mexico 87109
Phone: (505) 348-2002
Elizabeth@wer-legal.com
Attorney for Plaintiff
Pub. Oct. 18, 25 &
Nov. 1, 2019

LEGAL NOTICE

City of Elephant Butte Planning and Zoning Board Meeting Tuesday November 5, 2019 at 9am at City Hall 105 Wallar St. Elephant Butte, NM 87935. Notice is hereby given that City Council may have a quorum at this meeting.

Pub., Nov. 1, 2019

LEGAL NOTICE

City of Elephant Butte City Council Meeting Wednesday November 6, 2019 at 5:00pm at City Hall 105 Wallar St. Elephant Butte, NM 87935. Notice is hereby given that P&Z may have a quorum at this meeting.

Pub., Nov. 1, 2019

LEGAL NOTICE

The Truth or Consequences Housing Authority is accepting letters of interest and applications for a Commissioner on the Housing Authority Board of Commissioners to be appointed by the Truth or Consequences City Commission. Interested persons must reside within the Housing Authority's service area of Sierra County and may not be employed by the City of Truth or Consequences. Please contact the Housing Authority at 894-6244 or 108 S. Cedar, Truth or Consequences, NM 87901 for an application.

Pub.: Nov. 1, 2019

LEGAL NOTICE

Public Notice:

Request for information. The County of Sierra is working on the restoration of the Hillsboro Community Center. We are working closely with the NM Historic Preservation Division out of Santa Fe, to insure the building is restored to its natural state. The County is asking the local residents for color photos and construction of the original colors of the windows and doors. Photos of both the exterior and the interior, it would be helpful in the fulfillment of the project. Should anyone in the community be able to assist in the project with this information, please send via email to Jocelyn Holguin 855 Van Patten Dr C, NM 87901. All materials will be returned, per request of the person submitting, as long as a return address and contact information is provided. Please make available to the Sierra County Procurement Office no later than November 12, 2019. Should you have any questions please call 575 894-6215. Thank you.

Pub.: Nov. 1, 2019

Call To New Mexico Artists

By Jack LaSage

The Management of Memorial Medical Center (MMC) in Las Cruces is creating works of art for the Administration Building, the MMC Cancer Center on Telshor Ave. and the MMC Rio Rancho Pavilion and Women's Imaging Center on North Rio.

This is the beginning of a campus wide exhibit of art for the patients, nurses, staff and the public. It is our hope to enhance the architecture, sense of community and creative environment in Memorial Medical Center in Las Cruces, and eventually will be expanded to other MMC facilities in other cities in New Mexico. It is also our hope to create interest in building a Memorial Medical Center Permanent Art Collection.

1. Artist Eligible Resident Artists of New Mexico

2. Beginning date: 1 - Ongoing Invitation for Art

3. Artwork Mediums: oil, watercolor, acrylic, pen, collages, ceramic, mixed media, Sculpture - indoor and out, mobiles, pottery, fabric, weaving, quilting, stained glass, collage, and various other mediums.

4. Styles: Realism, Impressionism, Contemporary, Abstract.

5. Themes: Open theme but hospital appropriate - Scenes, people, animals, contemplative, colorful, positive, uplifting, warm, friendly, comforting, humorous, etc.

6. Size Minimum 16x20 inches/Be Maximum is unary of the cross sections widely very large (poster) Art may be moved to various locations from time to time.

7. Art Prep: All art should be presented in a professional manner, ready to hang, pictures were attached to the frame with D-rings, if needed exactly, wire-catches from the top of the artwork. All pieces will be hung with art-cloth hanging system by MMC. Consider UV plexiglass for watercolors and sprayed paintings for sun protection. This would be the artist's decision.

8. Process for Exhibiting: Submit 3-4 jpgs of completed works to be considered by an eight-member selection committee for hanging.

Information for each piece: Title, Medium, Size with Frame, Price, Artist Name, Email, Phone and a one-line bio entry information. Brief Biography And Personal Pic [PS]

9. Email or Jackie Jones, Hospitality Administrations Jenks.Jones@HCA FNTrust, and to Cynthia de Lorenzi of UAA: Cynthia.deLorenzi@gmail.com.

10. Town: Memorial Medical Center will jointly administer artist of consolidated team of the facilities to organize, Executive of the Interior and color/art spaces available.

11. Work Selected:

A. Artist will be notified as to which of their original works to bring in to a committee. Date and date to the Administration Building on the Memorial Medical Center campus on Telshor Dr.

B. At the time the art is delivered, artist will be asked to sign a liability waiver, dismissing Memorial Medical Center of any liability for theft or other problems and acquiescence that there will be no Medical Center commissions on art, as it is however, none are direct through the artist and a donation from art sold would be appreciated to the Memorial Medical Center (title fund) for future art purchases.

NOTE: The Medical Center is creating an independent artist for the art committee to choose art for specific areas in the Memorial Medical Center Complex. If you have nothing to submit at this time, you can send jpgs of your art and my title by following the above procedure. This project is ongoing.

For more information contact Cynthia de Lorenzi at Cynthia.deLorenzi@gmail.com or Jack LaSage at jacmg1@gmail.com

NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR SPECIAL USE AIRSPACE OPTIMIZATION

The United States Air Force (Air Force) has prepared a Draft Environmental Impact Statement (EIS) to analyze the potential effects for modification of training airspace. Public input is requested on the accuracy and adequacy of the Draft EIS analysis.

Proposed Action: The Air Force proposes to modify the dimensions and altitudes of training airspace in the vicinity of Holloman Air Force Base (AFB). The modified airspace would support required training resources for aircrews stationed at Holloman AFB and improve airspace availability and scheduling flexibility for training activities. The Draft EIS was prepared in cooperation with the Federal Aviation Administration, National Park Service, and Bureau of Land Management.

Public Hearings: Public involvement is an essential part of the EIS process and your comments are requested. Public hearings will be held from 5:30 PM to 8:30 PM at the locations identified below. All meetings will start with an open house from 5:30 PM to 6:00 PM, at which time Air Force representatives will be available to answer questions about the proposal. A formal hearing will begin at 6:00 PM with a brief presentation by the Air Force on the Proposed Action and alternatives and the findings provided in the Draft EIS. Following the presentation, the floor will be opened for verbal comments from the public. The Air Force requests that persons with hearing impairments notify them at least 7 days in advance of the meeting dates to ensure that sign language assistance can be available.

City/Town	Date	Location
Hobbs, NM	Monday, November 18	Hilton Garden Inn Hobbs, at 201 Lovington Highway Hobbs, NM 88240
Roswell, NM	Tuesday, November 19	Roswell Convention and Civic Center, 912 N. Main Street, Roswell, NM 88201
Artesia, NM	Wednesday, November 20	Artesia Public Library, 205 West Quay Avenue, Artesia, NM 88210
Carlsbad, NM	Thursday, November 21	New Mexico State University, Continuation (Room 300), 1500 University Drive, Carlsbad, NM 88220
Socorro, NM	Monday, December 2	Macey Center, 101 Leroy Place, Socorro, NM 87801
Truth or Consequences, NM	Tuesday, December 3	Commission Chambers, 505 N. Date Street (side of Courthouse), Truth or Consequences, NM 87901
Silver City, NM	Wednesday, December 4	Grant County Chamber of Commerce, 3031 Highway 180 East, Silver City, NM 88061
Las Cruces, NM	Thursday, December 5	Ramada by Wyndham Las Cruces Hotel and Conference Center, Las Cruces, NM 88005

Public Comments: Comments can be made at the public hearings, by mail, or via the project website. Please mail written comments to Holloman AFB Airspace EIS, 49th Civil Engineer Squadron, 1 Washington Circle, Suite 11, Hampton, VA 23666 or electronically submit comments at www.HollomanAFBAirspaceEIS.com. The EIS can be reviewed or downloaded on the project website; paper copies of the EIS can be reviewed at the libraries listed below. To ensure full consideration of all comments in preparing the Final EIS, comments should be submitted by December 16, 2019. For more information or requests for sign language assistance at the hearings, contact Rebeca Dreier at (210) 925-2730.

Holloman AFB Library	306 4th Street, Holloman AFB
Artesia Public Library	205 W. Quay Avenue, Artesia NM
Thomas Branigan Memorial Library	200 E. Picacho Avenue, Las Cruces, NM
Truth or Consequences Public Library	325 Library Lane, Truth or Consequences, NM
Carlsbad Public Library	101 S. Halagueno Street, Carlsbad, NM
Hobbs Public Library	509 North Ginger Street, Hobbs, NM
Silver City Public Library	515 W College Avenue, Silver City, NM
Socorro Public Library	401 Park Street, Socorro, NM
City of Roswell Public Library	301 N Pennsylvania Avenue, Roswell, NM
Mescalero Memorial Library	148 E. Deerwood St, Tularosa, NM
Ruidoso Public Library	107 Kansas City Rd., Ruidoso, NM
Lordsburg-Hidalgo Library	208 E. 3rd St., Lordsburg, NM

16 SILVER CITY DAILY PRESS and Independent—Friday, Nov. 1, 2019

Overdose prevention improving in state

The New Mexico Department of Health's latest New Mexico Drug Overdose Prevention Quarterly Measures Report shows year-to-year improvement in key indicators related to drug overdose prevention in the second quarter of 2019 compared to the same time period the year before.

Highlights include:

• The number of patients at higher risk of overdose death has declined by 13 to 20 percent between the second quarter of 2018 and the second quarter of 2019.

• Patients potentially beginning chronic opioid use (such as new opioid patients with 30 days or more of supply in the quarter) has declined by almost 25 percent (from 3,403 to 2,563).

This reduction in patients potentially starting to take prescribed opioids chronically will help reduce the drug overdose problem in future years, according to a news release.

"The three main strategies used by the Department of Health in combating the prescription drug overdose epidemic — improved prescribing, increased treatment availability, and provision of naloxone — are showing substantial positive results along with the efforts of other agencies," said Department of Health Secretary Kathy Kunkel.

The report also reveals the number of practitioners authorized to provide medication-assisted treatment with buprenorphine (which helps treat opioid use disorder) increased by 25 percent, and the number of those practitioners with at least 10 treatment patients increased by 26 precent, the release stated.

There was also an increase of 27 percent of the number of active clients of methadone-based opioid treatment programs, leading to over 13,000 people in opioid use disorder treatment, according to the release. Methadone is used to treat opioid use disorder.

State government programs operated by the Department of Health and the New Mexico Human Services Department distributed more than 15,000 doses of naloxone, a drug used to reverse an opioid overdose, in the second quarter of 2019. This was an increase of 84 percent over the same quarter in 2018, according to the release.

The number of pharmacy prescriptions for naloxone paid for by Medicaid increased by 118 percent, more than double the number in 2018, the release stated.

Freeport...

From Page 1

The company continued to invest heavily in expanding its mining interests in North America and Indonesia, while the cost of producing metals also continued an upward trend. The company said it still expects to meet its 2019 goals for overall production by the end of the fourth quarter.

While the company's operating capital and cash on hand continued to shrink, Freeport also stayed on track with reducing its total debt, which has steadily dropped from amounts in the tens of billions of dollars in the years before it began divesting itself of its oil and gas interests in 2016. Freeport reported its total consolidated debt in the third quarter at $9.9 billion.

Share prices for the company this year have been recorded as a net loss since the second quarter, having started out 2019 barely in the black at 5 cents per share, and ending the third quarter with a 9-cent-per-share loss.

Freeport's capital expenditures have also increased in the third quarter. Last year's third quarter capital expenditures were about $500 million, while this year's third quarter the company has spent $700 million.

As it has all year, the company assured shareholders that the heavy internal investment and high production costs would pay off when infrastructure development projects are completed in the coming years.

Freeport President and CEO Richard Adkerson addressed "three major initiatives" that have picked up momentum, according to the report. One of those is the work being done at a major mine located in Indonesia, where mining activity is moving underground.

"We are effectively executing our plans to establish large scale production from our significant high-grade, low-cost and long-lived underground ore bodies at Grasberg," he said in the report.

PT Freeport Indonesia "continues to mine the final stages of the Grasberg open pit and currently expects to complete mining in the open pit in fourth quarter 2019, subject to geotechnical conditions," the report states.

Adkerson also talked about the Lone Star project in Arizona. Leachable ores from that project are planned to average around 200 million pounds of copper per year, and the mine is expected to begin production by the end of next year.

In comparison, as of Sept. 30, Chino had produced 129 million recoverable copper pounds, while Tyrone produced 37 million recoverable copper pounds, according to the third-quarter report, and confirmed by Hayes. By the third quarter of 2018, Chino had produced 126 million recoverable copper pounds, while Tyrone produced 41 million recoverable pounds.

The final initiative, according to Adkerson, is to "progress [Freeport's] innovation initiatives to enhance productivity and grow our Americas operations with low capital intensity."

These three "initiatives are expected to significantly enhance [Freeport's] cost position, cash flow and the long-term value of our premier copper portfolio, providing opportunities for increased returns to shareholders," Adkerson said in the report. "We are pleased with our progress to date and remain focused on successful execution of our plans, which would enable us to increase copper."

"Freeport-McMoRan's New Mexico operations contributed $177 million in direct and indirect benefits to Grant County, and $409.6 million to the state of New Mexico," Hayes wrote in an email to the Daily Press. "Cobre [Mine] has been fully incorporated into Chino operations and continues to be a key part of Chino's ongoing mine plan."

In consolidated sales volume, Freeport's third quarter of 2019 saw copper sales of 795 million pounds, which is 4 percent lower than the 830 million pounds of copper sold in the second quarter. The main reason for the drop was a drop in Cerro Verde's mine production and the timing of shipments, "partly offset by higher production and sales from North America." Copper sales in the third quarter of 2018 were 1.04 billion pounds.

This year's third-quarter gold sales of 243,000 ounces were 6 percent higher than July's 230,000 ounces of gold. Last year's third-quarter gold sales were reported at 837,000 ounces. Molybdenum sales of 22 million pounds for this third quarter declined, compared to July's 25 million pounds. Last year's third-quarter molybdenum sales were the same, at 22 million pounds.

In the third quarter, North American copper sales volumes increased from 2018's 350 million pounds to this year's 395 million pounds. The report states that the increase is because of "higher leach production and higher mining and milling rates."

C.P. Thompson may be reached at cpt@scdailypress.com.

Daily Data

The Gilawriters Expressive Writing Group meets from 1-3 p.m. Tuesdays at the Murray Ryan Visitor Center, 201 N. Hudson St. in Silver City. The group welcomes writers of all levels to participate, according to a news release. All writing is done during the session. There is no charge. For more information, contact Trish Heck at trish.heck@gmail.com or call 534-0207. The event is endorsed by the Southwest Festival of the Written Word at www.swwordfest.org.

NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR
SPECIAL USE AIRSPACE OPTIMIZATION

The United States Air Force (Air Force) has prepared a Draft Environmental Impact Statement (EIS) to analyze the potential effects for modification of training airspace. Public input is requested on the accuracy and adequacy of the Draft EIS analysis.

Proposed Action: The Air Force proposes to modify the dimensions and altitudes of training airspace in the vicinity of Holloman Air Force Base (AFB). The modified airspace would support required training missions for aircrews stationed at Holloman AFB and improve airspace availability and scheduling flexibility for training activities. The Draft EIS was prepared in cooperation with the Federal Aviation Administration, National Park Service, and Bureau of Land Management.

Public Hearings: Public involvement is an essential part of the EIS process and your comments are requested. Public hearings will be held from 5:30 PM to 8:30 PM at the locations identified below. All meetings will start with an open house from 5:30 PM to 6:00 PM, at which time Air Force representatives will be available to answer questions about the proposal. A formal hearing will begin at 6:00 PM with a brief presentation by the Air Force on the Proposed Action and alternatives and the findings provided in the Draft EIS. Following the presentation, the floor will be opened for verbal comments from the public. The Air Force requests that persons with hearing impairments notify them at least 7 days in advance of the meeting dates to ensure that sign language assistance can be available.

City/Town	Date	Location
Hobbs, NM	Monday, November 18	Hilton Garden Inn Hobbs, 4518 Lovington Highway Hobbs, NM 88240
Roswell, NM	Tuesday, November 19	Roswell Convention and Civic Center, 912 N. Main Street, Roswell, NM 88201
Artesia, NM	Wednesday, November 20	Artesia Public Library, 205 West Quay Avenue, Artesia, NM 88210
Carlsbad, NM	Thursday, November 21	New Mexico State University, Gymnasium (Room 103), 1506 University Drive, Carlsbad, NM 88220
Socorro, NM	Monday, December 2	Manzy Center, 801 Leroy Place, Socorro, NM 87801
Truth or Consequences, NM	Tuesday, December 3	Commission Chambers, 405 W. Third Street, Truth or Consequences, NM 87901
Silver City, NM	Wednesday, December 4	Grant County Chamber of Commerce, 8481 Highway 180 East, Silver City, NM 88061
Las Cruces, NM	Thursday, December 5	Ramada by Wyndham Las Cruces Hotel and Conference Center, Las Cruces, NM 88005

Public Comments: Comments can be made at the public hearings, by mail, or via the project website. Please mail written comments to Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA 23666 or electronically submit comments at www.HollomanAFBAirspaceEIS.com. The EIS can be reviewed or downloaded on the project website; paper copies of the EIS can be reviewed at the libraries listed below. To ensure full consideration of all comments in preparing the Final EIS, comments should be submitted by December 16, 2019. For more information or requests for sign language assistance at the hearings, contact Robin Divine at (210) 925-2730.

Holloman AFB Library	390 4th Street, Holloman AFB
Artesia Public Library	205 W. Quay Avenue, Artesia NM
Thomas Branigan Memorial Library	200 E. Picacho Avenue, Las Cruces, NM
Truth or Consequences Public Library	325 Library Lane, Truth or Consequences, NM
Carlsbad Public Library	101 S. Halagueno Street, Carlsbad, NM
Hobbs Public Library	509 North Shipp Street, Hobbs, NM
Silver City Public Library	515 W. College Avenue, Silver City, NM
Socorro Public Library	401 Park Street, Socorro, NM
City of Roswell Public Library	301 N Pennsylvania Avenue, Roswell, NM
Marshall Memorial Library	110 S. Diamond St., Deming, NM
Raidoso Public Library	107 Kansas City Rd., Raidoso, NM
Lordsburg Hidalgo Library	208 E. 3rd St., Lordsburg, NM

Hometown Homesteading by Kathryn Sanderson

As summer garden dies, winter plants thrive

I am pleased to report that I don't have a lot to report.

Most weeks, there is a lot of activity around here. There is always stuff that needs to be done. Our project list is never completed, and there is always a chore list. The day is never long enough, and that is becoming increasingly the case.

This week brought with it temperatures cold enough to kill off our remaining summer garden. But life amazes me — there is a portion of my garden that thrives in this weather.

Out of curiosity and my love for experimenting, I simultaneously planted similar seeds in my outdoor garden and in my greenhouse several weeks ago. The cold-weather crops I started in the outdoor garden have taken off, whereas the greenhouse crops are reluctantly growing. Even with our cooler weather, it is warm enough during the day that the greenhouses get up in temperature. We added vents to our homemade greenhouse recently; it's still pretty hot in there. It's going to be fun to play in there this summer.

Aside from in our garden, nothing died this week. It will be a while before our livestock guardian dogs are big enough, old enough or wise enough to actually protect. They are LGDs in training. But just their presence on our homestead gives me peace and brings me joy. We have dogs.

I've had dogs my whole life. I would not have labeled myself as a dog person until now. I am head over heels in love with these two boys. They are smart. They are mellow. They have totally bonded with me back. We are a team.

Because I am a glutton for punishment, and possibly borderline crazy, I brought home a feral kitten this week. I am definitely a cat person. We intentionally added cats to our homestead last year. Owls and/or other predators have killed a couple. We expected that.

When I spotted Vickie from animal control carrying a live trap with a kitten inside this week, I could not control myself. The kitten is totally feral, and I appreciate a challenge. In the last couple of days, the kitten has gone from completely terrified to purring as I hold it. We are still establishing our relationship, and it will be a process to break it, but I am grateful that it has joined our homestead family.

Since adding cats to our system, our vermin situation has improved exponentially. Cats are certainly a tool that has been beneficial to our system. Since adding them, we have not had any pack rat damage or evidence, which has been really nice. There is nothing fun about pack rat nests in a vehicle.

Cats have been a blessing. I'm already excited about adding feral bedroom kitty to our yard. First, I need to convince this kitten that we are friends.

As I walk around my yard each day and observe my homestead, I feel incredibly blessed. I never had any grand plans for creating this. When I brought home a single rabbit six years ago, all I knew was that I wanted to feel good about and needed to connect with our food supply. I had no idea what was coming, and I look forward to what is yet to come.

Kathryn Sanderson is a Grant County native whose column is published each Saturday. She and her husband operate a small business, raise their family and attempt to raise their own food, going back to basics one small step at a time.

PUPPY WITH GOATS

THE OFFICE OF THE GRANT COUNTY CLERK
WILL BE **CLOSED** ON ELECTION DAY

Tuesday
November 5, 2019

FOR REGULAR BUSINESS

THE OFFICE WILL BE OPEN TO CONDUCT
THE REGULAR LOCAL ELECTION AND TO
ASSIST THE VOTERS OF GRANT COUNTY

WE WILL RESUME
REGULAR BUSINESS HOURS ON
WEDNESDAY, NOVEMBER 6, 2019

THANK YOU,

Marisa Castrillo

Grant County Clerk

NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR
SPECIAL USE AIRSPACE OPTIMIZATION

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Carlsbad, NM	Thursday, November 21	New Mexico State University, Gymnasium (Room 180), 1500 University Drive, Carlsbad, NM 88220
Socorro, NM	Monday, December 2	Macey Center, 801 Leroy Place, Socorro, NM 87801
Truth or Consequences, NM	Tuesday, December 3	Commission Chambers, 405 W. Third Street, Truth or Consequences, NM 87901
Silver City, NM	Wednesday, December 4	Grant County Chamber of Commerce, 3031 Highway 180 East, Silver City, NM 88041
Las Cruces, NM	Thursday, December 5	Ramada by Wyndham Las Cruces Hotel and Conference Center, Las Cruces, NM 88005

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Holloman AFB Library	590 4th Street, Holloman AFB
Artesia Public Library	205 W Quay Avenue, Artesia NM
Thomas Branigan Memorial Library	200 E. Picacho Avenue, Las Cruces, NM
Truth or Consequences Public Library	325 Library Lane, Truth or Consequences, NM
Carlsbad Public Library	101 S. Halagueno Street, Carlsbad, NM
Hobbs Public Library	509 North Shipp Street, Hobbs, NM
Silver City Public Library	515 W College Avenue, Silver City, NM
Socorro Public Library	401 Park Street, Socorro, NM
City of Roswell Public Library	301 E Pennsylvania Avenue, Roswell, NM
Marshall Memorial Library	138 S. Diamond St., Deming, NM
Rainbow Public Library	107 Kansas City Rd., Fabens, TX
Lordsburg Hidalgo Library	208 E. 3rd St., Lordsburg, NM

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APPENDIX B
INTERAGENCY COORDINATION

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B.1 Scoping Coordination Letters

Table B.1-1. Elected Officials

Organization	Point of Contact
Elected Officials – Members of Congress	
Arizona Senator	John McCain
Arizona Senator	Jeff Flake
New Mexico Senator	Martin Heinrich
New Mexico Senator	Tom Udall
115th U.S. House, Arizona District 1	Tom O'Halleran
115th U.S. House, Arizona District 2	Martha McSally
115th U.S. House, New Mexico District 1	Michelle Lujan Grisham
115th U.S. House, New Mexico District 2	Steve Pearce
Elected Officials - State	
Governor of Arizona	Doug Ducey
Governor of New Mexico	Susana Martinez
Arizona House District 14	Becky Nutt
Arizona House District 14	Drew John
Arizona Senate District 14	Gail Griffin
New Mexico House District 32	Candie Sweetser
New Mexico House District 38	Rebecca Dow
New Mexico House District 49	Gail Armstrong
New Mexico House District 54	James Townsend
New Mexico House District 66	Bob Wooley
New Mexico Senate District 28	Howie Morales
New Mexico Senate District 34	Ron Griggs
New Mexico Senate District 35	John Arthur Smith
Elected Officials - County	
Graham County Manager	Terry Cooper
Graham County Board of Supervisors	Danny Smith
Greenlee County Administrator	Deborah Kay Gale
Greenlee County Board of Supervisors	David Gomez
Catron County Manager	Kate Fletcher
Catron County Commissioners	Glyn Griffin
Chaves County Manager	Stanton Riggs
Chaves County Commissioners	Robert Corn
Eddy County Manager	Rick Rudometkin
Eddy County Commissioners	Stella Davis
Grant County Manager	Charlene Webb
Grant County Commissioners	Brett Kasten
Hidalgo County Manager	Tisha Green
Hidalgo County Commissioners	Marianne Stewart
Otero County Manager	Pamela Heltner
Otero County Commissioners	Susan Flores
Sierra County Manager	Bruce Swingle
Sierra County Commissioners	Kenneth Lyon
Socorro County Commissioners	Delilah Walsh
Socorro County Commissioners	Pauline Jaramillo
Elected Officials - City	
Mayor, City of Carlsbad	Dale Janway
Mayor, City of Truth or Consequences	Steve Green
Mayor, Las Cruces	Ken Miyagishima

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

Colonel Houston R. Cantwell
Commander, 49th Wing
490 First Street
Holloman AFB NM 88330-8277

State of Arizona
Governor Doug Ducey
1700 W Washington St
Phoenix, AZ 85007

Dear Governor Ducey:

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, and its implementing regulations, the United States Air Force (Air Force) is preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental impacts of optimizing the special use airspace available for pilot training at Holloman Air Force Base (AFB), New Mexico. Some of the training airspaces used by aircraft assigned to Holloman AFB were developed for legacy aircraft more than 30 years ago. This airspace does not have the optimum volume, proximity, times or attributes to support pilot training missions at Holloman AFB. The Proposed Action would increase training efficiencies and provide more scheduling flexibility by reconfiguring and expanding existing airspace or creating new airspace (see attachment).

The Air Force published a Notice of Intent to prepare an EIS in the Federal Register on August 24, 2017, initiating the public involvement process. Open-house style public meetings will be held at the locations, dates, and times listed below. No formal presentation will be given. Please attend at your convenience.

Tuesday September 12, 2017 6:00 PM to 8:00 PM Carlsbad Public Library 101 S. Halagueno Street Carlsbad, NM 88220	Wednesday, September 13, 2017 6:00 PM to 8:00 PM Truth or Consequences Civic Center Ralph Edwards Auditorium 400 W. 4th Avenue Truth or Consequences, NM 87901	Thursday, September 14, 2017 6:00 PM to 8:00 PM Hilton Garden Inn 2550 S Don Roser Drive Las Cruces, NM 88011

We request your participation and solicit your comments on the Proposed Action. Though comments will be accepted throughout the EIS process, please provide your comments no later than September 25, 2017 to ensure consideration in the Draft EIS. Comments may be submitted at any of the public meetings; on the project website, www.HollomanAFBAirspaceEIS.com; or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA 23666.

Sincerely,

HOUSTON R. CANTWELL, Colonel, USAF
Commander

1 Attachment: Project Area Map

COMBAT AIRPOWER STARTS HERE

SAMPLE

Attachment 1

Project Area Map

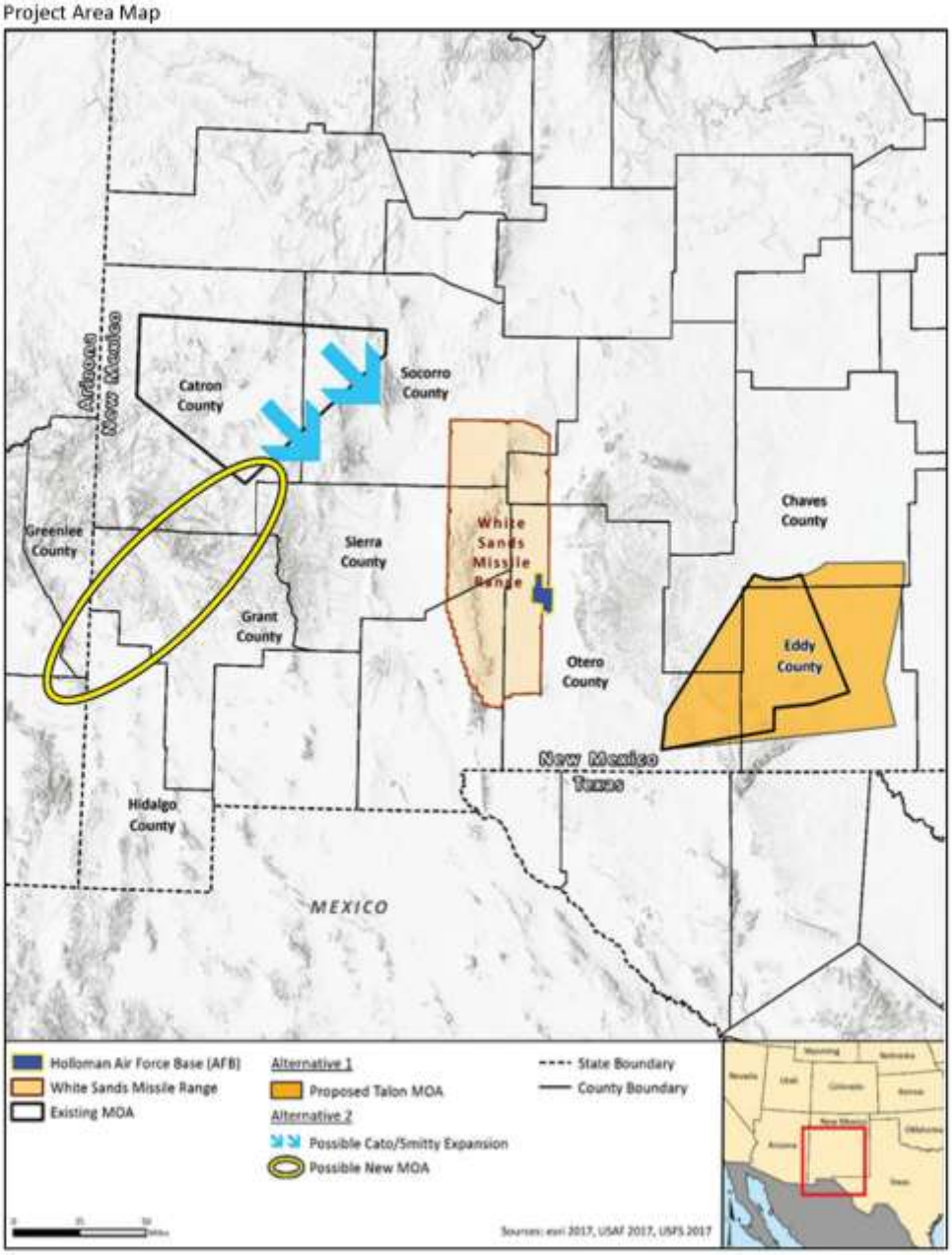


Table B.1-2. Federal, State, and Local Agencies, Other Stakeholders

Organization	Point of Contact
Federal, State, and Local Agencies	
The Adjutant General, Arizona	Michael McGuire
The Adjutant General, New Mexico	Andrew Salas
New Mexico State Office of Military Base Planning and Support	Eric Kivi
Environmental Protection Agency, Region 6	Ron Curry
Environmental Protection Agency, Region 9	Alexis Strauss
Apache-Sitgreaves National Forest	Steve Best
Cibola National Forest	Elaine Kohrman
Gila National Forest	Adam Mendonca
Gila National Forest	Black Range Ranger District
Gila National Forest	Silver City Ranger District
Lincoln National Forest	Travis Moseley
Lincoln National Forest	Guadalupe District
Carlsbad Caverns National Park	Headquarters
Bureau of Reclamation	Albuquerque Office
Bureau of Reclamation, Lake Avalon Dam	Jennifer Faler
Bureau of Reclamation, Lower Colorado Region	Terry Fulp
Bureau of Land Management, State Office	Amy Lueders
Bureau of Land Management, Las Cruces District	Bill Childress
Bureau of Land Management, Pecos District	Jim Stovall
Bureau of Land Management, Roswell Field Office	Chuck Schmidt
Bureau of Land Management, Carlsbad Field Office	Kari Vasenden
Bureau of Land Management, Socorro Field Office	Mark Matthews
New Mexico Environment Department	Office of the Secretary
Arizona Department of Environmental Quality	Misael Cabrera
Arizona Game and Fish	Larry Voyles
New Mexico State Parks	Energy, Minerals, and Natural Resources Department
Brantley Lake State Park	Leila Haver
Living Desert Zoo and Gardens	David Heckard
Elephant Butte Lake State Park	Kay Dunlap
Caballo Lake State Park	Saul Baquera
Other Stakeholders	
National Business Aviation Association	Heidi Williams
Airlines for America	Headquarters
Aircraft Owners and Pilots Association	Rune Duke
Alamogordo White Sands Regional Airport	Jim Talbert
Albuquerque International Sunport	Jim Hinde
Artesia Municipal Airport	Lance Goodrich
Beaverhead Airstrip	Robert Madell
Cavern City Air Terminal	Sherri Chandler
Deming Municipal Airport	Wes Hooper
Glenwood-Catron County Airport	Kate Fletcher
Grant County Airport	Justin Reese
Greenlee County Airport	Phil Ronnerud
Jewett Mesa Airport	Robert Madill
Magdalena Airport	Ambers Guin
Reserve Airport	Glyn Griffin
Roswell International Air Center Airport	Jennifer Brady
Sierra Blanca Regional Airport	David Pearce
Socorro Municipal Airport	Jay Santillanes

Organization	Point of Contact
Truth or Consequences Municipal Airport	Bill Slettom
Whiskey Creek Airport	Brandon Crisp

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

MEMORANDUM FOR DISTRIBUTION

FROM: 49 WG/CC
490 First Street, Stuie 1700
Holloman AFB NM 88330-8277

SUBJECT: Environmental Impact Statement (EIS) for Special Use Airspace Optimization, Holloman Air Force Base (AFB), New Mexico

1. The United States Air Force (Air Force) is preparing an EIS to evaluate the potential environmental impacts of optimizing the special use airspace available for pilot training at Holloman AFB, New Mexico. Some of the training airspaces used by aircraft assigned to Holloman AFB were developed for legacy aircraft more than 30 years ago. This airspace does not have the optimum volume, proximity, times or attributes to support pilot training missions at Holloman AFB. The Proposed Action would increase training efficiencies and provide more scheduling flexibility by reconfiguring and expanding existing airspace or creating new airspace (see attachment).

2. The environmental analysis for the Proposed Action is being conducted by the Air Force Civil Engineer Center in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended. The Air Force published a Notice of Intent to prepare an EIS in the Federal Register on August 24, 2017, initiating the public involvement process. Open-house style public meetings will be held at the locations, dates, and times listed below. No formal presentation will be given. Please attend at your convenience.

Tuesday, September 12, 2017 6:00 PM to 8:00 PM Carlsbad Public Library 101 S. Halagueno Street Carlsbad, NM 88220	Wednesday, September 13, 2017 6:00 PM to 8:00 PM Truth or Consequences Civic Center Ralph Edwards Auditorium 400 W. 4th Avenue Truth or Consequences, NM 87901	Thursday, September 14, 2017 6:00 PM to 8:00 PM Hilton Garden Inn 2550 S. Don Roser Dr. Las Cruces, NM 88001

3. We request your participation and solicit your comments on the Proposed Action. Though comments will be accepted throughout the EIS process, please provide your comments no later than September 25, 2017 to ensure consideration in the Draft EIS. Comments may be submitted at any of the public meetings, on the project website, www.HollomanAFBAirspaceEIS.com, or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, Virginia (VA) 23666. My point of contact for this project is Ms. Robin Divine. She may be reached at (210) 925-2730, robin.divine@us.af.mil. Thank you for your assistance in this matter.

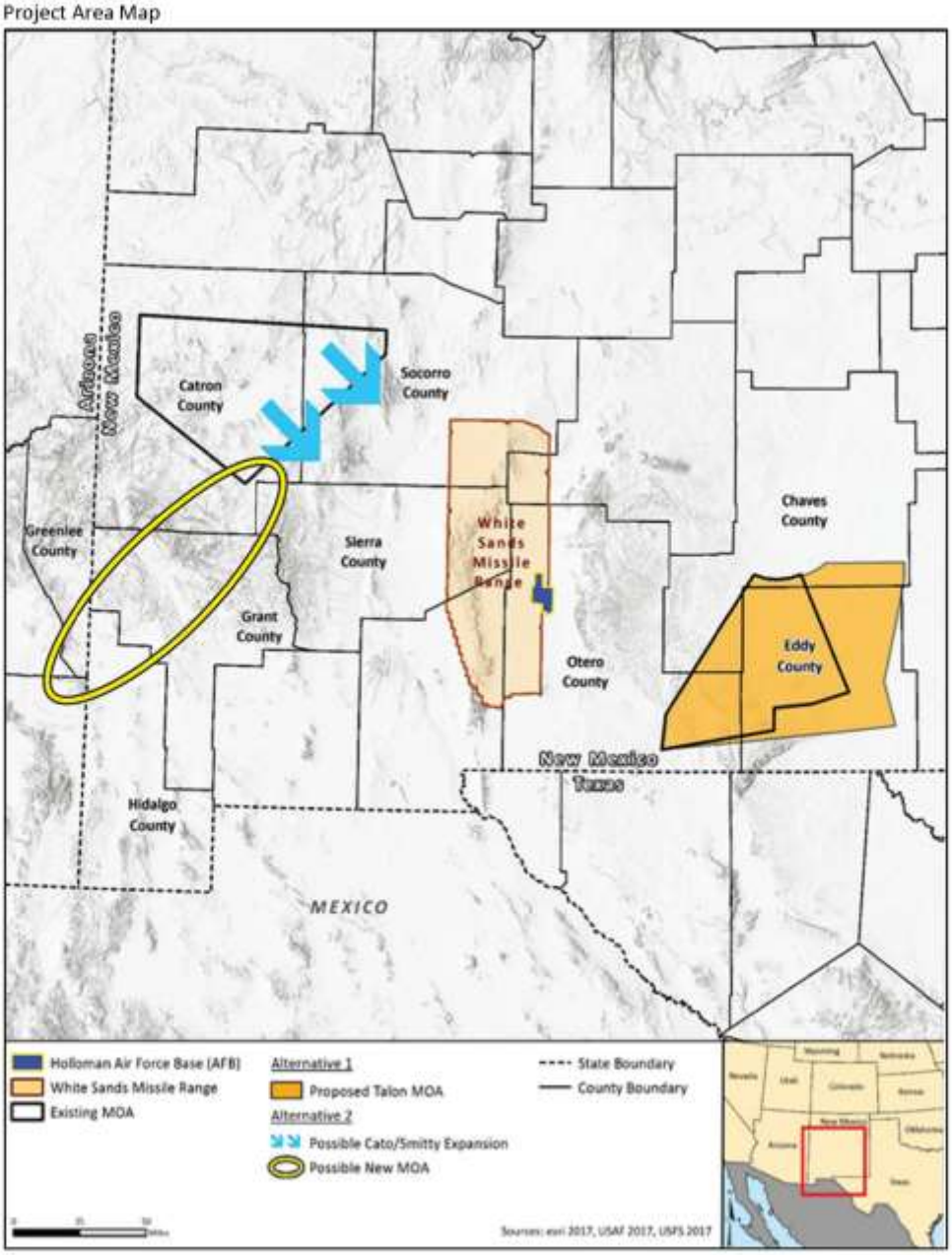
HOUSTON R. CANTWELL
Colonel, USAF
Commander, 49th Wing

1 Attachment: Project Area Map

Combat Airpower Starts Here

Attachment 1

Project Area Map



B.2 Draft Coordination Letters

Table B.2-1. Elected Officials

Organization	Point of Contact
Elected Officials – Members of Congress	
115th U.S. House, Arizona District 1	Tom O'Halleran
115th U.S. House, Arizona District 2	Ann Kirkpatrick
Arizona Senator	Martha McSally
Arizona Senator	Kyrsten Sinema
115th U.S. House, New Mexico District 1	Debra Haaland
115th U.S. House, New Mexico District 2	Xochitil Torres Small
New Mexico Senator	Martin Heinrich
New Mexico Senator	Tom Udall
Elected Officials - State	
Governor of Arizona	Doug Ducey
Arizona House District 14	Becky Nutt
Arizona House District 14	David Gowan
Arizona Senate District 14	Gail Griffin
Governor of New Mexico	Michelle Lujan Grisham
NM House District 32	Candie G. Sweetser
NM House District 36	Nathan Small
NM House District 38	Rebecca Dow
NM House District 39	Rodolpho "Rudy" Martinez
NM House District 49	Gail Armstrong
NM House District 54	James G. Townsend
NM House District 55	Cathrynn Brown
NM House District 58	Candy Spence Ezzell
NM House District 59	Gregg Nibert
NM House District 61	David Gallegos
NM House District 62	Larry Scott
NM House District 66	Phelps Anderson
NM Senate District 27	Stuart Ingle
NM Senate District 28	Gabriel Ramos
NM Senate District 30	Clemente Sanchez
NM Senate District 32	Cliff Pirtle
NM Senate District 33	William F. Burt
NM Senate District 34	Ron Griggs
NM Senate District 35	John Arthur Smith
NM Senate District 37	William Soules
NM Senate District 41	Gregg Fulfer
NM Senate District 42	Gay Kernan
Elected Officials - County	
Graham County	Dustin Welker
Graham County Board of Supervisors	Jim Palmer
Greenlee County Administrator	Deborah Kay Gale
Greenlee County Board of Supervisors	Richard Lunt
Catron County Manager	John Cliff Snyder
Catron County Commissioners	Bill Green
Chaves County Manager	William Cavin
Chaves County Commissioners	Stanton Riggs
Eddy County Manager	John Henry
Eddy County Commissioners	Rick Rudometkin
Grant County Manager	Chris Ponce

Organization	Point of Contact
Grant County Commissioners	Charlene Webb
Hidalgo County Manager	Tisha Green
Hidalgo County Commissioners	Joey Mora
Otero County Manager	Gerald Matherly
Otero County Commissioners	Pamela Heltner
Sierra County Manager	James Pxon
Sierra County Commissioners	Bruce Swingle
Socorro County Commissioners	Martha Salas
Socorro County Commissioners	Delilah Walsh
Lea County Commissioners	Rebecca Long
Lea County	Mike Gallagher
Elected Officials - City	
City of Carlsbad	Dale Janway
City of Truth or Consequences	Steve Green
City of Las Cruces	Ken Miyagishima
Town of Silver City	Ken Ladner
City of Socorro	Ravi Bhasker
City of Albuquerque	Richard J. Berry
City of Alamogordo	Richard A. Boss
City of Artesia	Phillip Burch
City of Roswell	Dennis Kintigh
City of Hobbs	Sam Cobb
City of Lordsburg	Arthur Clark Smith
City of Deming	Benny Jasso
City of Loving	Pete Estrada
City of Virden	Rulene Jensen
City of Bayard	Charles Kelley
City of Santa Clara	Richard Bauch
City of Hope	Bob Rogers
City of Lake Arthur	Ysidro Salazar
City of Magdalena	Richard Rumpf
City of Reserve	Hilda Kellar

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

Colonel Joseph L. Campo
Commander, 49th Wing
490 First Street, Ste 1700
Holloman AFB NM 88330-8277

OCT 18 2019

State of Arizona
Attn: Doug Ducey
1700 W Washington St
Office Of the Governor
Phoenix, AZ 85007

Dear Governor Ducey,

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, and its implementing regulations, the United States Air Force (Air Force) has prepared a Draft Environmental Impact Statement (EIS) that evaluates the potential environmental impacts associated with the proposed optimization of special use airspace available for pilot training at Holloman Air Force Base (AFB), New Mexico.

The Draft Special Use Airspace Optimization EIS analyzes proposed airspace modifications that would include expanding existing airspace or creating new airspace within parts of the following counties: Graham and Greenlee, Arizona; and Catron, Chaves, Eddy, Grant, Hidalgo, Otero, Sierra, Lea and Socorro, New Mexico. The Proposed Action would include aircraft operations within the proposed airspace from 500 feet above ground level (AGL) up to flight level (FL) 510 (50,000 feet above mean sea level [MSL]), supersonic flight above FL300 (30,000 feet above MSL), and the use of chaff and flares. Three action alternatives and the No Action Alternative have been analyzed in the Draft EIS.

Public hearings will be held at the dates and locations listed below. All hearings will be held from 5:30 PM to 8:30 PM. The hearings will start with an open house from 5:30 PM to 6:00 PM, at which time Air Force representatives will be available to answer questions about the proposed action. A formal hearing will begin at 6:00 PM with a brief presentation by the Air Force on the Proposed Action and alternatives and the findings provided in the Draft EIS.

Public Hearing Locations	
Date	**Location**
Monday, November 18	Hilton Garden Inn, Hobbs, 4620 Lovington Highway Hobbs, NM 88240
Tuesday, November 19	Roswell Convention and Civic Center, 912 N Main Street, Roswell, NM 88201
Wednesday, November 20	Artesia Public Library, 205 West Quay Avenue, Artesia, NM 88210
Thursday, November 21	New Mexico State University, Gymnasium (Room 103), 1500 University Drive, Carlsbad, NM 88220
Monday, December 2	Macey Center, 801 Leroy Place, Socorro, NM 87801

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Tuesday, December 3	Commission Chambers, 405 W. Third Street, Truth or Consequences, NM 87901
Wednesday, December 4	Grant County Chamber of Commerce, 3031 Highway 180 East, Silver City, NM 88061
Thursday, December 5	Ramada by Wyndham Las Cruces Hotel and Conference Center, 201 East Avenue, Las Cruces, NM 88005

We request your participation at any of the public hearings and solicit your comments on the findings in the Draft EIS. The Draft EIS is available for review and download on our project website: www.HollomanAFBAirspaceEIS.com. Comments may be submitted at any of the public hearings; on the project website; or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA 23666. In order to ensure consideration in the Final EIS, comments are requested no later than **16 December 2019**. My point of contact for this project is Ms. Robin Divine. She may be reached at (210) 925-2730, robin.divine@us.af.mil.

Sincerely

JOSEPH L. CAMPO, Colonel, USAF
Commander

Attachment:
Draft EIS (CD)

SAMPLE

Table B.2-2. Federal, State and Local Agencies, Other Stakeholders

Organization	Point of Contact
Federal, State, and Local Agencies	
The Adjutant General, Arizona	Michael McGuire
The Adjutant General, New Mexico	Andrew Salas
New Mexico State Office of Military Base Planning and Support	Eric Kivi
Environmental Protection Agency, Region 6	Ron Curry
Environmental Protection Agency, Region 9	Alexis Strauss
Apache-Sitgreaves National Forest	Steve Best
Cibola National Forest	Elaine Kohrman
Gila National Forest	Adam Mendonca
Gila National Forest	Black Range Ranger District
Gila National Forest	Silver City Ranger District
Lincoln National Forest	Travis Moseley
Lincoln National Forest	Guadalupe District
Carlsbad Caverns National Park	Headquarters
Bureau of Reclamation	Albuquerque Office
Bureau of Reclamation, Lake Avalon Dam	Jennifer Faler
Bureau of Reclamation, Lower Colorado Region	Terry Fulp
Bureau of Land Management, State Office	Amy Lueders
Bureau of Land Management, Las Cruces District	Bill Childress
Bureau of Land Management, Pecos District	Jim Stovall
Bureau of Land Management, Roswell Field Office	Chuck Schmidt
Bureau of Land Management, Carlsbad Field Office	Kari Vasenden
Bureau of Land Management, Socorro Field Office	Mark Matthews
New Mexico Environment Department	Office of the Secretary
Arizona Department of Environmental Quality	Misael Cabrera
Arizona Game and Fish	Larry Voyles
New Mexico State Parks	Energy, Minerals, and Natural Resources Department
Brantley Lake State Park	Leila Haver
Living Desert Zoo and Gardens	David Heckard
Elephant Butte Lake State Park	Kay Dunlap
Caballo Lake State Park	Saul Baquera
Chambers of Commerce	
Greater Albuquerque Chamber of Commerce	Terri Cole
Alamogordo Chamber of Commerce	Reid Giggs
Artesia Chamber of Commerce	Hayley Klein
Deming-Luna Chamber of Commerce	Greg Marrow
Las Cruces Chamber of Commerce	Rick Jackson
Lordsburg-Hidalgo Chamber of Commerce	Marsha Hill
Magdalena Chamber of Commerce	n/a
Roswell Chamber of Commerce	Kaye Whitefoot
Silver City Chamber of Commerce	Scott Terry
Socorro County Chamber of Commerce	Linda Wilson
Capitan Chamber of Commerce	n/a
Carrizozo Chamber of Commerce	n/a
Hobbs Chamber of Commerce	Sharon Bush
Mesilla Chamber of Commerce	n/a

Organization	Point of Contact
Other Stakeholders	
National Business Aviation Association	Heidi Williams
Airlines for America	Headquarters
Aircraft Owners and Pilots Association	Rune Duke
Alamogordo White Sands Regional Airport	Jim Talbert
Albuquerque International Sunport	Jim Hinde
Artesia Municipal Airport	Lance Goodrich
Beaverhead Airstrip	Robert Madell
Cavern City Air Terminal	Sherri Chandler
Deming Municipal Airport	Wes Hooper
Glenwood-Catron County Airport	Kate Fletcher
Grant County Airport	Justin Reese
Greenlee County Airport	Phil Ronnerud
Jewett Mesa Airport	Robert Madill
Magdalena Airport	Ambers Guin
Reserve Airport	Glyn Griffin
Roswell International Air Center Airport	Jennifer Brady
Sierra Blanca Regional Airport	David Pearce
Socorro Municipal Airport	Jay Santillanes
Truth or Consequences Municipal Airport	Bill Slettom
Whiskey Creek Airport	Brandon Crisp
New Mexico Pilots Association	Joyce Woods
National Radio Astronomy Observatory (NRAO)	Pete Domenici
Gila Conservation Coalition	M.J. Dutch Salmon
Gila Resources Information Project	Allyson Siwik
Center for Biological Diversity	Todd Schulke
Upper Gila Watershed Alliance	Donna Stevens
Gila Native Plant Society	Ronald Groves
Continental Divide Trail Coalition	Jenny Gaeng
Southwestern New Mexico Audubon	Terry Timme
Silver City Bicycle Advisory Group	Rebecca Summer, PhD
Rio Grande Chapter, Sierra Club	Dan Lorimier
Rio Grande Chapter, Sierra Club	Howie Dash
Southwest Environmental Center	Kevin Bixby
District 5, Grant County Commission	Harry Browne
District 3, Grant County Commission	Alicia Edwards
Agave Ridge Retreat	Maryam Weidner
Townside Farm	Douglas Smith
Abundance Therapeutics	Martha Everett
Heart and Wings Retreat Center	Azaima Anderson
New Mexico Sportsmen	Oscar Simpson
Kate Brown Pottery and Tile	Kate Brown
Casitas de Gila Guesthouses	Becky O'Connor
The Volunteer Center	Kristin Lundgren
WolfHorse Outfitters	Joe Saenz
Halflife Digital	David Garcia
Securing Economic and Energy Democracy	Debaura James
African Wild Dog Conservancy	Kim McCreery

Organization	Point of Contact
Western Wildlife Conservancy	Kirk Robinson
New Mexico Wilderness Alliance	Judy Calman
Gila Resources Information Project	Sally Smith
Colorado Wolf and Widlife Center	Darlene Kobobel
New Mexico Wildlife Federation	Todd Leahy
Red Paint Tribal Council	Kristi Moya
Chiricahua Apache Nation	Harold Dick Jr.
Gila Native Plant Society	Elroy Limmer
White Mountain Conservation League	Tom Hollender
Sierra Club-Rio Grande Chapter	David Coss
WildEarth Guardians	Greg Dyson
Heart of the Gila	Patrice Mutchnick
The Rewilding Institute	David Parson
Back Country Horsemen of NM	Allen H., Olson
Wildlands Network	Kim Crumbo
Northern Arizona University	Aaron Divine
Defenders of Wildlife	Bryan Bird
The Wilderness Society	Michael Casaus
NOLS Southwest	Lindsay Honl

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

SUBJECT: Draft Environmental Impact Statement (EIS) for Special Use Airspace Optimization, Holloman Air Force Base (AFB), New Mexico

The United States Air Force (Air Force) has prepared a Draft EIS that evaluates the potential environmental impacts associated with the proposed optimization of special use airspace available for pilot training at Holloman AFB, New Mexico. The Draft EIS analyzes proposed airspace modifications that would include expanding existing airspace or creating new airspace within parts of the following counties: Graham and Greenlee, Arizona; and Catron, Chaves, Eddy, Grant, Hidalgo, Otero, Sierra, Lea, and Socorro, New Mexico. The Proposed Action would include aircraft operations from 500 feet above ground level (AGL) up to Flight Level (FL) 510 (51,000 feet above mean sea level [MSL]), supersonic flight above FL300 (30,000 feet above MSL), and the use of chaff and flares. Three action alternatives and the No Action Alternative have been analyzed.

Public hearings will be held at the dates and locations listed below. All hearings will be held from 5:30 PM to 8:30 PM. The hearings will start with a 30 minute open house at which time Air Force representatives will be available to answer questions about the proposal. A formal hearing will begin at 6:00 PM with a brief presentation by the Air Force on the proposed action and alternatives and the findings presented in the Draft EIS. The same information will be presented at each hearing, please attend any of the hearings at your convenience.

Public Hearing Locations

Date	Location
Monday, November 18	Hilton Garden Inn Hobbs, 3920 Lovington Highway Hobbs, NM 88240
Tuesday, November 19	Roswell Convention and Civic Center, 912 N. Main Street, Roswell, NM 88201
Wednesday, November 20	Artesia Public Library, 205 West Quay Avenue, Artesia, NM 88210
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Monday, December 2	Macey Center, 801 Leroy Place, Socorro, NM 87801
Tuesday, December 3	Commission Chambers, 405 W. Third Street, Truth or Consequences, NM 87901
Wednesday, December 4	Grant County Chamber of Commerce, 3031 Highway 180 East, Silver City, NM 88061
Thursday, December 5	Ramada by Wyndham Las Cruces Hotel and Conference Center, 201 East Avenue, Las Cruces, NM 88005

The Air Force appreciates your involvement and requests your comments on the findings in the Draft EIS. The Draft EIS is available for review and download on the project website, www.HollomanAFBAirspaceEIS.com. Comments may be submitted at any of the public hearings; on the project website; or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA 23666. To ensure consideration in the Final EIS, comments are requested no later than **December 16, 2019**.

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APPENDIX C
DRAFT EIS PUBLIC COMMENT AND RESPONSES

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INTRODUCTION

The United States (U.S.) Air Force (USAF) would like to extend our appreciation to all who have shown interest in this proposal and have provided comments on the Draft Environmental Impact Statement (EIS). By taking an active part in the environmental impact analysis process, you help to ensure that this document is the best it can possibly be and that all substantive issues have been addressed.

Comments were received via the website, U.S. Postal Service, hand-written in person at public hearings, or via the transcript from the public hearings. The table of contents shows the comment category title and where the response to that comment can be located in this document. Comments were grouped into similar topics so that, in many cases, a single response was generated for multiple comments, thereby reducing redundancy in responses.

There were approximately 17,000 comments received during the Draft EIS comment period. Not all comments received were considered to be substantive, though all were fully considered and made part of the administrative record. Substantive comments were considered individually and collectively and responded to in the following pages. Some comments were used to make corrections or modifications in the body of the EIS. The response to the specific comment cites to where in the EIS modifications were made.

As discussed in the EIS (Section 1.6.2.3), substantive comments are those comments that generally challenge the analysis, methodologies, or information in the EIS as being factually inaccurate or analytically inadequate; that identify impacts not analyzed or developed and evaluate reasonable alternatives or feasible mitigations not considered by the USAF; or that offer specific information that may have a bearing on the decision, such as differences in interpretations of significance, scientific, or technical conclusions, or cause changes or revisions in the proposal. Non-substantive comments, which do not require a specific Air Force response, are generally considered to be those comments that are non-specific; express a conclusion, an opinion, agree, or disagree with the proposals; vote for or against the proposal itself, or some aspect of it; state a position for or against a particular alternative; or otherwise state a personal preference or opinion. Due to the voluminous number of comment letters received on the Draft EIS the Air Force has summarized the comments in accordance with Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] 1503.4). The full comment letters are a part of the official record. Tables C-1 (agencies, elected officials, and organizations) and C-2 (members of the public) provide a list of commenters and how their individual comment was categorized. Commenters that provided substantive comments can locate their names in these tables to see which of the comment responses is applicable to their comment. The vast majority of the comment letters constituted five different form letters (approximately 16,000 comments). A single response is given to each type of form letter, individual names are not provided for form letters or non-substantive variations of those letters.

The following sections provide a summary of the comments and the Air Force responses. The comments are grouped by category.

1) NEPA PROCESS

1a) NEPA Process, public involvement

Comment Summary: scoping was inadequate because it didn't include Silver City, Sierra County, Grant County; hearings should have been held in Alamogordo, Weed, or Mayhill; scoping meeting in Las Cruces only included Alternative 1; Grant County, Sierra County, and Socorro County elected officials and airports were not contacted during scoping; and questions about how scoping comments were addressed and how Draft EIS comments will be addressed. No public meetings in Otero County. Public meeting held during holiday season. No public hearing in Catron County and no public notice in Catron County Courier. No public hearings in smaller communities in Otero County.

Response: As detailed in Section 1.6 of the EIS, the Air Force conducted extensive public and stakeholder outreach throughout the course of the EIS. During the scoping phase of the project, the Air Force held three formal scoping meetings throughout New Mexico and also participated in numerous stakeholder meetings to provide information about the proposal (see Section 1.6.1). The information presented at each scoping meeting and the stakeholder meetings was the same and included Alternatives 1 and 2. At the time of scoping, the proposed dimensions for the airspace associated with Alternative 2 were not as developed as Alternative 1, but it was represented in all the public materials (posters and handouts) and Air Force representatives discussed this alternative with the public (see EIS Section 1.6.1.5). While the end of the scoping period was officially announced in the Notice of Intent as September 25, 2017, the Air Force continued to accept comments through the website and mail until the release of the Draft EIS (November 2019). All comments received prior to the release of the Draft EIS were considered in the development of the Draft EIS and are included in the administrative record. Section 1.6.1.4 provides details on the comments received prior to release of the Draft EIS and how those comments were addressed in the Draft EIS. Section 1.4 and Appendix B provide information on interagency and intergovernmental coordination during scoping. The locations for public hearings were expanded based on information received during the scoping phase, and the Air Force held 8 formal hearings throughout New Mexico. The locations for the hearings provided sufficient geographic coverage for the areas most likely to be impacted by the proposal. Advertising was expanded in response to scoping comments, and hearings were advertised in 9 newspapers. The Catron County Courier is a monthly paper and providing notice of the hearings in this paper would not allow for timely notice of the hearings. There is no change in operations in areas of Otero County (specifically Alamogordo, Weed, and Mayhill) transiting to MOA areas so meetings were not held in these locations (see response to *18) Transition Zones*). Draft EISs must be made available for a minimum of 45 days. The Air Force accepted the request to extend the public comment period and made the Draft EIS available for 91 days which allowed substantial time outside of the holiday season.

1b) NEPA Process, no action analysis

Comment Summary: evaluation of No Action Analysis was lacking or inadequate; EIS should include a No Action Alternative; baseline analysis inadequate; EIS should include comparison of Alternatives 1-3 and No Action; include No Action effects in each table in EIS.

Response: The No Action Alternative was included in the Draft EIS (EIS Section 2.8.4.). Section 3.0 (Affected Environment) of the EIS describes the existing conditions for the respective resources, which constitutes the baseline conditions that would continue if the No Action Alternative were implemented.

The No Action Alternative is analyzed for each resource area in the respective sub-sections of Section 4.0 in the EIS and included in quantitative resource analysis tables for comparison where relevant (i.e., Noise Section 4.3, Air Quality Section 4.4, and Land Management Section 4.6). A descriptive comparison of the environmental consequences of the action alternatives (1 through 3) and the No Action Alternative is included in Tables ES-4 and repeated in Table 2.9-1. Under the No Action Alternative, the existing aircraft operations in the existing MOAs (specifically in the Talon, Cato, and Smitty MOAs/ATCAAs) and other training airspace in the vicinity (other MOAs and Military Training Routes [MTRs]) would continue. The descriptions of the environmental consequences of the No Action Alternative for each resource area in the summary tables (Table ES-4 and Table 2.9-1) have been revised to better clarify these impacts.

1c) NEPA Process, reasonable alternatives

Comment Summary: EIS did not include all reasonable alternatives; Valentine and Bronco MOAs should be included; airspace outside of New Mexico should be evaluated. Northern parts of Culbertson and Hudspeth Counties, Texas should be evaluated. Alternatives that consider computer systems training and development and advancement of "space age weaponry" should be considered. Pecos MOA is closer than proposed airspace. EIS should include an alternative that reduces military operations over Congressionally-protected areas, such as the Gila National Forest Wilderness Areas and adjacent areas. Request from FAA to develop a new hybrid alternative that would minimize civil aviation impacts associated with the western MOAs proposed under Alternatives 2 and 3.

Response: The alternatives development process is described in EIS Sections 2.3 and 2.4, which defined the scope for the EIS. Valentine and Bronco MOAs were included in the alternatives evaluation process since these are Air Force scheduled airspaces available to Holloman AFB. The basis for eliminating the Valentine and Bronco MOAs is discussed in EIS Section 2.4.1; the basis for eliminating Pecos MOA is discussed in EIS Section 2.6.1. Valentine and Bronco MOAs exceeded the 120-nautical mile selection criteria and were dismissed from further consideration in the EIS. The 120-nautical mile radius was used as a selection criteria to maximize training time and minimize transit time.

Though simulation technology has provided increased realism over the years, simulators still lack the external environment and the necessary level of fidelity or interoperability that provides new pilots with airmanship, critical thinking, and seasoning under real-world flight conditions. Simulators are used to the maximum extent possible within the objectives of the F-16 Formal Training Unit syllabus and provide good skills training and training that can't be replicated accurately and/or safely in the aircraft (such as engine-out training). However, live-flight at the Formal Training Unit, balanced with simulator training, ensures pilots arrive at their operational unit ready to focus on that unit's specific mission.

The proposed action includes training sorties necessary to accomplish the anticipated F-16 training mission; therefore, a reduced number of *total* operations was not included as an alternative. However, Alternative 3 was developed without the inclusion of the Lobos Low MOA and the operations would be split between the western MOAs (Lobos High, Cato, and Smitty MOAs) and the Talon MOA. This alternative would result in reduced operations over the Gila National Forest (500 proposed sorties vs 2,200 sorties proposed under Alternative 2) see **EIS Section 2.8.3** for details and figures illustrating this alternative.

During discussions with FAA as a cooperating agency in August and October 2019, the agencies discussed the concept of a new hybrid alternative that minimized the potential impacts to civil aviation associated with the proposed western MOAs (namely Lobos MOA and the Christa and Kendra ATCAAs). The consensus between the agencies was that this new hybrid alternative was not reasonable and the existing alternatives were sufficient. Since the FAA agreed Alternative 1 would not create an unacceptable impact to the National Airspace System, the Air Force chose not to develop and analyze a fourth action alternative in the Final EIS.

1d) NEPA Process, cooperating agency

Comment Summary: U.S. Forest Service should be a cooperating agency. Air Force should consult with Forest Service in developing mitigation measures over protected areas

Response: The Air Force coordinated with the U.S. Forest Service throughout the project. The Air Force provided letters to the Gila National Forest (Supervisor's Office, Black Range Ranger District, and Silver City Ranger District), Apache Sitgreaves National Forest (Arizona), Cibola National Forest, and the Lincoln National Forest (see EIS Appendix B). During scoping, the Gila National Forest requested that the Air Force maintain a minimum altitude of 2,000 feet AGL over the Wilderness Areas, limit flare use over the forest to 2,000 feet AGL and above, and reduce flights on weekends and during certain times of the year over the Wilderness Areas when they are more heavily used for recreation. The Air Force considered all the comments received from the U.S. Forest Service when developing the alternatives that were analyzed in the Draft EIS. The only request from the Gila National Forest that was not included in the alternatives was the request for seasonal restrictions on flights. Since Holloman AFB is a training base, their operational tempo remains consistent throughout the year and it is not possible to alter the training syllabus schedule for specific seasonal restrictions. All comments provided by regulatory agencies during either phase of the project have been considered during the development of the EIS.

2) PURPOSE AND NEED

2a) Propose and Need, airspace is adequate

Comment Summary: the Air Force, Holloman AFB, Air Force representatives, or Draft EIS state the current airspace is "adequate" which implies the Proposed Action is not warranted.

Response: The current airspace meets some of the training needs of Holloman AFB, but is not sufficient for all of their needs. To address the limited availability of suitable airspace at Holloman AFB, the training sorties have been reduced to satisfy only the basic requirements of Initial Qualification Training (see EIS **Section 1.2.2**). This requires that pilots complete their training with their assigned operational unit after they leave Holloman AFB resulting in pilots that are not operationally ready for their squadron's mission when they reach their assigned base. While the airspace is technically adequate for meeting the training minimums, it does not provide the volume or attributes necessary to conduct the full complement of F-16 training and therefore requires optimization. Achieving minimum training requirements does not support the Air Force's responsibility to National Defense.

2b) Purpose and Need, pilot shortage

Comment Summary: requests for data supporting the pilot shortage noted in the EIS; statement provided that General David Goldfein, Air Force Chief of Staff, said he believes the Air Force has begun to turn the shortage around; address need to train USAF pilots – what other locations are available.

Response: The Air Force pilot shortage is noted in the executive summary and background sections of the EIS (Section ES.1 and Section 1.2) to highlight the importance of training pilots for National Defense. As was previously stated in the *EA for the Interim Relocation of Two F-16 Squadrons* (Air Force 2017), the Air Force is short 700 pilots with the shortage projected to increase to 1,000 within 5 years. While the Air Force has "begun to turn the shortage around" that does not imply the shortage has been eliminated or that training F-16 pilots is no longer a priority. This EIS addresses optimizing SUA to support F-16 training for pilots stationed at Holloman AFB. Relocating the pilots, associated infrastructure, and moving this training to other installations or locations would not be a reasonable alternative and does not address the purpose and need defined in this EIS. See also the response to 1c) *NEPA Process, reasonable alternatives* for the discussion on the other alternatives evaluated.

2c) Purpose and Need, additional sorties

Comment Summary: EIS was not clear why an additional 10,000 sorties are needed in the proposed airspace or why 10,000 sorties are needed for optimization; current training within existing airspace (approximately 9,000 sorties) would continue with any of the alternatives.

Response: The current SUA available to Holloman AFB pilots does not provide the optimal volume or attributes necessary to complete the training syllabus in an appropriate and efficient manner (see also Response to 2a) *Purpose and Need, airspace is adequate*). The EIS must analyze the environmental and social impacts associated with the airspace modifications needed to optimize the airspace. A large portion of the potential impact from the optimization is the noise associated with the training that would occur once the airspace is optimized. To ensure the EIS adequately assesses the noise, the Air Force had to determine the maximum training (i.e., sorties) that would occur. There are 2 F-16 squadrons currently at Holloman AFB. These 2 squadrons currently perform a total of approximately 9,000 sorties distributed throughout the existing MOAs and restricted areas (see EIS Table 1.2-1). To produce more pilots to meet the shortage and address the lack of suitable airspace the training sorties have been reduced to satisfy only the basic requirements of Initial Qualification Training before the pilots are placed with their operational squadrons at other installations where they complete their training. It was assumed the ideal sortie count would be closer to 10,000 under normal operations. An additional 2 squadrons are expected to be relocated to Holloman AFB at some point in the future (Air Force 2017) although there is no projected date or timeline. With the existing squadrons and the possible future squadrons, the total sortie count is estimated to be 20,000 annually (rounded). Approximately half of those sorties could be supported in existing MOAs and restricted areas (see EIS Table 1.2-1: F-16s currently use restricted airspace at WSMR and Fort Bliss, and Beak, Pecos, Cato, Smitty, and Talon MOAs). Therefore, using a conservative estimate, the proposed optimized airspace would be expected to support approximately 10,000 F-16 sorties (plus transients). It should be noted that the current use of Cato, Smitty, and Talon MOAs is included in the proposed sortie count that could occur once the airspace is optimized; the proposed sorties analyzed in each alternative represents the maximum use and includes existing and proposed sorties. Proposed Operations for each Alternative are detailed in EIS Sections 2.8.1.2 (Alternative 1), 2.8.2.2 (Alternative 2), and 2.8.3.2 (Alternative 3).

The conservative estimate for the proposed optimized airspace of 10,000 F-16 sorties (plus non-Holloman based transients) was used to ensure the noise analysis represented maximum use of the proposed airspace. The noise analysis as presented in the Draft EIS remains valid, as reflected Final EIS **Section 4.3**. At the time of development of this EIS, the two additional squadrons had yet to be added at Holloman AFB. However, these additional squadrons are still reasonably expected to occur and the proposed operations in this EIS need to include the maximum possible use of the proposed airspace. Until these squadrons are relocated to Holloman AFB, the actual impacts within the proposed airspace would be less than what is analyzed in this EIS. The F-16 and transient sorties within the proposed airspace would not exceed the conservative estimate defined in each Alternative and may be less due to shifting mission landscapes. The proposed sorties have been clarified in a new section of the EIS, Section 2.2.2.1, *Proposed Sorties*.

2d) Purpose and Need, WSMR limitations

Comment Summary: limitations for using WSMR are not quantified; why doesn't the JTTOC solve scheduling issues; Air Force concern about not having scheduling authority over WSMR is not credible since Air Force doesn't have scheduling authority over Cato/Smitty MOAs either since they are scheduled by New Mexico Air National Guard; WSMR should be used on weekends to meet F16 training needs; EIS shows about 5,000 sorties at WSMR but the EA for Interim Beddown showed over 45,000 sorties in WSMR – why the decrease in 3 years? Holloman AFB will have to de-conflict air traffic with WSMR to gain access to areas West. No permanent route cutting through WSMR can be established due to the WSMR test schedule being so variable.

Response: The Cato and Smitty MOAs are scheduled by the New Mexico Air National Guard which is part of the Air Force. The selection standard 1 defined for the proposal was that the airspace needed to be scheduled by the Air Force, not specifically Holloman AFB as the comment implies (see Section 2.3 of the EIS). The JTTOC helps to coordinate day to day scheduling issues, but doesn't increase the availability of WSMR airspace for F-16 training. WSMR's priority is to support test missions which are scheduled months in advance and often close the airspace to other users for extended periods of time (hours or even full days).

Pilots stationed at Holloman AFB must obtain their training during the current Holloman AFB airfield operational hours (i.e., 7:00 am to 10:00 pm, Monday through Friday). In addition to the pilots, a significant number of maintenance and other support staff must be present when the aircraft are operational. An alternative for a wholesale change of hours of pilot and ground support personnel would substantially increase costs and reduce morale at a base that is already experiencing pilot retention problems. Additionally, the FAA currently uses the airspace above WSMR to route civil traffic when the WSMR is not active, notably on weekends. Using this airspace on the weekends for military training would require these commercial flights be re-routed around WSMR impacting civil aviation. For these reasons, an alternative for Holloman AFB to use the airspace on weekends is not reasonable.

The data shown in the EA for the Interim Relocation of Two F-16 Squadrons (Air Force 2017) is for annual operations, not sorties. In that case, an operation was defined as one aircraft touching one block of airspace one time (which is just another way of counting usage). Since the WSMR is actually a collection of a number of individual airspace blocks, one sortie could in effect cause a larger number of counts of "airspace operations". For this EIS, the Air Force has chosen to use "sorties" to represent a single aircraft entering the overall boundary of the WSMR as one count, in an attempt to make this simpler. It is

understood that a permanent route across WSMR is not feasible. Holloman AFB would need to coordinate the intermittent crossing traffic directly with WSMR through the JTTOC.

2e) (code not used)

2f) Purpose and Need, selection criteria

Comment Summary: questions about the distance criteria used (specifically regarding distance to Cato/Smitty MOAs and exclusion of Valentine MOA); requests for supporting information on space requirements for SUA since operation tables show limited training events that require more than 55 nautical miles (Table 3.1-2 of Appendix F); none of these standards, other than Limit Impacts to Civilian Aviation, take into account effects on humans or wildlife. If there were selections standards, for example, to Limit Impacts to Wilderness Areas or Limit Impacts to Populated Areas, there would have been a significant change in what was proposed as MOAs or ACTAAs.

Response: The selection criteria associated with distance is described in EIS Section 2.3.2. As described, the distance criteria was based on fuel capacity of the F-16 aircraft. The aircraft must be able to travel to the training area, perform a minimum of 30 minutes of training, and travel back to the base without refueling. The center of the Cato and Smitty MOAs is within the distance criteria if the F-16 flies through WSMR airspace and not around this airspace (117 nautical miles [nm] traveling through WSMR vs 200 nm traveling around WSMR , see EIS Section 2.4.3). Therefore, Cato/Smitty MOAs meet the distance criteria and were carried forward for evaluation in the EIS. The center of the Valentine MOA exceeds the 120 nautical mile criteria (travel distance is 156 nm); therefore, it was eliminated from the EIS.

"Reasonable alternatives" are those that could meet the purpose of and need for the Proposed Action. Per the requirements of 32 CFR 989, the Air Force Environmental Impact Analysis Process regulations, selection standards are used to identify alternatives that meet the purpose of and need for the Proposed Action. The purpose of the Proposed Action is to modify existing airspace and establish new airspace in order to provide readily available and adequately sized training airspace with appropriate attributes needed to conduct F-16 pilot training missions. The need for the Proposed Action is to support required training missions for aircrews stationed at Holloman AFB. Therefore, the Air Force developed a set of selection standards for screening the possible alternatives for the optimization of SUA within the vicinity of Holloman AFB. The analysis in the EIS details the potential impacts on several resource areas, to include impacts to land use management, socioeconomics, and natural resources. While the selection standards did not specifically include issues such as those requested (limiting impacts to populated areas or wilderness areas) impacts to these resource areas are taken into consideration during the decision-making process.

3) PROPOSED ACTION DETAILS

3a) Proposed Action, sortie numbers

Comment Summary: sortie numbers are not consistent across all EIS sections and appendices.

Response: All tables in the EIS and appendices were reviewed and found to be consistent; however, since the tables throughout the EIS and appendices present different information it is understandable how these were confused. In order to clarify this concern, additional footnotes and information have been added where appropriate for the reader. In general, the sortie tables within the main body of the EIS present rounded numbers for the proposed operations for ease of reading. The appendices in the EIS (namely D2,

Airspace Impact Analysis and F, *Noise Study*) present precise numbers for a variety of reasons specific to the analysis being performed. In the case of the noise analysis, the model requires input of exact numbers in specific MOA/ATCAA components or combinations of those components. In addition, altitude is an important factor when determining the noise impacts, so the data input must also distribute the sorties in certain altitude bands. The F-16 training syllabus was used to estimate the distribution of the proposed 10,000 sorties in the various MOAs/ATCAAs and altitude bands. Similarly, in Appendix D2, an estimated distribution of the number of sorties and time within certain airspace components was needed to determine the potential impact to civil aviation within these pieces of airspace. In reality, the use of the proposed airspace would vary year to year and precise numbers in each airspace component are unknown. However, the use would be within close range of the precise numbers used in the analysis since these estimates were generated using the F-16 training syllabus. See also response to 5*j) Noise, data accuracy*.

3b) Proposed Action, Preferred Alternatives

Comment Summary: a Preferred Alternative has not been identified; the Air Force's intention isn't known; can't evaluate the EIS since a Preferred Alternative is not identified.

Response: The Air Force did not have a preferred alternative at the time of public release for the Draft EIS. The Preferred Alternative is identified in the Final EIS in Section 2.8.6 in accordance with CEQ Regulation (40 CFR 1502.14e). Identification of a Preferred Alternative does not affect the analysis contained in an EIS.

3c) Proposed Action, MOA altitudes

Comment Summary: requests to change the altitudes for the proposed MOAs; raise the floor of the low MOAs; establish a high altitude "bridge" from the base to the MOAs. Talon B Low MOA will impact JB Flight Services – see comment in category 9b) Civil Aviation, VFR traffic

Response: The proposed altitudes for the MOAs are described in detail in EIS Section 2.8. The altitudes are based on the training requirements for the F-16 aircraft pilots. Some of the comments requested that the floor of the Talon Low B MOA be raised (to 700 or 1,000 feet AGL). The proposed floor of the Talon Low MOAs (A and B) were determined based on the low altitude training requirement for the F-16 (see also response in *22) Mitigation* for additional information concerning the request to raise the floor of the Talon Low B MOA). Aircraft traveling from the base to MOAs use higher altitudes to conserve fuel. Most often they use established flight plans, called stereo routes, that are filed with FAA Air Traffic Control (see also the response to *18) Transition Zones*).

3d) Proposed Action, overflight restrictions

Comment Summary: requests to restrict overflight frequency or location; limit times of day for MOA use.

Response: The Air Force is not restricting overflights at specific locations other than those defined in Section 7.0 of the EIS. The Air Force would adhere to avoidances as described in the EIS for Wilderness Areas, National Monuments and Parks, and populated places. The hours of operation for the proposed SUA would be the same as the current hours of operation for Holloman AFB airfield, 07:00am to 10:00pm, Monday through Friday and other times through Notice to Airmen (NOTAM). As described in the EIS, the anticipated use of the MOA would not be continuous during the entire operational hours.

3e) Proposed Action, Christa and Kendra ATCAAs

Comment Summary: questions about how Christa and Kendra ATCAAs would be used; how many overflights, type of activity, altitudes.

Response: The Christa and Kendra ATCAAs would be a component of Alternatives 2 and 3 as described in Section 2.8.2.1 and 2.8.3.1, respectively. The ATCAAs would serve as temporary bridges between the airspace above WSMR and the proposed ATCAAs above the Cato MOA and Lobos MOA. The F-16 aircraft would use these ATCAAs as a means to transition from WSMR airspace to the proposed airspace west of WSMR, the use of the ATCAAs and activities allowed within them would be defined in a Letter of Agreement between the FAA and the Air Force. It is the Air Force's intent to use these ATCAAs simply as a transition area from one airspace to the next and to allow a group of F-16 aircraft to get into formation for various training events that would occur within the MOAs. F-16 aircraft would be limited to above FL180 (approximately 18,000 feet MSL). There is no MOA beneath the Christa and Kendra ATCAAs. Chaff and flares would not be used in the Christa and Kendra ATCAAs. This has been clarified in the EIS Sections 2.8.2.2 and 2.8.3.2.

3f) Proposed Action, avoidances

Comment Summary: requests to avoid monuments, wildernesses, and cities; EIS should identify all the avoidance areas beneath the proposed MOAs; 2,000-foot avoidance of wilderness areas is a recommendation, not a requirement; pilot can choose to ignore the recommended avoidance. DEIS does not define "populated" areas, communities, settlements.

Response: In accordance with FAA minimum safe altitudes (14 CFR 91.119), aircraft must avoid congested areas of a city, town, or settlement or any open-air assembly of people by 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. For other than congested areas, including sparsely populated areas, aircraft must not operate closer than 500 feet to any person, vessel, vehicle, or structure. The FAA has not defined the term "congested area" by regulation and does not use a mathematical formula to determine the boundaries of a congested area. Instead, the FAA applies a case-by-case analysis to determine compliance with 14 CFR 91.119 to balance the interests of the pilot's operation and the need to protect persons and property on the ground which has been the purpose of the minimum safe altitudes rule in 14 CFR 91.119. Ultimately, it is the pilot's responsibility to maintain the minimum safe altitudes required. This approach has been supported by legal opinions issued by the FAA, National Transportation Safety Board, and federal courts (see Leanne Simmons, Legal Interpretation, March 3, 2010; F. Dennis Halsey, Legal Interpretation, January 5, 1978; and Richard D. Henderson, Legal Interpretation, September 13, 1976).

Also, overflights would be restricted to 2,000 feet above the surface of National Parks, Monuments, Seashores, Lakeshores, Recreation Areas, and Scenic Riverways administered by the NPS; National Wildlife Refuges, Big Game Refuges, Game Ranges, and Wildlife Ranges administered by the USFWS; and Wilderness and Primitive areas administered by the U.S. Forest Service (USFS). The Air Force is committed to requiring these avoidances as part of this Proposed Action.

3g) Proposed Action, foreign military

Comment Summary: concern that proposed airspace would be used to train foreign military pilots; sortie numbers not accurate - would increase to train pilots from foreign nations; EIS does not address foreign pilot training

Response: The purpose and need for the Proposed Action is to train F-16 pilots stationed at Holloman AFB. The Proposed Action does not include foreign military training. The sortie numbers included in the EIS reflect the training needs of the F-16 pilots at Holloman AFB and a reasonable estimate of sorties associated with transient aircraft. All SUA includes use by transient aircraft, which are simply aircraft that are not stationed at the base that schedule the MOA, and these aircraft must adhere to the same rules and regulations as the stationed aircraft. As described in Section 3.2.1 of the EIS, procedures governing the use of training areas and airspace operated and controlled by the Air Force are included in Air Force Policy Directive 13-2 *Air Traffic, Airfield, Airspace and Range Management* and its implementing regulations. The Air Force manages airspace in accordance with processes and procedures detailed in AFI 13-201, *Airspace Management*.

3h) Proposed Action, expanded training

Comment Summary: expanding airspace will lead to expanded training in the future; once created the MOAs would be used for training and aircraft not disclosed in the EIS; no sortie ceiling identified so training will be more than what's evaluated in EIS; including transients in EIS indicates more, new training is anticipated.

Response: Use of the proposed airspace must be in accordance with the Air Force Record of Decision (ROD) signed for this proposal and any decision documents (i.e., ROD) issued by FAA. This includes the defined geographic boundaries of the airspace (horizontal and vertical), types of training that can occur, and the average annual sorties. Use of the airspace outside of the parameters of the ROD would require additional NEPA analysis.

4) TRANSIENT AIRCRAFT

4a) Transients, use of MOAs

Comment Summary: transient use of the MOAs is unclear; number of transients unclear; where would the transients come from and what type of aircraft; why would transients that are not from Holloman use the MOA that would be more than 120 miles away when Holloman won't use existing SUA due to that limiting standard; transient use signals current interest in using this airspace extends beyond the needs of Holloman AFB; what is the basis for determining the transient numbers, specifically why only 300 F-35 transients and why only in Lobos High MOA; incorrect statement in Appendix F (Noise Analysis) that F-35s would come from Davis-Monthan AFB.

Response: The Air Force must make the assigned SUA available to the activities of other military units on a shared basis to ensure optimum use of the airspace as defined in FAA Order JO 7400.2, *Procedures of Handling Airspace Matters,* Chapter 21, Paragraph 21-1-7. As described in EIS Sections 2.8.1.2 and 2.8.2.2, transient aircraft are defined as any aircraft that is not based at Holloman AFB. Some squadrons operate on a temporary basis in various locations in order to take advantage of training opportunities that may be different than those at their home locations. All SUA has the potential to be used by this type of transient aircraft in accordance with FAA JO 7400.2M, therefore, to provide an accurate analysis for the

proposed MOAs an estimate of transient use was included in the analysis for all resource areas. It is unknown exactly how many sorties or what type of aircraft could schedule the MOA in the future, therefore, a reasonable estimate based on the historical use of other MOAs in the vicinity was used. Similarly, the type of aircraft that have historically used the MOAs was used to estimate the types of aircraft that could use the proposed MOAs for noise analysis purposes. Specifically, for the F-35 transient estimate in the Lobos High MOA, the F-35 requires long expanses of airspace for high altitude training purposes. With the adjacent F-35 use of the Outlaw, Jackal, Morenci, and Reserve MOAs, it was assumed that sometimes the F-35 pilots would desire a longer stretch of airspace for some of their training. This use would have to be scheduled with the using agency (Holloman AFB). The notation in Appendix F that F-35s would come from Davis-Monthan was an error. This has been corrected to Luke AFB where the F-35 squadrons are stationed and this had no change to the analysis as it was presented in the Draft EIS. In actuality, the transient use of the proposed MOAs could be much less than the estimate used in the EIS, but the analysis includes a conservative estimate to represent a maximum use scenario. As described in comment 3h) *Proposed Action, expanded training*, use of the MOA must be in accordance with the parameters of the ROD. Average annual sorties (to include transient aircraft) cannot exceed those defined in the EIS and ROD without additional NEPA analysis.

4b) Transients, expansion of activities

Comment Summary: transient activities could expand beyond EIS assumptions.

Response: Transient use of the MOAs is described in 4a) *Transients, use of MOAs*. The Air Force controls the use of the proposed SUA. Any flying activities that could be accomplished in the new airspace will be within the scope of the analysis of the EIS. Transients would follow normal Air Force procedures to schedule and use Holloman AFB airspace. When transient units schedule airspace, normal practice is that they are required to review the airspace in accordance with AP-1A, *DoD Flight Information Publication Area Planning Special Use Airspace,* AP-1B, *DoD Flight Information Publication Area Planning Military Training Routes*, and the local flying instructions for the specific airspace. Prior to takeoff, the units are given a mission brief that includes specific restrictions or guidelines for that airspace. See also response 4c) *Transients, cumulative use*.

4c) Transients, cumulative use

Comment Summary: EIS should include cumulative use of airspace by transients associated with Taiwan Air Force Relocation, Arizona RSOP EIS, increased use of VR-176, Personnel Recovery EA.

Response: As described in the response to Comment 4a) *Transients, use of MOAs*, potential transient activity in the proposed MOAs is included in the analysis for all of the alternatives, regardless of where the transient aircraft could come from. The Taiwan aircraft would not utilize the Holloman AFB airspace as discussed in the Final EA for that action (May 2020). All of the other actions noted in the comment summary are analyzed in the Cumulative Analysis (EIS Section 5.0); transient aircraft associated with these actions are accounted for in the estimated transient use of the proposed MOAs.

5) NOISE

5a) Noise, general

Comment Summary: general statements of concern about noise; conclusions that noise will be a significant impact; general information provided on the decibel level of jet noise.

Response: The EIS was written consistent with USAF and FAA policy for evaluating noise impacts. In the EIS, the Air Force conducted a detailed noise analysis for each of the three action alternatives and determined that the increased aircraft activity would be noticeable in some locations given the current ambient noise conditions (see Section 4.3 and Appendix F in the EIS).

5b) Noise, additional references

Comment Summary: additional references or studies provided with respect to noise or noise analysis.

Response: References provided generally focus on the inadequacy of using annoyance and 65 DNL threshold. Noise analysis within the EIS was done in accordance with USAF policy for assessing noise impacts and guidance from the Department of Defense (DoD) Noise Working Group (DNWG) for assessing single event metrics. The referenced studies provided during the Draft EIS comment period utilize methodologies that have not been approved or validated by the DoD or the FAA for use in establishing significance criteria for noise induced impacts. Additionally, some of the citations were specific to noise at civilian aviation airfields (commercial/municipal airports) that do not necessarily apply to military airfields nor to airspace noise modeling.

5c) Noise, ambient noise

Comment Summary: ambient noise in rural, wilderness, or forest environment not accurately described; National Park Service ambient data should be used in impact section; questions about why certain National Parks were used to describe ambient noise and not others; general conclusions or statements about ambient environment beneath proposed MOAs (specifically the Lobos MOA). The setting and the source of ambient noise are important factors for a person's response to an intrusive noise source.

Response: Attempts were made to characterize ambient noise levels in rural areas by citing National Park Service surveys and documents for nearby/representative wilderness areas and parks. Section 3.3.2.1 of the EIS has been revised to include NPS data on the ambient noise conditions at Carlsbad Caverns National Park, the Gila Cliff Dwellings National Monument, and the Guadalupe Mountains National Park. However, the NPS uses a different metric for assessing noise (L50) which is not comparable to DNL that is approved for noise assessment of DoD airspace actions. For this reason, the NPS data cannot be used in the impact section of the EIS, but only to describe the existing ambient conditions at the parks.

5d) Noise, inadequate analysis

Comment Summary: inadequate analysis, methodology, or thresholds for a quiet environment; use of cumulative average metrics (DNL or CDNL) not appropriate; cumulative metrics do not represent how loud the aircraft will be. Lacks analysis of aircraft noise on recreational settings, national parks, rural settings. DNL is insensitive to: the impact of very loud, isolated events; the time when an event occurred; does not take into consideration other sound characteristics; and a large difference between ambient levels and intrusive noise is more annoying than small differences; include in EIS a statement that DNL does not

adequately address impacts of noise on visitors to national parks; recommended supplemental metrics be calculated, such as speech interference, etc.

Response: The EIS is consistent with USAF and FAA policy for evaluating noise impacts. As discussed in the EIS (Section 3.3.1.1), DNL and Ldnmr were the noise metrics considered in this analysis, and neither metric resulted in significant impacts. The DNL is an A-weighted cumulative noise metric that measures noise based on annual average daily aircraft operations. When DNL is averaged over a busy month of operations (vice an average month), and is adjusted for the onset rate of the noise to account for the "surprise factor," the metric is Ldnmr. In the case of this analysis, Holloman AFB is a training base with a steady operations tempo, typically there is no month busier than the others. The onset rate adjustment was included in the model calculations; however, it was small enough to not make a difference in the DNL calculation. Therefore, in this EIS the calculations of Ldnmr and DNL are the same. DNL is also a well-accepted predictor of annoyance used by the FAA and U.S. Environmental Protection Agency (USEPA), along with various other agencies, for impact analysis. The DNL metric specifically recognizes the importance of noise that occurs at night and heavily penalizes it.

Supplemental metrics are calculated in those situations where the projected noise exceeds certain thresholds as defined by the DNWG. The need for supplemental metrics was checked based on the requirements for each standard. For instance, the need to development additional analysis for classroom speech interference is triggered when the L_{eq} is above 60dB at a particular site. This condition does not exist under any of the three alternatives. Per the standards for evaluating probability of awakening (sleep disturbance), the events with SEL values greater than 90 dBA in all of the proposed airspace are all during daytime hours, and so do not meet the threshold for using this metric. The DNL results for this Proposed Action do not indicate the need to calculate supplemental metrics.

5e) Noise, non-auditory concerns

Comment Summary: aircraft noise will have non-auditory health concerns such as induced stress, cardiovascular issues; noise will affect persons with PTSD, elderly, or children.

Response: There is public concern that aircraft noise has non-auditory health effects, which are physiological effects on health and well-being (i.e., stress response and cardiovascular effects) that are caused by exposure to aircraft noise. While there is a substantial amount of research on the topic, most of the studies concern chronic exposure to high levels of noise, like that experienced in an airport environment with hundreds of flights per day. The DNWG stated that the current state of scientific knowledge cannot yet support inference of a causal or consistent relationship between military aircraft noise exposure and non-auditory health consequences for exposed residents. The results of published studies of aircraft noise on human health are unclear. There is no scientific basis for concluding that aircraft noise has a negative non-auditory health impact (DNWG Technical Bulletin: Non-Auditory Health Effects of Aircraft Noise, December 2013).

PTSD is a serious, life-altering condition. The National Institute of Mental Health (NIMH) offers guidance to understand the symptoms and reactions as well as information to find treatment. NIMH has specific links on their website at https://www.nimh.nih.gov/health/topics/post-traumatic-stress-disorder-ptsd/index.shtml. PTSD affects 6-8 percent of the population. Initiating or triggering events are highly varied – from military combat and natural disasters to car accidents and assault. Given the diverse

causation and success rate of individual treatment, it is not possible to predict the response or severity of the response individuals may have to the proposed training.

5f) Noise, hearing loss

Comment Summary: aircraft noise can lead to hearing loss; information provided on decibel levels that have been known to cause hearing loss; comparison of jet noise decibels to OSHA defined levels for hearing loss; necessity for hearing protection.

Response: Research continually refines our understanding of the effects of any pollutant or stressor on the human body. The studies to date continue to support the conclusion that permanent, physical harm for most people comes from chronic exposure to extreme noise (working lifetime of 40 years with exposure lasting 8 hours per day for 5 days per week). The DoD uses U.S. Environmental Protection Agency (USEPA) criteria screening for partial hearing loss risk by determining if any residences would be exposed to 80 DNL or greater. The intermittency of aircraft noise, even during training exercises with multiple aircraft at one time, makes the risk much lower than that expected to harm nearly all people. Permanent, physical harm from noise only occurs with extreme, chronic exposure. As discussed in the EIS (Section 3.3.1.3), populations exposed to noise greater than 80 dB DNL would be at the greatest risk of permanent hearing loss and none of the areas beneath the existing or proposed airspace would experience noise at this level. Residents and outdoor recreationists would have no ill effects from casual, temporary exposure to expected noise levels and hearing protection would not be required.

5g) Noise, sonic booms

Comment Summary: general concern for sonic booms; sonic booms cause structural damage to properties, adobe structures, cliff dwellings, and cultural resource sites. Overpressures from sonic booms needs additional review; use a threshold of 0.5 psf for damage to plaster and other sensitive materials.

Response: The noise impacts related to supersonic noise (i.e., sonic booms) is provided in EIS Sections 4.3.1.2, 4.3.2.2, and 4.3.3.2. As demonstrated in the EIS, the supersonic noise is not expected to be at a level that would cause structural damage. Additional information on supersonic noise and sonic booms has been included in the Final EIS to clarify this issue (see EIS Section 4.3).

Tests by the Air Force on sonic booms have found that most structures in good condition should not be affected by sonic booms with a peak overpressure of less than 16 pounds per square foot (psf). Typically, community exposure to sonic booms is less than 2 psf. Ground motion from sonic booms is rare and is well below structural damage thresholds accepted by the U.S. Bureau of Mines. Tests by the National Aeronautics and Space Administration (NASA) have shown that structures in good condition are undamaged by overpressures of up to 11 psf. As described in the EIS Section 4.11.1, damage to plaster is in a comparable range of glass but depends on the condition of the plaster. Adobe faces risks similar to plaster, but assessment is complicated by adobe structures being exposed to weather, where they can deteriorate in the absence of any specific loads. At 1 psf, the probability of a window breaking ranges from one in a billion (Sutherland 1990) to one in a million (Hershey and Higgins 1976).

5h) (code not used)

5i) Noise, annoyance

Comment Summary: nighttime sorties have more impact than daytime sorties; different hours of the night have different impacts to sleep disturbance; confusion about nighttime sorties occurring after dark or after 10:00pm (known as "environmental or acoustical" night).

Response: Aircraft noise that occurs at night is of greater concern to the public than noise that occurs during the day. The Proposed Action would have some nighttime operations as described in the EIS (approximately 1,000 sorties). The noise metric used for the analysis in the EIS (DNL) recognizes the higher disturbance from aircraft operations at night and highly penalizes this with a 10-dB penalty. That is, the model adds 10-dB to the projected noise results for night operations so that the additional "annoyance" is accounted for in the metric and analysis. The model applies this penalty to operations that occur after 10:00pm, often denoted as "acoustical night" or "environmental night". Under the Proposed Action in the EIS, nighttime activity is defined as operations that occur after dark (i.e., after sunset), not necessarily 10:00pm, however, the analysis assumed all nighttime activity would occur after 10:00pm to provide a worst-case scenario. Therefore, the actual nighttime noise is likely overestimated and would be less than the results presented in the EIS.

5j) Noise, data accuracy

Comment Summary: questions about the accuracy of the data in specific tables; notes about inconsistencies in tables in EIS and Appendices; conflicting training operations presented in Table 2.2-1 and Table 3.1-2 in Appendix F; Appendix F table includes operations that require use of a range – how was this accounted for in analysis; Table 3.1-3 (Appendix F) has 80% operations above 10,000 feet when Table 3.1-2 (Appendix F) shows 80% of sorties require less than 10,000 feet. SEL values at 500 feet in Table 4.3.2 should be greater than, not less than, the corresponding Lmax values. Discrepancy between Table 3.3-2 and 6.2-2 - the former shows Gila National Forest baseline to be 49 but the later shows <35.

Response: Comment about conflicting training operations in EIS Table 2.2-1 and App F Table 3.1-2: Table 3.1-2 in Appendix F shows all of the training in the F-16 syllabus at Holloman. The sorties that require expenditure of air-to-ground ordnance would be in restricted areas (see EIS Table 1.2-1), and on ranges not included in the Proposed Action. Table 2.2-1 shows just the training operations that would occur in the proposed airspace. The sorties that would occur in restricted areas are not part of the proposal and are not modeled. Both tables have been updated to clarify. It should also be noted that the noise model requires inputs of exact numbers in the various MOA components or combinations of those components depending on the training activity taking place. Therefore, the operations/sorties listed in tables in Appendix F (i.e., Table 4.1-1, 4.3-1, 5.1-1, 5.3-1, 6.1-1, and 6.3-1) are the exact sortie numbers used for modeling purposes. In reality, the operations in each of the various MOA components would vary year to year but would be within the range used in the model. For ease of reading, the sortie tables within the main body of the EIS were rounded to nearest tenth or hundredth.

Comment about Appendix F Table 3.1-3 and use of airspace above/below 10,000 feet: Appendix F Table 3.1-2 shows airspace requirements, which includes information about the lowest altitude needed. With few exceptions, these minimum altitudes are used for just a small portion of the time in the airspace. Appendix F Table 3.1-3 shows the distribution of altitudes for six groupings of training types that were used in the modeling. Some sorties never use below 10,000 feet, and others do. The overall amount of

time spent below 10,000 feet is a factor of these distributions by mission type, and the frequency of use of each group, which is derivative of the syllabus. EIS Table 2.2-2 shows the overall distribution that results: about 22% of the time is somewhere below 10,000 feet above ground level, with the rest above that level.

Comment about SEL values: Lmax shows the loudest sound for a noise event that may last many seconds, or even minutes. It does not account for the length of time that the event lasts, nor how much noise is produced before and/or after that loudest instant. SEL, on the other hand, does account for the total length of time of the entire event, and accounts for the rest of the noise by integrating the total event into a metric representing the loudness of the event as if it all happened in one second – to provide comparison between events of different lengths and sound profiles. Since many aircraft overflight events are longer than a second, this very often results in the SEL being larger than the Lmax. Together, these two metrics give a more complete answer about the experience of the total event.

Comment concerning discrepancy between EIS Table 3.3-2 and 6.2-2: There is no Table 6.2-2, assume this is a typo and commenter was referring to Table 4.3-8. The baseline noise levels for the POI: Gila National Forest are presented in two ways in the EIS: subsonic baseline noise in Table 3.3-2 (which is 49 dB [DNL] for the Gila National Forest) and supersonic baseline noise in Table 4.3-8 (which is <35 dB [CDNL] for the Gila National Forest). There is not a discrepancy in the data. These two sections also show A-weighted noise levels (subsonic noise) and C-weighted noise levels (supersonic noise) as supersonic flight and sonic booms are measured using C-weighted dB.

5k) Noise, metrics

Comment Summary: dismissal of Ldnmr as a metric to account for "sudden onset noise" not explained.

Response: The metric Ldnmr was not "dismissed" from the analysis. Ldnmr uses a "busy month" for calculation. Because Holloman AFB is a training base, with a steady training tempo, there is no month busier than the others. The onset rate adjustment was used in the noise calculations and was small enough that it did not result in a difference, since the numbers are rounded to whole decibels. Because the FAA regulations use straight DNL, without onset rate adjustments, and the DOD uses the metric with onset rate adjustments, both were calculated. Since they were the same result, the EIS stated that to try to reduce confusion, the results would be reported as "DNL", but that the numbers were equivalent to the Ldnmr values.

5l) Noise, modeling software

Comment Summary: questions about modeling software; does the model account for varied elevations or terrain. DEIS (page 4-19) shows Lmax and SEL values at or over 105. The model accuracy is unknown. EIS lacks analysis of multi-plane events within the MOAs since the analysis is done by "sorties" and some training events include more than one aircraft.

Response: MRNMAP noise modeling software is the only noise model approved for military airspace modeling. It is the accepted model for DOD and FAA. The noise model uses temperature, humidity and atmospheric pressure. It does not use terrain variation in the way that the airfield models do, due to the sound being predominantly produced overhead (whereas at an airfield, the greatest noise is produced very near the ground and the propagation outward is along the surface, where terrain variation has much more effect on the noise). The development of the approved noise models does include measurement of noise from actual aircraft. Tests of modeled events versus measured events have shown the models' accuracy,

which is why they are the approved models for use. While a single sortie is the takeoff, operation, and landing of one aircraft, the EIS analyzes the impacts of up to 10,000 sorties plus potential transient sorties. The total number of sorties analyzed does account for multi-aircraft events (i.e., a training event with 4 aircraft would count as 4 sorties, not 1, and was analyzed this way).

5m) Noise, F-35 use

Comment Summary: model didn't account for F-35 use of Lobos High (Appendix F).

Response: The noise model accounted for 300 transient F-35 sorties in Lobos High (see Appendix F Section 5.1, *Subsonic Modeling Data*). The text in Section 5.1 of Appendix F has been revised to make this clear. No change to the analysis as it was presented in the Draft EIS.

5n) Noise, baseline DNL

Comment Summary: request to show baseline DNL contours in a figure like the one provided for CDNL; questions about DNL values for specific POIs – how were these determined and why are they so different; requested map of flight tracks used for baseline DNL calculations.

Response: Because the airspace was modeled as an entire "block" there are no specific flight tracks within the airspace block for subsonic noise. This is partly because the subsonic activity can take place anywhere within the block. The model assumes an even distribution of aircraft and spreads the noise out over the entire block. Because of this, contours aren't typically shown, as they directly mirror the airspace boundary. Those results for subsonic noise (DNL) are therefore shown in tabular form, with values that represent the whole airspace block. Noise produced by supersonic flight is more directional and is more dependent on where the aircraft is flying specifically. For this (supersonic noise) analysis, the airspace was modeled based on how the Air Force intends to use the area geometrically. This results in CDNL contours, since there is generally more noise in the middle of the area than nearer the edges.

Variations in the DNL projections at specific points of interest may be due to variations in the floor of the MOA that overlies the POI, various FAA avoidance rules about populous areas or other things, or in some areas the model could include flights across more than one block of airspace. The noise modeling software provides a value but does not take into account terrain. However, it does take into account altitudes above ground level, and this is used to produce the calculated values. The airspace is modeled as a block with varying values along grid points (500 ft spacing). Therefore, there is some variation within the block of modeled airspace.

5o) Noise, vibration

Comment Summary: concern for noise vibration impacts specifically at Elephant Butte Dam and Gila Cliff Dwellings. The vulnerability of adobe buildings to aircraft vibrations is not a matter of speculation. Vibration study cited: https://pubs.usgs.gov/of/1988/0544/report.pdf. Questions concerning vibration/sonic boom impacts to livestock and poultry.

Response: The results of the Noise Analysis presented in the EIS (Section 4.3 and Appendix F), specifically the supersonic noise from sonic booms, do not indicate the need for a vibration study. Ground motion from sonic booms is rare and is well below structural damage thresholds accepted by the U.S. Bureau of Mines. All supersonic flights would be limited to above FL300 (approximately 30,000 feet MSL) where any resulting sonic boom would have limited impacts at ground level as evidenced in the

noise results (EIS Sections 4.3.1.2, 4.3.2.2, and 4.3.3.2) The anticipated sound pressure from this noise would not be at a level expected to damage structures. Additional information on supersonic noise has been included in the Final EIS to clarify this issue (see EIS Section 4.3). Additional information concerning sonic booms and vibration impacts on historical structures (such as adobe buildings) is provided in EIS Section 4.11.1.1; information concerning livestock and sonic booms is provided in EIS Section 4.5.1.2, Domestic Animals.

5p) Noise, VLA

Comment Summary: questions about noise reflection at the Very Large Array site; hearing loss for workers at VLA from amplified noise. Special consideration is needed in order to prevent excessive telemetry, communications, and radar transmissions over the array. In-beam or radar beam-on-beam occurrences have the potential to damage the highly-expensive, cryogenically-cooled RF electronics installed on each VLA antenna. Extended minimum altitude restrictions over antenna hardware are also required for noise limitations related to safety of life for NRAO personnel servicing the 27 VLA antennas at their 100 ft AGL apex.

Response: While the potential may exist for the amplification of sound waves due to the shape of the VLA antennas, these antennas are designed for capturing and amplifying radio signals from space, not sound waves. Hypothetically, for someone to experience sound amplification, they would need to be above the antenna working on the detector, and within the focal point of the reflector, during an overflight, with the antenna directed at the aircraft. While these events are potentially possible, they are probably unlikely. Hearing loss is not a concern associated with the Proposed Action as described in the EIS Section 3.3.1.3. The VLA is located within the existing Cato/Smitty airspace and is also beneath VR-176. There are current altitude restrictions of 1,000 feet avoidance within a 2 nautical mile radius of the main building at the VLA. Since the military is only one of the many users of the airspace in this area, any frequency requirements/restrictions would need to be established by the National Radio Astronomy Observatory through the Federal Communications Commission (FCC). The Air Force abides by the frequency limitations imposed by the FCC and the FAA Spectrum Management Office.

6) WILDERNESS AREAS

6a) Wilderness Areas, incompatibility

Comment Summary: statements concerning general incompatibility of aircraft activity, military training above Wilderness Areas or National Forests; reference to or direct quotes from Wilderness Act that defines the purpose of Wilderness Areas; concern about the use of chaff and flares over Wilderness Areas; air-dropping items prohibited in Wilderness Areas; FAA has agreed to a 2,000 foot over terrain flight advisory on aeronautical charts to reduce low level flight. Analysis should include impacts to wilderness values – particularly the quality of outstanding opportunities for solitude or a primitive and unconfined type of recreation. Wilderness areas are just that: wild areas, not to be used for other purposes than to let the natural uses thrive. The proposed use of the airspace over the New Mexico areas is misconceived and in contravention to the whole idea of a wilderness area.

Response: There are no designated Wilderness Areas associated with the Preferred Alternative (Talon MOA), the public concern over this issue is limited to the MOAs proposed in western New Mexico associated with Alternatives 2 and 3. If Alternative 2 or 3 were selected, the Air Force would commit to

implementing the 2,000-foot AGL avoidance over Wilderness Areas and National Parks as recommended in FAA Advisory Circular 91-36D (see EIS Sections 2.2.2, 2.8.2.1, and 7.1). The National Park Service and U.S. Forest Service have studied the impacts from aircraft overflight on Wilderness Areas in separate assessment reports issued after the 1987 National Parks Overflight Act, PL 100-91. Those assessments concluded that up to 2,000 feet was the level at which environmental impacts raised concerns (U.S. Forest Service 1992 and National Park Service 1994). FAA, in coordination with those same agencies, considered this concern when they issued FAA Advisory Circular 91-36D and recommended voluntary restrictions on flying below 2,000 feet AGL over these specific lands. FAA Advisory Circular 91-36D defines the surface of a national park area (including parks, forests, primitive areas, wilderness areas, recreational areas, national seashores, national monuments, national lakeshores, and national wildlife refuge and range areas) as the highest terrain within 2,000 feet laterally of the route of flight, or the upper-most rim of a canyon or valley. The Air Force is committed to requiring pilots observe this recommended altitude for Wilderness Areas under all of the alternatives (see Section 2.2.1 of the EIS), as such, the Proposed Action would not be out of compliance with the Wilderness Act or other FAA regulations concerning avoidance of noise sensitive areas.

In accordance with 36 CFR §261.18 National Forest Wilderness, the following are prohibited in a National Forest Wilderness: (a) Possessing or using a motor vehicle, motorboat or motorized equipment except as authorized by Federal Law or regulation, (b) Possessing or using a hang glider or bicycle, (c) Landing of aircraft, or dropping or picking up of any material, supplies, or person by means of aircraft, including a helicopter. Notable prohibitions of certain uses as defined in the Wilderness Act, Public Law 88-577 (16 USC 1131-1136), Section 4, include the following: ….(c) Except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.

The prohibitions in this regulation are aimed at transportation (i.e., using mechanical means to access Wilderness Areas or to airdrop supplies or persons) for commercial or private purposes. The Air Force does not propose to access any land areas, to include Wilderness Areas, as part of the Proposed Action. Dropping chaff or flares is a governmental activity for a government purpose (similar to aerial firefighting, patrolling, or rescue). The intent of the statute is focused on private/commercial activities (see Section 4(c) of the Wilderness Act) and these prohibitions do not apply to chaff and flares. Chaff is a tiny, dispersed residue that is approximately half the thickness of a very fine human hair and ranges in length from 0.3 to 1-inch or more that degrades rapidly after landing on the ground (see EIS Section 2.2.4). It is more akin to air emissions emanating from aircraft that operate within the NAS and drifts down to Wilderness Areas. Flares are designed to burn out completely well before reaching the ground (see EIS Sections 2.2.4 and 3.10.2.3) and do not present the same hazard as fireworks or pyrotechnics used at ground level (which are prohibited under 36 CFR 261.52(f)). Furthermore, there have not been any flare-related fires associated with Holloman AFB operations. The characteristics of chaff and flares and the potential impacts to resources beneath the airspace from the use of chaff and flares are described in various sections of the EIS (Sections 2.2.4, 3.10.2.3, 3.12.2.2, 4.4, 4.5.1.1, 4.5.1.2, 4.10.1.3, and 4.12.1.2).

The provision of the Wilderness Act of 1964 that some commenters refer to, 1133(d) [section 4.d] has only been interpreted to cover low level overflights, see 1987 National Parks Overflight Act and subsequent U.S. Forest Service and National Park Service overflight noise assessments and FAA Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (2004). As noted above, if Alternative 2 or 3 were selected, the Air Force would not perform low level overflights over Wilderness Areas or National Parks with implementation of the 2,000-foot avoidance recommendation over these areas. If one were to try to apply an unlimited vertical interpretation to this provision of the Act, there could be no overflight of Wilderness Areas unless the flights existed before 1964. Civilian aircraft overfly Wilderness Areas daily at higher levels in the NAS, that leads one to believe that no Wilderness Area overflights is not reasonable. It is all about altitude, and this provision has been consistently interpreted to apply only to low-level overflights or to aircraft landings.

Wilderness Areas are not discussed as a stand-alone resource area in the EIS, but rather in the Land Management Sections 3.6 and 4.6. The impacts to the physical and social resources within the Wilderness Area would be the same as those described in various resource sections of the EIS, i.e., air quality, natural resources, noise, recreation, etc. The noise associated with low-level overflights would be the primary concern in these noise sensitive areas and these areas were used as a Point of Interest (POI) in the noise analysis (see EIS Section 3.3.2.1, Figure 3.3-3). While the FAA recommended avoidance of 2,000 feet would be observed, there would still be a predicted increase in the noise within the Gila, Aldo Leopold, and the Apache Kid Wilderness Areas under Alternative 2, but the level would be well below the 55 DNL threshold established by the Environmental Protection Agency to protect public health and welfare (USEPA 1982). In accordance with FAA 1050.1F noise standards for noise sensitive areas were also analyzed for points of interest which included Wilderness Areas, and significance levels were not exceeded. See EIS Section 4.3.2.1, Table 4.3-7 for noise analysis of Wilderness Areas associated with Alternative 2. Under Alternative 3, there would be no change in the predicted noise within the Gila or Aldo Leopold Wilderness Areas and a small increase in the Apache Kid Wilderness (see EIS Section 4.3.3.1, Table 4.3-10). As stated above, there are no designated Wilderness Areas associated with Alternative 1.

7) WILDLIFE AND DOMESTIC ANIMALS

7a) Wildlife, general

Comment Summary: general statement that Proposed Action or aircraft noise will have impacts to wildlife or domestic animals. Suggestion that wilderness should have its own section in the EIS. Concerns that wildlife might ingest litter debris.

Response: Aircraft noise impacts to wildlife and domestic animals can vary depending on the type of animal and the environmental setting. Overall, the literature suggests that species differ in their response to various types, durations, and sources of noise (Manci et al. 1988; Radle 2007; NPS 2011; Shannon et al. 2016); and that, response of unconfined wildlife and domestic animals to aircraft overflight under most circumstances has minimal biological significance. The potential impacts to wildlife and domestic animals are discussed in detail in Sections 4.5.1.1 and 4.5.1.2. With regards to wildlife ingestion of litter/debris, see subsections titled “Potential Effects from Chaff and Flare” in Section 4.5.1.1 (Wildlife) and 4.5.1.2 (Domestic Animals). Wilderness is discussed in Land Management, Sections 3.6 and 4.6.

7b) Wildlife, additional references

Comment Summary: additional references, studies, or data provided with respect to noise impacts on wildlife, threatened and endangered species, or domestic animals.

Response: Some comments provided additional references or sources for information. These were evaluated for relevance to the Proposed Action and against the requirement of 40 CFR 1502.24, which requires Agencies preparing NEPA documents to "ensure the professional integrity, including scientific integrity, of the discussions and analyses." Some references were added to Section 4.5.1 (4.5.1.1 Wildlife) under the subheading "Potential Effects from Aircraft Noise". Other information referenced in the public comments is not included in the EIS because it does not meet these standards.

7c) Wildlife, startle effect

Comment Summary: aircraft noise causes horses, dogs, and other domestic animals to "startle"; safety concerns for riders of animals during aircraft overflights. Impact to potential safety from riders thrown from horses is inadequate – what is compensation for injuries?

Response: The potential impacts to domestic animals is described in EIS Section 4.5.1.2. EIS Section 7.2 (Mitigation Measures) under the heading "Public Safety" describes that the Air Force has a claims program for compensating anyone suffering a loss or damage due to training operations.

7d) Wildlife, migratory birds

Comment Summary: bird strike concern for migratory bird corridors or flyways, specifically along Rio Grande; impacts to Canada Geese, Sandhill Cranes; cranes often fly at altitudes of 6,000 to 7,000 feet and can sometimes fly at 13,000 feet; impacts to migratory birds at Bosque del Apache NWR; concerned about maintaining the Rio Grande migratory bird flyway

Response: Additional information on the potential for bird strike has been added to EIS Section 4.5 of the EIS. The Bird/Wildlife Strike Hazard program is discussed in EIS Section 3.10.2.2. Bird strike was also addressed in the project's Biological Assessment and consultation with U.S. Fish and Wildlife Service. The Rio Grande migratory flyway and the Bosque del Apache NWR are located beneath the proposed Christa and Kendra ATCAAs. As described in EIS Section 2.8.2.1, the ATCAAs would be used as a transition area between WSMR airspace and the proposed Cato, Smitty, and Lobos MOAs. Aircraft flights in the ATCAAs would be in the altitude range of FL180 to FL510 (i.e., approximately 18,000 feet MSL to 51,000 feet MSL). At this altitude, the noise associated with the overflights would be minimal (see EIS Section 4.3.2). The noise model included specific points at the NWR and along the Rio Grande and found the noise in these locations attributable to aircraft activity would remain unchanged (Baseline DNL in both locations was <35 DNL). The altitude of the ATCAAs would be high enough that bird strikes along the flyway would not be a concern and Holloman AFB actively monitors and avoids large flocks of birds for safety reasons (see EIS Sections 3.10.2.2 and 4.5 for additional bird strike information).

7e) Wildlife, nesting effects

Comment Summary: aircraft noise has impacts to nesting and reproduction for birds and other wildlife. EIS should consider the impacts.

Response: Although concerns have been raised in the literature and examples have been documented, studies of unconfined wildlife and domestic animals to overflight by military jet aircraft at 500 feet AGL or higher have not shown measurable changes in population size or reproductive success at the population level or other significant biological impact under normal conditions. The potential impacts to wildlife, including nesting or reproduction effects, are more specifically described in EIS Section 4.5.

7f) Wildlife, inadequate analysis

Comment Summary: inadequate analysis on wildlife (especially birds), threatened and endangered species, domestic animals in EIS; insufficient references to support impacts discussion; dated references used; EIS "cherry picked" references to support conclusions; lack of detailed analysis, specifically for Alternatives 2 and 3; impacts should be detailed for each alternative to show the differences between the two geographic areas; analysis should include impacts to lambs and ewes.

Vegetation not included in analysis – flare or crash could destroy with severe, extensive, long-lasting impact on native, forest vegetation. Lack of vegetation increases surface water runoff. Concern for loss of or impact to wild plants grown for food and medicine due to fire or pollution from chaff/flare debris

Response: The potential impacts of noise to wildlife, domestic animals, and special status species were discussed in detail for Alternative 1 using accepted scientific research. While some of these references are dated, they remain valid sources of information concerning the potential impacts to wildlife from noise. The impact discussion focuses on species groups, not specific geography; therefore, the potential impacts from aircraft noise would be the same for all alternatives. This approach was used to eliminate repetitive text and reduce the overall size of the document. All data and studies referenced were evaluated against the requirement of 40 CFR 1502.24 (CEQ Regulation), which requires Agencies preparing NEPA documents to "ensure the professional integrity, including scientific integrity, of the discussions and analyses." Some comments provided additional references or sources for information and these were added as appropriate (see response to Comment *7b) Wildlife, additional references*), including a discussion of noise impacts to wild mountain sheep (see EIS Section 4.5.1.1). Impacts to domestic animals are discussed generally based on Manci et al (1988), a compilation of literature. Threatened and Endangered Species lists were obtained through consultation with USFWS and a Biological Assessment was prepared (see response to Comment *7g) Wildlife, T&E*). Impacts discussions for Alternatives 2 and 3 referred back to Alternative 1, where the types of potential impacts to species groups were discussed in detail. As stated in Sections 4.5.2 and 4.5.3, the potential impacts from aircraft noise and use of chaff and flares on species groups would be the same as those described for Alternative 1. As stated in EIS Section 3.5.1 (Natural Resources, Definition of Resource), the natural resources impact analysis focuses on wildlife, domestic animals, and special status species. Vegetation is not expected to be affected by the Proposed Action. Fire is addressed in EIS Sections 3.10.2.1 and 4.10.1.1 (Ground Safety), specifically under the heading "Fire Risk Management." See also responses provided in 11a) *Safety, increased mishaps* and 11b) *Safety, fire risk from crashes*.

7g) Wildlife, T&E

Comment Summary: Mexican gray wolf; Southwestern willow flycatcher, the yellow-billed cuckoo, the narrow-headed garter snake, the Northern New Mexican garter snake, the Mexican spotted owl, the Chiricahua leopard frog, the loach minnow, and the spike dace found in geographic location of action; mitigation measures for Mexican Spotted Owl related to low-level overflights should be considered based

on wildfire impacts to habitat and the reduction in population in the Upper Gila Mountains Ecological Management Unit. General statements that analysis on threatened and endangered species is inadequate.

Response: The Air Force obtained a list of all threatened and endangered species potentially occurring beneath the proposed airspace through the U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC) system (see EIS Sections 3.5.2.1 and 3.5.2.2). In accordance with Section 7 of the Endangered Species Act, the Air Force consulted with U.S. Fish and Wildlife Service on the impacts to threatened and endangered species. The results of the consultation are provided in EIS Section 4.5 and Appendix H. The U.S. Fish and Wildlife Service concurred with the determination that the Preferred Alternative is likely to affect, but not likely to adversely affect threatened and endangered species.

8) ECONOMIC IMPACTS

8a) Economics, recreation and tourism

Comment Summary: Proposed Action will have impacts to local economies related to recreation and tourism, specifically those associated with Gila National Forest; increase in military aircraft (noise and visual) will detract from forest visitor experiences; loss of hunting and fishing opportunities not assessed; statistics provided on outdoor recreation and tourism contributions to state revenue. Analysis should include economic development plans of Silver City, Grant County, Las Cruces, and Truth or Consequences. Include visitation and economic statistics associated with the National Parks within airspace similar to what was done for National Forests.

Response: Commenters were concerned with the lack of a quantifiable impact to local economies related to recreation and tourism. The Air Force appreciates the statistics provided by some commenters on outdoor recreation and tourism in New Mexico and recognizes the importance of these industries to the local economy (specifically those counties and communities associated with Alternative 2). While the Air Force acknowledges possible impacts on tourism areas located under the loudest areas of the airspace, there is not a way to forecast a quantifiable impact on outdoor recreation and tourism from the proposed overflight activity. For this reason the statistics provided by some commenters were not added to the EIS specifically. EIS Section 3.9 provides economic data from the U.S. Census Bureau on employment sectors by industry in each county within the region of influence, as well as, visitor spending associated with National Forests and National Parks. The potential impact to recreation and the economic impact from those impacts are discussed in EIS Sections 4.7 and 4.8.1.3, respectively.

The distribution of proposed training would occur across a vast area of airspace (approximately seven million acres under Alternative 2). The likelihood of an individual experiencing an overflight is relatively low. Impacts to visitor experience would be intermittent, occurring only when aircraft are operating in the area. An individual's reaction to an overflight varies based on personal factors as well as factors such as proximity to the sound source, the setting of a specific recreational area, and the recreational activities in which the individual is engaged. Impacts on visitors from aircraft are only one of numerous factors that can affect visitor enjoyment (NPS 1994). It is not expected that the nature or tempo of the training would be at such a level that individuals recreating and hunting within the Wilderness Areas, National Forest land, or other recreation venues would experience extreme, consistent, routine, or even daily overflights. Visitors are currently exposed to noise from existing aircraft operations, military and civilian. The Air Force acknowledges the importance of these areas for tourism. However, it is not possible to predict how many individuals would have a negative response to an overflight that would cause them never to return,

thereby impacting the revenue in the area. Because there are many non-noise-related factors that can affect tourism, the analysis does not attempt to quantify changes in tourism revenues or visitor numbers in individual communities directly related to military overflights. The impacts to recreation are discussed in EIS Section 4.7 and the economic impacts are discussed in EIS Section 4.8.1.3.

Statistics concerning visitation and spending in National Park Service units has been added to the EIS as requested in EIS Section 3.8.2.4.

8b) Economics, Aviation Industry

Comment Summary: establishing MOAs will impact economics related to aviation industry; concern that local airports will no longer be used by commercial and private aircraft. NM is already difficult to navigate – a lot of air traffic ends up north and south of my airport (F82 in Lubbock) as they cross the U.S.; a lot of hours (expense) to travel to and from points west of this airport. Detachment of "key six" uses proposed Talon MOA area for an extended amount of time - don't know how the MOA would impact the operation or eliminate it.

Response: Operational impacts (i.e., financial) for commercial or corporate flights would be highly specific and varied for each company. As such, the EIS cannot provide specific financial impacts for individual private companies. However, these entities can use Appendix D2 (Tables D2-3, D2-6, D2-9, and D2-12) to determine the estimated re-route time and assess their individual operational impacts from that data. It should also be noted that these re-route estimates presented in Appendix D2 would only occur while the MOAs were active. Civilian and military air traffic controllers work daily with one another to deconflict the airspace (that is, provide separation between aircraft using the same airspace) and ensure aircraft operating in the national airspace are safe and able to accomplish their mission. It is understood that traffic traversing the region in the east-west directions would already potentially end up on flight tracks that are either north or south of F82, due to the activation of the WSMR airspace and/or the Bronco MOAs under current conditions. Under this proposal, the Bronco 1 and Bronco 2 MOAs would be returned to the NAS (would no longer exist as MOAs). Additionally, under Alternative 1, the Air Force has agreed to a mitigation measure that they will not activate the Bronco 3 MOA if the Talon High C MOA is active. It is hard to generalize about all civil aircraft types and all related businesses, but the return of these MOAs back to the NAS would be anticipated to help civil aircraft travelling to/from F82 since the total volume of MOA airspace would be reduced in the immediate vicinity of F82.

The comment concerning the “key six” use of the proposed Talon MOA did not provide any further detail as to what this use is and a specific response cannot be provided.

8c) Economics, housing values

Comment Summary: increased aircraft noise will affect housing values; commenter expects property values to decrease as a result of the project, and asks the USAF to make up the difference in tax base; information provided that correlated noise, decibel levels with percent reduction in housing value; requests for compensation on reduction in housing value related to increase in noise.

Response: The analysis acknowledges that increased operations may potentially have a negative impact on surrounding property values from the increased frequency of noise exposure. Aircraft noise has been found to potentially affect the value of property under airspace with 65 DNL or higher noise exposure (see EIS Section 4.3 for specific noise results, but all of the proposed airspace is expected to be well

below 65 DNL). Situations where it has been determined aircraft noise affects property values have been those that experience routine or continuous flights on a daily basis (such as housing around airports). Property values are dynamic and influenced by a combination of factors, including market conditions, neighborhood characteristics, and individual real property characteristics (e.g., the age of the property, its size, home amenities, and lot size). The degree to which any factor may affect property values is influenced by many other factors that fluctuate widely with time and market conditions. These same factors enter the personal decision for people to purchase a home. The frequency of flights and the noise related to them are two of many factors that may affect changes in property values. As many non-noise-related factors can affect property values, the analysis does not attempt to *quantify* changes in property values specifically as a result of the Proposed Action. For these reasons, the EIS does not provide for specific compensation for a reduction in housing values. However, individuals that believe they have experienced damages or injury from any Air Force activities may pursue a claim against the Air Force to pay for those damages. See EIS Section 4.8.1.2 for additional information.

8d) Economics, wind energy

Comment Summary: questions about how MOAs would affect potential for wind energy development (specifically beneath Talon MOA).

Response: The Department of Defense (DoD) is supportive of renewable energy where it is compatible with the DoD mission to test, train, and operate. The Air Force is a member of the established DoD Siting Clearinghouse (est. January 2011 through Congress in Section 358 of the Ike Skelton National Defense Authorization Act for FY2011, Public Law 111-383. That authority was amended and codified in 2017 as 10 USC 183a). The Clearinghouse provides a timely, transparent, and repeatable process that can evaluate potential impacts and explore mitigation options, while preserving the DoD mission through collaboration with internal and external stakeholders. The Clearinghouse works with industry to overcome risks to national security while promoting compatible domestic energy development.

Under the 2011 statute that set up the DoD Energy Siting Clearinghouse process (now codified at 10 USC 1083a), DoD must evaluate each siting proposal and meet with windfarm project developers to try to find feasible and affordable mitigation before objecting to a project. Because of the statutory mandate to try to reach compromise before objecting, the Air Force cannot prejudge windfarm sitings. The potential for overflight obstruction hazards is a shared concern for all aviation users, including the DoD, commercial, business, and general aviation users. As with any large vertical construction project, such as telecommunication towers or wind turbines, the DoD considers potential impacts of wind farm development on flight safety from obstructions introduced near DoD airfields, training ranges, and in areas used for military flight operations. For the development of wind turbines in, under, or adjacent to airspace, test ranges, and training ranges where low-flying operations are conducted, there is a potential to adversely affect the altitude at which flight operations can be conducted. There is potential risk due to the increased likelihood of encountering tall vertical structures during low altitude flight operations. The nearby location of overhead transmission lines to connect wind turbines to the local power grid can present a flight hazard to low altitude flight operations as well. The individual evaluation of any proposal considers such impacts of any specific development on a specific section of airspace.

In addition to the DoD Clearinghouse process, all structures constructed taller than 200 feet in height trigger a review from the FAA (through the Obstruction Evaluation / Airport, Airspace, Analysis (OE/AAA) process). The FAA will notify the managers of any affected military flying route of a new

proposal and the affected military airspace managers evaluate the proposal for possible detrimental impacts to operations. There are existing wind farm developments in which the Air Force has successfully developed a compatible relationship.

8e) Economics, general

Comment Summary: general statement or conclusions that Proposed Action would affect local economy (without specific reference to an industry); increased noise would affect quality of life causing people to move and impact local economy. Economic cost from fires; burden on fire prevention/fighting budgets.

Response: Conducting military training could potentially impact the economics of a region or locality. The level of impact would be dependent on a number of factors to include but not limited to frequency of flights, noise from flight, time of day of the flights, and the local perception of military flights. Based on the noise modeling results, the noise resulting from the proposed overflights would not exceed a level indicating a need for land use restrictions (65 DNL) or adversely affect human health (55 DNL) and the flights are not expected to occur in one area with substantial frequency given the overall size of the proposed training airspace. For these reasons the socioeconomic impact from the Proposed Action is expected to be minimal (see EIS Section 4.8, *Socioeconomics*). Quality of life is a subjective determination based on personal experiences and preferences. Some of the community characteristics that affect quality of life include population density; educational, recreational, and cultural opportunities; housing characteristics; and access to community and health care services. The preferences and values attributed to these characteristics will vary by the individual as well as the form in which these characteristics are presented in the community. Therefore, the EIS does not analyze the effects on a specific individuals' quality of life. The specific cost for responding to a fire as a result of the proposed training activity cannot be quantified since it is dependent on local conditions at the time of the incident, geographic area and distance from responders, and severity of fire. The Air Force responds to all aircraft-related incidents and provides compensation for damages associated with a fire caused by Air Force activity (see EIS Section 4.10.1.1, *Ground Safety, Crash Response*). Furthermore, the Air Force has a claims program for compensating anyone suffering a loss or damage due to training operations.

9) CIVIL AVIATION

9a) Civil Aviation, general

Comment Summary: general statement or conclusion that Proposed Action would have negative impacts to civil aviation; commenter recommended all three MOAs be created, designating 1 as the primary and the other 2 as secondary to provide flexibility in activation; concerns that medivac flights would be delayed by active MOAs; statement that medivac flights must go around active MOAs; FAA can't toggle MOAs on/off as is implied in the EIS; concerns that aerial firefighting capability would be impacted by MOAs. Hobbs KHOB and Carlsbad KCNM are both hubs for General Aviation and 135/121 operations in the area. I would be concerned about the ability of these airports to continue providing service to these operators and local pilots; our citizens who are active in flight-related industries continue to have serious concerns related to the proposed expansion into the Talon MOA airspace. The EIS lists one of criteria to be that modifications would have limited impacts on civil aviation. Given the unprecedented growth taking place in Carlsbad and the surrounding areas, we remain highly concerned that the Talon MOA, if adopted, could have a very significant impact on civil aviation.

Response: The Air Force appreciates the support for the Proposed Action provided by many commenters and having all three proposed MOAs (similar to the Proposed Action under Alternative 3) would provide greater flexibility to accomplish training missions. As described in Section 2.2.1 of the EIS, emergency flights or flights in distress are always given priority in the airspace, but non-emergency ambulance flights (for example, on the return trip without a patient on board) would have to transit the MOA via VFR or route around like other general aviation. Similarly, aerial fire fighting activities would take precedence in the area. In the event there is a fire, military training would not occur within the same airspace. MOAs are charted airspace, but not always active. When they are inactive it reverts to Class E or G airspace. Pilots can check NOTAMs to find out when the MOA is active, or they can call on the radio to find out real time.

In response to the concern about civil aviation impacts associated with the Talon MOA (notably in the areas of Artesia, Carlsbad, Roswell, and Hobbs and flight corridors between these areas/airports), the EIS addresses the following main issues associated with the proposed Talon MOA to support the conclusion that impacts to civil aviation, and thus aviation-related industries, would be minimal:

- The Proposed Talon Low A/B MOAs were designed to exclude airfield Class D, Class E surface area, and Class E 700-foot floor areas for the local airports (see Appendix D1, Figure D1-1).
- Non-military airspace transit through the area (not using local airports):
    - Appendix D2, Section D2.3 includes an analysis of air traffic through the area, divided into altitude strata (High, Medium, Low) for the proposed Talon ATCAA, High MOA, and Low MOA structures.
    - High traffic (above FL180) already must fly around the WSMR when it is operational. Since the proposed Talon MOA would be used at the same times, the impact of the Talon MOA on this commercial traffic is very small. Appendix D2, Table D2-3 shows the impact of Alternative 1 for the 25 most commonly used city pairings (that is, the 50 most common routings, since they are bi-directional) and the largest impact is a change of less than a minute of flight time.
    - Appendix D2, Table D2-9 shows the most used airport pairings for the Proposed Talon High B/C MOAs. VFR traffic could cross this area and IFR traffic would have to either avoid it laterally or vertically by being below 12,500 feet MSL. Table D2-9 shows the details of the changes for the IFR traffic; the time differences for routing around the area are mostly between 1.5 and 2.5 minutes. The worst potential impact is IFR traffic from Cavern City to Denver Centennial that would have to re-route an additional 9.9 minutes (on the total 467 mile trip) or remain below 12,5000 feet MSL until clear of the area (which would take 47nm). This Cavern City to Denver Centennial flight occurs on an average of almost one per week. These conditions would exist about 9 hours per day for 260 training days per year.
    - Appendix D2, Table D2-6 shows the most common airport pairings for observed traffic in the proposed Talon Low B MOA. This table shows that re-routing some of these IFR flights may add 1 to 9 minutes additional time. VFR traffic could cross the MOA airspace, or it could route around with the same time differences as the IFR traffic. The most common routings that occur more than once per week, would have an average of 3 minutes difference by going around the proposed Talon Low B MOA. There are two routings that would have an

additional 9 minutes if they were rerouted (LBB to ATS and ATS to LBB), but these flights combined only occur once per week. These flights would only be re-routed if they maintained IFR (vice VFR), and only if the MOA was activated. Appendix D2, Table D2-4 shows that the Talon Low B MOA would be active about 2.6 hours per day for 260 training days per year.

In summary, the various MOAs would have a varying effect on civil traffic. The Proposed Action would not result in continuous use of the MOAs, and when the proposed areas are in use, the additional time to either go around, or remain below the MOA, or descend on arrival to be beneath the MOA are minimal for general civil (including commercial) traffic.

9b) Civil Aviation, VFR traffic

Comment Summary: general comments or questions about how proposed low MOAs would affect VFR traffic; alternatives 2 and 3 may limit VFR flights, especially flight training opportunities, as many pilots and students expressed concerns about the limitations of using "see and avoid" protocols when encountering much faster moving military aircraft within MOAs; specific impacts noted for VFR traffic associated with Gila National Forest with regards to hunting, recreation, or general transport. Civil VFR aircraft in Gila area is under-represented in EIS since radar and communications coverage are unavailable to VFR aircraft in this area; Talon B Low with VFR will affect JB Flight Services that operates in altitudes of 500-700 feet; crop dusting flights operate at 500 feet AGL on the proposed Talon Low MOA area and spray about 15,000 acres in this area; impacts to aviators flying VFR for oil and gas infrastructure inspection.

Response: While a MOA does not prohibit access to VFR traffic, it is recognized that many VFR pilots choose to avoid these areas due to safety concerns, particularly within low MOAs. A Notice to Airmen (NOTAM) is issued 24 hours in advance of MOA activation to increase awareness of military training in the area to increase the safety of all airspace users. The concern for student pilots using "see and avoid" procedures in a MOA was generated from the Las Cruces area. While Las Cruces is not directly beneath any proposed airspace, student pilots are likely to use surrounding airspace associated with Alternative 2 (notably, the Lobos Low MOA). It is also noted that there is a concern for crop dusting and pipeline monitoring activity that occurs in the lower altitudes (500 feet AGL) of the Talon Low MOAs that would present a safety concern when military jet aircraft are also training at this altitude.

As detailed in Appendix D2 of the EIS (formerly D3 in the Draft EIS), the expected usage of the low MOAs is limited: 17% Talon Low A/B (Alternative 1, Appendix D2 Section D2.3.2.1, Talon Low A/B MOAs.) and 5% Lobos Low and 20% Smitty (Alternative 2, Appendix D2 Section D2.4.2., MOA Traffic), and even less under Alternative 3. This expected usage equates to 2 aircraft in the MOA for 2.6 hours per day in Talon Low A and B, less than 1 hour per day (0.7 hours) in the Lobos Low MOA, and 3.1 hours per day in Smitty MOA. It should also be noted that this usage applies to the entire low MOA, which spans from 500 feet AGL up to 12,500 or 13,500 feet MSL and does not necessarily mean the aircraft would be operating at 500 feet AGL for this entire duration. Most training scenarios require the F-16s to operate at 500 feet AGL for a limited amount of time before climbing to higher altitudes within the MOA. Given the expected frequency of the crop dusting and pipeline monitoring activities (daily) and that these aircraft would be patrolling (i.e., focusing their attention downward and operating at lower altitudes), the F-16 pilots operating above at higher altitudes would remain vigilant and instill "see and avoid" procedures to ensure safe operation of both users. See also the response to *22) Mitigation*.

With respect to VFR traffic in the Gila National Forest that is utilizing multiple, small airstrips, as described above the proposed use of the Lobos Low MOA (under Alternative 2) would be limited (less than 1 hour per day) (see EIS Section 4.2.2.1).

9c) Civil Aviation, IFR traffic

Comment Summary: general comments or questions about IFR traffic in high MOAs; concern about IFR traffic from Silver City (Grant County Airport, SVC) heading to Albuquerque (ABQ) that would be re-routed to the east of WSMR; traffic from SVC heading to Phoenix (PHX); potentially bottleneck air traffic to a corridor between Smitty MOA, Lobos Low MOAs and R5111C/D - this corridor creates concern for IFR traffic which cannot enter either restricted or active MOAs, and for the VFR traffic, while allowed, would usually elect not to fly within active MOAs. EIS should address operational impacts for commercial flights into Roswell, Carlsbad, Artesia.

Response: The impacts associated with civil aviation (to include IFR traffic in high MOAs and ATCAAs) are detailed for each alternative in EIS Section 4.2 and Appendix D2. The IFR traffic along the north-south corridor from SVC to ABQ route and SVC to PHX is specifically addressed in Section D2.4.2 in Appendix D2. This section has been revised to more clearly detail the impacts to air traffic using the Grant County Airport. IFR traffic using the corridor between the Smitty and Lobos MOAs and R5111C/D is discussed in Appendix D2 Section D2.4.1 and Figure D2-2.

Operational impacts (i.e., financial) for commercial or corporate flights would be highly specific and varied for each company. As such, the EIS cannot provide specific financial impacts for individual private companies. However, these entities can use Appendix D2 (Tables D2-3, D2-6, D2-9, and D2-12) to determine the estimated re-route time and assess their individual operational impacts from that data. It should also be noted that these re-route estimates presented in Appendix D2 would only occur while the MOAs were active.

9d) Civil Aviation, radar coverage

Comment Summary: statements about lack of dependable radar coverage in mountainous areas (specifically beneath proposed Lobos MOA) making see and avoid challenging; lack of radar coverage between Carlsbad and Roswell. In a remote area like this part of New Mexico, where radar coverage may only exist at higher altitudes, ADS-B can improve the safety and efficiency of the airspace for military and general aviation aircraft.

Response: It is recognized from the comments that lack of dependable radar coverage in the mountainous areas of the Gila National Forest creates a safety concern for VFR traffic potentially operating in an active low MOA. As discussed in the response for Comment 9b) *Civil Aviation, VFR traffic*, the anticipated Air Force use of the proposed Lobos Low MOA would be approximately 5% under Alternative 2. This equates to approximately 770 times per year. Assuming two aircraft at a time, this means the MOA would be activated less than two times per weekday on average, for a 30-minute period (see EIS Section 4.2.2.1). The proposed low usage of that MOA should alleviate many of the potential conflicts within that airspace. A mitigation measure (see Section 7.2 of the EIS) has been included to improve FAA communication infrastructure needed to support air traffic control radio coverage of the Talon Low MOA area. See response in *22) Mitigation* for specific information concerning ADS-B.

9e) Civil Aviation, Spaceport and Rio Grande

Comment Summary: concern or questions about impacts to Spaceport activities and overlapping of their ATCAA with Christa and Kendra ATCAAs; concern about general aviation along Rio Grande transiting north-south (i.e., from Silver City to Albuquerque or Las Cruces to Albuquerque/Santa Fe); daily flight from Grant Count (SVC) to Albuquerque (ABQ) with normal cruise altitude of 20,000 feet, Christa and Kendra ATCAAs would mean general aviation would have to divert to the east of WSMR, a considerable re-route for small local aircraft traveling from Silver City or Grant County to Albuquerque or Socorro.

Response: The Air Force met with Spaceport multiple times during scoping to discuss their operations. Spaceport uses restricted airspace above WSMR in conjunction with their own ATCAA for their operations. When Spaceport has a launch, these areas are closed to other users (to include Holloman AFB). With the closure of the airspace over WSMR for launches, the F-16s from Holloman AFB would not be able to transit WSMR to get to the proposed Christa and Kendra ATCAAs. Since the Christa and Kendra ATCAAs would not be in use at the same time as the Spaceport ATCAA there would be no potential for conflict.

The flights from Silver City or Las Cruces flying to Albuquerque or Santa Fe could still fly through this general area if the ATCAAs were active, they would just have to reduce their cruise altitude to lower than FL180 (which would be the floor of the ATCAAs) for about half of their travel distance. The Christa and Kendra ATCAAs would be active for about 5.8 hours per day (39% of daytime hours) under Alternative 2 and about 2.3 hours per day (15% of daytime hours) under Alternative 3. These flights could fly through the area as they currently do when the ATCAAs were not active. The Christa and Kendra ATCAAs would not be established under Alternative 1, the Preferred Alternative, therefore, this potential impact would not occur.

9f) Civil Aviation, weather diversions

Comment Summary: questions about operations during weather; concern that MOAs are proposed for areas generally used for weather diversions around mountainous areas.

Response: In general, the F-16s would not perform training during major weather events so the conflict of the F-16s training in areas needed for civil aircraft diversions would be limited. During weather events or other safety situations, the FAA would recall the MOA and return the airspace to the NAS.

9g) Civil Aviation, airport approaches

Comment Summary: questions, comments, or concerns about impact to airport approaches and departures beneath proposed MOAs; specific concerns about Silver City, Grant County (GPS approach for runway 08 and impacts to Gila Tanker Base), and smaller airstrips in Gila National Forest; specific concerns about Artesia approach. Ask that ATS IFR approaches be protected by slightly adjusting proposed airspace and we support Alternate 3

Response: The approach to SVC GPS Runway 08 would overlap with Lobos Low MOA. Section D2.4.2 in Appendix D2 of the EIS (formerly Appendix D3 of the Draft EIS) provides specific details about this approach should Alternative 2 be implemented. With regards to impacts to the Gila Tanker Base, during times that firefighting aircraft were operating in the area to actively suppress a fire, they would have precedence over the airspace and the Air Force would not be conducting training operations. The proposed Talon Low B was developed with the approach to Artesia (ATS) in mind; the northern boundary

of the low MOA was modified as the proposal progressed to avoid the ATS approaches (see EIS Section 7.2, *Mitigation Measures*).

9h) Civil Aviation, data questions

Comment Summary: questions, comments, or concerns about civil aviation data and impacts; appendix D1 (page D-13) listed aircraft in the Roswell airport included three multipilot engine airplanes which is incorrect; Pg 4-13 states that SVC is not and will not be under a MOA which conflicts with Pg D3-20 which says SVC lies under the proposed Lobos MOA.

Response: Airport data reported in Appendix D1 was collected from SkyVector and represents data reported to the FAA. The data for Roswell International Airport indicated 3 multi-engine aircraft, 35 single-engine aircraft, 3 jet aircraft, and 2 helicopters based on field. The Grant County Airport (SVC) is not located beneath the MOA, but it's Class E airspace and approaches/departures overlap with the proposed Lobos Low MOA. This has been clarified in Appendix D2 (formerly Appendix D3 of the Draft EIS).

10) CHAFF AND FLARES

10a) Chaff and Flares, fire risk

Comment Summary: increased fire risk from flare use, specifically over Gila National Forest and other dry areas; general notes that Proposed Action would increase fire risk. Analysis of fire risk from flares is inadequate, doesn't follow guidelines in the 1997 Air Force reference that requires site-specific analysis. EIS fails to recognize the different fire vulnerabilities between the Talon MOA and the Cato, Smitty, Lobos MOAs. Cliff-Gila valley had a fire started from a flare in 2017 that was put out by locals. Flares allegedly burn out far above ground level, but there are documented cases of them being mistakenly released at low altitudes, reaching the ground and igniting fires.

Response: Wildfires from any cause would be serious and can impact human investments, animals, wildlife, and vegetation. Given the number of the comments on the risk of fire from flares, the Air Force recognizes the communities' concern. Therefore, several sections of the EIS discuss the fire risk from flares and also aircraft mishaps: EIS Sections 2.2.4.2, 3.10.2.1, 3.10.2.3, 4.10.1.1, 4.10.1.3. A site-specific fire risk assessment requires input of several variables that cannot be determined at the scale of an entire MOA. Section 4.10.1.3 has been revised to include additional details concerning the risk of fires from the use of flares.

Flare ejection and reliability are described in EIS Section 2.2.4.2, as described improper flare functioning would be rare but could increase the risk of fire. In response to the comment about flares being dropped at low altitudes, flares are designed to burn out within 3-5 seconds (which equates to approximately 400 feet, see EIS Section 3.10.2.3) which could be a fire concern if the flare was released below 500 feet AGL; none of the proposed airspace would allow for aircraft activity lower than 500 feet AGL so even an accidental release below the minimum altitude would not have a significant fire risk especially with the flare fire danger restrictions that are used for Holloman AFB aircraft activity.

In response to the comment about a fire in 2017 in the Cliff-Gila valley, Holloman AFB was never contacted about this incident and therefore did not investigate this claim. The base did receive information about C-130 aircraft using this general area. C-130's from Kirtland AFB fly up to 34 sorties annually along VR-176. In addition, C-130's associated with the Air National Guard (ANG) Advanced Tactics

Aircrew Course from Missouri fly up to 100 sorties annually in western New Mexico. Currently, aircraft from Holloman AFB do not drop flares in this area.

The 1997 Air Force reference was updated with the *Supplemental Report Environmental Effects of Training with Defensive Countermeasures* (Air Force 2011) which has been used substantially in the analysis presented in the EIS. Both of these documents are reference sources that provide descriptions of potential impacts and recommendations for analyses, these are not documents that dictate Air Force requirements as implied by the commenter.

10b) Chaff and Flares, litter

Comment Summary: dispensing chaff and flares increases debris, litter on the ground; specifically litter/debris in wilderness areas or forests. Concerns that wildlife might ingest litter debris. Analysis does not account for chaff cartridge failures that could deposit large amounts of chaff at a single location. Lack of analysis on soils from degraded residual materials into microplastics.

Response: As described in the EIS, the use of chaff and flares results in residual materials that eventually land on the ground surface (see Table 3.1-2 in the EIS). As described, the materials would be small and widely distributed over a significant area of land and not be concentrated in any one location. A "cartridge failure" causing large amounts of chaff bundles to be released in one location would be an extremely rare anomaly. The impact of such a release would be highly site-specific and cannot be accurately analyzed in this EIS. See Sections 4.5.1.1 and 4.5.1.2 for a discussion on the potential wildlife and domestic animal impacts from residual materials. Section 4.12.1.2 discusses soil and water impacts from chaff and flares, to include non-deployed "clumps" of chaff.

10c) Chaff and Flares, dud flares

Comment Summary: concerns with dud flares, specifically the safety issues. Concerns that DEIS dismisses the effects of dud flares; lack of analysis of wildlife impacts from encounters with dud flares, potential ingestion of dud flare.

Response: As noted in the EIS and in the comments, a dud flare would be a serious safety concern. The EIS describes the reliability of flares and why dud flares sometimes occur (see EIS Section 2.4.2.2) as well as the safety concerns related to dud flares (see EIS Section 3.10.2.3 and 4.10.1.3). A flare requires a 1,000- to 2,000-degree Fahrenheit heat source to ignite. Very few (if any) dude flares are expected, therefore, encountering one would be very rare and the likelihood of one igniting would be even more remote. An animal or person stepping on a flare would likely not cause the flare to ignite, although any flare encountered should be treated as unexploded ordnance and avoided. Animals have not been found to freely ingest residual materials from flares (Air Force 2011b), so it is unlikely they would attempt to ingest an entire dud flare.

10d) Chaff and Flares, health concerns

Comment Summary: components of chaff and flares will cause health or environmental risks; health risks concerning chaff are unknown; comparison of fiber glass health concerns with chaff; chaff and flare impacts health of wildlife and domestic animals from ingestion or nest material; information, details about the toxicity of components of chaff or flares (magnesium, boron, etc.) not provided in the Draft EIS. Impacts to wild plants.

Response: The components of chaff and flares are described in detail in the EIS (see Sections 2.2.4 and 3.12.2.2). The potential health concerns to humans and animals has been studied and the results of those studies are provided in various parts of the EIS (Section 4.12.1.2 for human impacts, Section 4.5.1.1 for wildlife impacts, and Section 4.5.1.2 for domestic animal impacts). The toxicity of the components of chaff and flares is described in detail in Sections 3.12.2.2 and 4.12.1.2. The primary reference source used in the EIS for chaff and flare health concerns is a study done in 2011 (Air Force 2011b) that is a compilation of over 40 years of research and evaluation on the effects of chaff and flares on the environment. This study also addressed open ended concerns and questions identified during an independent evaluation of chaff done by the General Accounting Office, *Environmental Effects of RF Chaff (1999)* and *Select Panel Report* (2002). Many of the comments submitted on the Draft EIS were similar in nature to those open-ended concerns and questions in the independent evaluations. See also response to *10a) Chaff and Flares, fire risk*.

Some comments confused the potential impact from chaff filaments with the health concerns related to fiber glass. Fiber glass is a synthetic mineral fiber made of silica compounds and is used in insulation. A binder is added to insulation fiber glass to hold the fibers together and the most common binder that used to be added to fiber glass was phenol-formaldehyde. Chaff does not contain a binder. Persons installing insulation are potentially exposed to fragmented fiber glass during installation when the material is cut. Exposure to fiber glass could irritate the worker's skin, eyes, or the respiratory system if the fibers are small enough to inhale. Arfsten et al. (2002) concluded that there are no data indicating that inhalation or ingestion of chaff or dermal contact with chaff has any adverse health effects in humans. Therefore, comparisons to fiber glass insulation and chaff are not accurate.

10e) Chaff and Flares, air pollution

Comment Summary: general statement or conclusions that chaff distribution creates air pollution; concern for inhalation of chaff fibers; impacts of chaff are largely unknown (references to 1997 Air Force study). Concern that high winds typical of New Mexico will transport fine particles. Concern about byproducts from burning Teflon.

Response: The toxicity of the components of chaff and flares is described in detail in Sections 3.12.2.2 and 4.12.1.2. A study conducted by the Desert Research Institute in 2002, The Fate and Distribution of Radio Frequency Chaff (Desert Research Institute 2002), and an independent parallel study conducted by B.W. Cook, Investigation of the Abrasion, Fragmentation, and Re-Suspension of Chaff (referenced in Air Force 2011b), addressed the concern of chaff fragmentation into inhalable particles (PM_{10} or smaller). Based on these studies it can be concluded that there is little to no risk of chaff abrading in the air to inhalable particles before being deposited on the ground. The primary reference source used in the EIS for chaff and flare health concerns is a study done in 2011 (Air Force 2011b) that is a compilation of over 40 years of research and evaluation on the effects of chaff and flares on the environment. The byproducts from flare combustion would not come into contact with residents or wildlife given the minimum altitude of release for flares (see EIS Sections 3.12.2.2 and 4.12.1.2).

10f) Chaff and Flares, water pollution

Comment Summary: toxicity of chaff and flare components not analyzed; failure to follow Air Force guidance on assessment of impacts to small, confined water bodies (reference to Air Force 1997 study). Precipitation runoff will transport materials to streams. Increased aluminum into water bodies not studied

or addressed in DEIS. EIS should include an inventory and sampling of significant water resources to assess vulnerabilities to contamination by chaff.

Response: The toxicity of the components of chaff and flares is described in detail in Sections 3.12.2.2 and 4.12.1.2 of the EIS. Section 3.1.3 provides the potential distribution of chaff and flares residual material beneath the airspace under each alternative. EIS Section 4.12.1.2 provides information concerning the potential soil and water contamination from chaff. Chaff does not pose a water quality concern; therefore, an inventory or sampling of water sources is not warranted.

11) SAFETY

11a) Safety, increased mishaps

Comment Summary: statements or conclusions that Proposed Action will have increased aircraft mishaps; concerns about cleanup and payment for mishaps; questions about mishaps data. EIS should include mishap rates from training rather than overall mishaps since the aircraft went into service. How do the flight hours relate to a sortie. EIS should include a predicted number of crashes; include the recovery efforts and how to mitigate the damage if a crash occurs in a Wilderness Study Area, Wilderness Area, or National Monument. The utilization of airspace over Holloman AFB and WSMR for pilots training should be limited to those areas and not include the airspace in a radius of 10 miles around the center of Alamogordo; should restrict training to the hours of 7:00 to 17:00 weekdays only. Concern about expanding Talon MOA near proposed nuclear waste facility with respect to potential crashes.

Response: Section 3.10 of the EIS provides aircraft mishap statistics for the F-16 and incident response procedures for Holloman AFB. Aircraft mishap rates are calculated based on total flying hours, excluding combat losses due to enemy action, and are not broken down into training versus operational hours. The mishap rate for the F-16 has been updated in the EIS to the most currently available information (FY19); the mishap rate has actually decreased in recent years despite F-16 crashes that have occurred worldwide. Impacts to safety from aircraft operations are presented in Section 4.10 of the EIS. The overall mishap rate for the F-16 would not be expected to change as a result of the Proposed Action.

It is impossible to predict the precise location of an aircraft accident; therefore, the possibility for a mishap in a remote area does exist. As described in the EIS (Section 4.10), local first responders would likely be first on the scene given the distance from Holloman AFB, and the Air Force would consult with the appropriate land use manager to minimize direct damage and coordinate actions. As described in EIS Section 3.10.2.1, first responders would stabilize the situation and minimize further damage. A National Defense Area would be established around the accident scene and the site would be secured during the investigation. The Air Force would be responsible for site clean-up and any damage claims submitted for the incident. The Air Force response to a crash would follow the same procedures regardless of the location whether it be a rural/remote area, Wilderness Study Area, Wilderness Area, or National Monument. As stated above, the Air Force would consult with the land use manager to minimize damage or determine site-specific mitigation measures.

Pilots stationed at Holloman AFB use the airspace at WSMR for a large portion of their training (see EIS Section 1.2.2, *F-16 Pilot Training*) but F-16 training cannot be limited exclusively to this airspace (see EIS Section 2.6.2, *Non-Air Force Schedule Airspace*). There is no training airspace (i.e., MOAs or restricted areas) over Alamogordo and the Proposed Action would not change any operations in the vicinity of Alamogordo. The current operational hours are 7:00 am to 10:00pm, Monday through Friday.

These operational hours cannot be reduced to 5:00pm as this would not allow enough time to accomplish all the training needs for pilots stationed at Holloman AFB and the pilots also need to conduct training after dark.

The proposed location for an interim nuclear waste storage facility is approximately halfway between Carlsbad and Hobbs, NM. The site would be a temporary holding area for spent nuclear fuel until a permanent repository is identified. The timeframe or likelihood of this facility being constructed is unknown. However, this site is outside of the eastern edge of the proposed Talon MOA. The F-16 training activities addressed in this EIS would not occur over the proposed nuclear waste site and would not represent an additional aircraft mishap safety concern in this area.

11b) Safety, fire risk from crashes

Comment Summary: statements or conclusions that mishaps will increase fire risk; EIS lacks analysis of impacts of fire from aircraft mishap; concerns about local, volunteer fire departments responding to fire from aircraft mishap; cost of fire from a mishap on local resources (fiscal and human).

Response: Mishap fire risk and management impacts are presented in Section 4.10.1.1 of the EIS. F-16 operations currently occur within airspace associated with Holloman AFB and have not presented an increased fire risk nor has the base's aircraft activity been the cause of a fire. The proposed operations would be similar in nature to the existing operations and would not constitute a novel or increased fire risk for the land under the MOAs. The activities associated with response to a fire would be site-specific and cannot be predicted in the EIS, instead the Air Force procedure for responding to an incident was described in EIS Section 3.10.2.1. The success of fighting a fire is dependent on a multitude of variables to include, but aren't limited to, the climatic conditions at the site, distance first responders must travel to the site, level of access to the site, terrain, capabilities of first responders, and resources available to fight the fire. Given the extensive variables, it is not possible to accurately describe or predict the fiscal and human impact from a fire or aircraft mishap.

11c) Safety, hydrazine

Comment Summary: concerns about hydrazine release to environment during aircraft mishap; hydrazine could kill animals/wildlife; requests for training of local fire departments specific to hydrazine.

Response: Hazardous materials are described in detail in Section 3.12 and 4.12 of the EIS. F-16 aircraft carry a small quantity of hydrazine in a sealed canister that is designed to withstand crash impact damage. In any crash that is severe enough to rupture the canister, it is most likely that fire would also be involved, which would burn and completely consume the hydrazine. The local impacts from such a crash would be primarily from fire and less about hydrazine. Any hazards associated with the brief time the hydrazine was burning would be very localized to the crash site and short-term. Any fumes from hydrazine would be gone by the time first responders or any person could approach the crash site. Wildlife in the impact area or in the immediate vicinity of a crash that are unable to flee would likely be killed. EIS Section 4.12.1.1 describes the impacts associated with hydrazine. The Air Force has Standards of Procedure in the event of an aircraft mishap to identify potential hazardous materials and situations, protect responding personnel and the environment from immediate hazards, and to provide guidelines for the ultimate cleanup and disposal of the crash residues. The request for training of local fire departments was requested as a mitigation measure and is discussed in *22) Mitigation*.

12) AIR QUALITY

12a) Air Quality, general

Comment Summary: concerns about air quality with respect to jet emissions, burning of jet fuel; pollutants not analyzed for short-term thresholds; analysis averages pollutants over broad airspace; no monitoring station data included; unclear if analysis included aircraft activity at 500 feet or just 3,000 feet mixing height; Doña Ana County would be part of the proposed area in Alternative 2 - Kendra Air Traffic Control Assigned Airspace and should be mentioned in this draft Environmental Impact Statement (EIS). With regards to the National Ambient Air Quality Standards, the Anthony Area within Doña Ana County is nonattainment for particulate matter (PM10) and the Sunland Park Area in Doña Ana County is nonattainment for ozone (marginal) Dona Ana County is in nonattainment; air quality analysis should include specific emissions over Wilderness Areas; cumulative analysis should include new mining activity near Hanover, NM; analysis should include sub-MOAs since each sub-MOA could have concurrent aircraft.

Response: The EIS was written consistent with U.S. Air Force policy for evaluating air quality impacts under NEPA. Section 4.4 (Air Quality) describes the methodologies employed in the analysis of potential impacts to air quality. For attainment areas, prevention of significant deterioration stationary source permitting threshold was used as an indicator of the significance of potential impacts. Areas where F-16 training activities would occur below 3,000 feet AGL mixing height, and that are nonattainment/maintenance for a criteria pollutant were evaluated under the General Conformity Rule portion of the Clean Air Act, which specifies annual emission thresholds in order to assess Conformity applicability. The region of influence for the air quality analysis was defined as the areas where aircraft activity could occur at or below the mixing height (3,000 feet AGL); therefore counties beneath the Christa and Kendra ATCAAs were not in the region of influence since aircraft activity within the ATCAAs would occur above 18,000 feet MSL.

EIS Appendix G contains the reports from the USAF Air Conformity Applicability Model and includes detailed reports on how results were calculated. Results for each Alternative are detailed in EIS Sections 4.4.1, 4.4.2, and 4.4.3. No exceedance was identified for any criteria pollutant and that the vast majority of emissions occur above the mixing height - which means that the emissions would not impact areas below 3,000 ft AGL. The source of the emissions, flying aircraft, travel large distances over a short period of time. Their transitory nature is best captured by evaluating emissions on an area-wide basis.

The proposed F-16 training within the Lobos Low MOA would be up to 10 minutes per day with potentially two aircraft flying below the mixing height (3,000 feet AGL) somewhere within 508 square miles. There is no way to predict where at any given moment the aircraft would be, and their flight path would change with each sortie. It is therefore virtually impossible to identify specific emissions associated with the aircraft at any given point geographically, in time. However, what can be ascertained is that 10 minutes of flight time within the large expanse of air space on any day would have a small impact on the ground based on the amount of emissions generated per quantity of fuel burned during 10 minutes of flight continuously moving within this area.

With regards to the comment concerning mining activity near Hanover, NM, there are 509 mining claims in the Hanover Mine District. The commenter did not provide any additional specific information for the EIS team to understand which mining activity would be a concern and should be included.

With regards to analyzing air emissions in "sub-MOAs", the environmental impact methodology for both noise and air quality impacts presented in the EIS were derived by utilizing the same operational data developed as directed by AFI 32-1015 *Integrated Installation Planning*, 30 July 2019 (this instruction replaced AFI 32-7070, *Air Force Noise Program* that was referenced in the Draft EIS). The noise and air quality analyses used the best prediction of how the training would occur throughout the proposed airspace and took into consideration all the blocks and altitude components of the proposed MOAs.

12b) Air Quality, greenhouse gas emissions

Comment Summary: concerns about greenhouse gas (GHG) emissions; overall concerns about climate change; do the CO2e values account for the higher forcing effect but shorter forcing duration of NOx; is the smaller number of GHGs calculated for Alternative 2 attributable to the smaller number of expected total sorties? (see Tables 2.8-6 and 2.8-12 for a possible discrepancy).

Response: The GHG analysis is a global analysis and since all of the sorties for the existing and anticipated squadrons at Holloman AFB are already occurring somewhere globally, there is no increase in GHGs. While the training syllabus is currently reduced within the existing New Mexico airspace, this training is still accomplished once the pilot reaches their operational squadron at other installations. Thus, there is no increase in GHGs since all sorties currently occur globally. The greenhouse gas analysis calculates the contribution of GHGs associated with the proposed F-16 operations (10,000 sorties). However, these emissions are not *additional* GHGs. As noted in the EIS, climate change represents a global problem resulting from the incremental addition of emissions from millions of individual sources. Additional information added to EIS Section 3.4.1.3 to discuss long-term strategic planning for climate change. There is not a discrepancy in Tables 2.8-6 and 2.8-12, footnotes in these tables explain the lower sortie number.

13) CUMULATIVE IMPACTS

13a) Cumulative Impacts, contiguous block of airspace

Comment Summary: EIS needs to evaluate cumulative impacts from establishment of contiguous block of airspace from New Mexico to Arizona; inadequate analysis on cumulative impacts from all Air Force training; most of southeastern New Mexico would be covered by airspace with this proposal; analysis is inadequate since it only addresses new block of airspace created to the west of WSMR and does not address linkages to established restricted airspace, MOAs, ATCAAs, and MTRs to the east of WSMR; no figures showing all of this airspace are included in the cumulative section. Fort Bliss and Davis-Monthan have projects underway that are not included in the DEIS. The DEIS specifically mentions F-35 sorties from Davis-Monthan, but are they coming from Luke?

Response: Cumulative impacts are addressed in Section 5.0 of the EIS. A detailed cumulative projects list is provided in Table 5.1-1 and includes Air Force, other DoD, and other agency projects that have the potential to overlap geographically or temporally with the Proposed Action (to include actions occurring at Fort Bliss and Davis-Monthan among others). The cumulative analysis focuses on actions occurring or are planned to occur within southern New Mexico. The cumulative airspace analysis in EIS Section 5.2.1 includes all proposed airspace under this proposal to include Talon, Cato, Smitty, and Lobos MOA (airspace both east and west of WSMR). While a figure showing all the airspace actions is not included in the cumulative analysis, all of the actions listed in EIS Table 5.1-1 were addressed in the cumulative

analysis. A map showing all of the proposed actions was not generated since the proposed actions are in various stages of decision/implementation, GIS is not necessarily available for all actions, and a map could not provide detail concerning the airspace attributes (altitudes, times of use, and other attributes). A map of active SUA and associated details can be viewed at the FAA website: **https://sua.faa.gov/** . As described in Section 2.8 of the EIS, transient F-35A aircraft could schedule and use the proposed Lobos High MOA/ATCAA to conduct an estimated 300 sorties per year. The F-35 sorties would come from Luke AFB, this has been corrected in Appendix F.

13b) Cumulative Impacts, wilderness areas

Comment Summary: almost all Wilderness Areas within Gila National Forest would be covered by airspace with this proposal and past actions (to include VR-176, Local Flying Areas for Army, Personnel Recovery Training Areas). Proposal not evaluated in conjunction with the 2009 Continental Divide National Scenic Trail Comprehensive Plan.

Response: Cumulative impacts are addressed in Section 5.0 of the EIS, specifically, Table 5.1-1 provides a detailed list of past, present, and reasonably foreseeable actions that could contribute cumulatively to the impacts of the proposed optimization. The overflights that currently occur along VR-176 were included in the baseline noise analysis in the EIS; therefore, the noise from the proposed F-16 training and the flights already occurring along VR-176 are included in the results for Alternatives 2 and 3 accordingly. As shown in the noise analysis (EIS Section 4.3.2.1), the noise from these activities is expected to be less than 52 DNL (see EIS Table 4.3-7: *Baseline and Projected Noise Levels Attributable to Aircraft Operations in Proposed SUA at Selected POIs under Alternative 2*). Activities associated with the Local Flying Area for the Army and the Personnel Recovery Training Areas are not occurring currently and are therefore addressed in the cumulative impacts section (EIS Section 5.2.1 and 5.2.2). The 2009 Continental Divide National Scenic Trail Comprehensive Plan has been added to this section.

14) HAZARDOUS MATERIALS

Comment Summary: comments about hazardous materials in general; hydrazine and other chemicals potentially released during a crash; use of fire retardants – Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA).

Response: Hazardous materials are described in detail in Section 3.12 and 4.12 of the EIS. F-16 aircraft carry a small quantity of hydrazine that would only have the potential to be exposed to the environment during an aircraft crash. The potential impacts from a hydrazine release are described in the EIS (Section 4.12.1). Existing PFOS/PFOA contamination is related to the former use of aqueous film forming foam (AFFF), a fire suppressing agent, at airfields. PFOS/PFOA is not an issue for aircraft operation (or flare usage) within airspace and does not need to be addressed in the EIS. The U.S. Air Force is transitioning to an alternative firefighting foam and taking steps to reduce the opportunity for this alternative formulation to enter the environment. Chaff and flare and their associated residual materials are not considered hazardous materials or waste (Air Force 1997; USEPA 1997); however, a discussion of the components and toxicity of chaff and flare is provided in EIS Section 3.12.2.2.

15) ENFORCEMENT OF RESTRICTIONS

Comment Summary: accountability for rogue pilots; how will proposed restrictions, avoidances be enforced; statements/witness accounts of pilots not adhering to existing restrictions.

Response: As described in Section 3.2.1 of the EIS, procedures governing the use of training areas and airspace operated and controlled by the Air Force are included in Air Force Policy Directive 13-2 *Air Traffic, Airfield, Airspace and Range Management* and its implementing regulations. The Air Force manages airspace in accordance with processes and procedures detailed in AFI 13-201, *Airspace Management*. Pilots must adhere to local flying requirements specific to an installation and the training airspace being used. Aircraft training within MOAs is strictly scheduled and monitored by the using agency of the MOA. In the event a military aircraft gets too close to or exits the MOA boundaries during flight maneuvers, Holloman AFB Air Traffic Control would alert the pilot and notify FAA Albuquerque Center of this "spillout" for any control actions required to ensure this aircraft is separated from other IFR flights near that boundary. If more than one military aircraft is involved in this spillout or more frequent events, the Albuquerque Center would coordinate with the Air Force to determine corrective actions and may close that MOA and/or ATCAA airspace if the Air Force doesn't take corrective action. Holloman AFB tracks and reviews spillout events and the actions required to address those events. Air Force leadership investigates all reports of pilot misbehavior in coordination with Public Affairs. These matters are taken very seriously and the Air Force takes corrective actions specific to each situation.

The avoidances and mitigation measures included in the EIS would be implemented with the Record of Decision, which is a legally binding document, and enforced once the proposed airspace is charted. Complaints concerning Air Force aircraft or operations can be reported to the Holloman AFB Public Affairs Office at 575.572.7381.

16) DARK SKIES

Comment Summary: nighttime operations and flare usage will impact Dark Skies/Night Skies; Gila National Forest is one of remaining areas where true Dark Skies can be observed. Cosmic Campground in Catron County was designated as the first international dark sky sanctuary in 2016 by the International Dark Sky Association.

Response: As discussed in EIS Section 3.1.3, approximately ten percent of training operations would occur after dark (approximately 1,000 sorties). Safety lights on the F-16 aircraft would not be any different than common commercial aircraft in the area. Flares, if used in the proposed training airspace after dark, would be a temporary source of light emissions (flares burn for approximately 3 to 5 seconds). Assuming ten percent of the annual flare usage would occur after dark, this would result in approximately 1,536 flares annually that would burn cumulatively for 7,680 seconds (128 minutes) throughout a year. While there are current light emissions associated with flare usage within the Talon, Cato, and Smitty MOAs, there would be a higher usage of flares with the Proposed Action. Flare usage within the proposed Lobos MOA would be a new source of light emissions. As described above it is expected that flares would be a very limited source of light. The Cosmic Campground is located beneath the existing Reserve MOA and the Proposed Action in this EIS would not change current operations in that MOA. Also see EIS Section 3.1.3, *Visual Effects,* for information on potential light emissions.

17) CONTINENTAL DIVIDE TRAIL

Comment Summary: lack of analysis of the Continental Divide National Scenic Trail; concerns about the impact to the Continental Divide Trail, maintenance of the trail, or other activities associated with the trail.

Response: A discussion of the Continental Divide National Scenic Trail has been added to Sections 3.7 and 4.7, Recreation Resources of the EIS. Also, the trail has been added to the Points of Interest maps in the noise analysis EIS Sections 3.3.2.1 and 4.3.2.1. There are several points along or near the trail that provide the predicted noise level in these areas. A single point cannot be established for the trail since it is a linear feature and the modeled noise is calculated for a single point on the ground.

18) TRANSITION ZONES

Comment Summary: lack of analysis of "transition zone" or areas between Holloman AFB and the MOAs; questions about the activities or type of training that would occur in these areas; frequency of overflights in these areas. EIS should address impacts to White Sands National Park. EIS needs to specify if F-35s would use the "Transition Zones".

Response: Some comments from local residents and also White Sands National Park questioned the lack of analysis in this EIS on the use of airspace between Holloman AFB and the MOAs. Aircraft operating within the National Airspace System (such as the area of transit from Holloman AFB to the MOAs or other SUA), must operate in accordance with all FAA regulations. When F-16 aircraft are traveling from the airfield at Holloman AFB to MOAs or other training airspace, their operations are under jurisdiction of the FAA like any other users of the National Airspace System. Hazardous or non-hazardous training operations cannot occur outside of designated MOAs, military training routes (MTRs), restricted areas, or the like. Supersonic flight and use of defensive countermeasures will remain within the training areas designated and approved for such activity as defined in the Record of Decision.

The public concern for aircraft activity during transit to the training airspace would be an increase in noise. In an effort to conserve fuel and maximize training time within a MOA, an aircraft departing the base runway would rapidly ascend to higher altitudes to travel to designated training airspace to perform their training mission (jet aircraft consume less fuel the higher they fly). There are defined flight plans (known as "stereo routes") that an F-16 pilot from Holloman AFB can file with Air Traffic Control when traveling to the training areas in the region. For transit from Holloman AFB to Talon MOA (the Preferred Alternative), these routes exist in an altitude block of 21,000 feet MSL to 22,000 feet MSL (for outbound flights) and 19,000 feet MSL (for return flights). The FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures (*effective July 15, 2015), page B-2, and the FAA 1050.1F Desk Reference (version 2, February 2020), page 11-7, that complements the Order, define that the study area for a noise analysis associated with a proposed change in air traffic procedures or airspace redesign may extend vertically to 10,000 feet AGL, or up to 18,000 feet AGL if the proposed change is over a national park or wildlife refuge.

The highest peak beneath the outbound stereo route (which occurs at 21,000 feet MSL) is approximately 9,000 feet MSL, meaning aircraft would be at a minimum of 12,000 feet AGL. The highest peak beneath the return stereo route (which occurs at 19,000 feet MSL) is approximately 8,000 feet MSL, meaning aircraft would be at a minimum of 11,000 feet AGL. Since the aircraft along these routes would be above the FAA metric of 10,000 feet AGL, a noise analysis is not required (there are no national parks or wildlife refuges beneath the routes).

Many of the comments concerning this topic originated from communities or persons with a vested interest in the area east of Alamogordo in small, low density hamlets such as Weed, Mayhill, Sacramento, and Pinon, New Mexico. The elevations of these communities range from 6,000 to 7,300 feet MSL, so all

aircraft activity would be above 10,000 feet AGL. This EIS does not include any proposed changes to the air traffic procedures at Holloman AFB or general operations within the regional airspace to include these communities. A noise analysis is not required for these areas in accordance with FAA 1050.1F and the Desk Reference since this area does not include a national park or wildlife refuge and aircraft would be flying above 10,000 feet AGL.

The potential impacts to White Sands National Park from the increased operations at the airfield at Holloman AFB were addressed in the 2017 EA (Air Force 2017) and that EA did not identify any impacts to the park from the increased airfield operations. The 2017 EA illustrated that the noise associated with increased F-16 operations within the airfield decreased with distance from the runway (Air Force 2017: Section 4.3.1.2, Figure 4-1 DNL Contours (dBA), Alternative 1 Holloman AFB and Figure 4-2 Comparison of Alternative 1 Contours with Existing 2017 Contours Holloman AFB). The 65 DNL noise contour surrounding the airfield does expand with the increased operations but that EA determined this expansion was not significant since the overall noise increase did not exceed 3 dB. The 65 DNL contour overlaps a small portion of the northeast corner of the White Sands National Park boundary but the historic district and the visitor's center are located over five miles away from this area of overlap and would experience noise levels well below 65 dB (Air Force 2017: Section 4.5.1.2, Historic Buildings, Structures, and Objects). Also, because White Sands National Park is west of Holloman AFB, it is not along the stereo routes between the base and Talon MOA. This EIS does not propose any changes to the airfield operations at Holloman AFB and those potential impacts from increased operations would remain the same as presented in the 2017 EA.

The only anticipated F-35 activity associated with this Proposed Action would be the limited transient use of the proposed Lobos High MOA (approximately 300 sorties per year). As described in the EIS, it is expected that since the F-35s use the adjacent Reserve MOA there may be times when the F-35s would want to schedule and use the Lobos High MOA in conjunction with the other adjacent MOAs to provide more long range training opportunities. The F-35s are not anticipated to use the proposed Talon MOA (Preferred Alternative). The F-35 operations associated with their home base in Arizona, Luke AFB, were addressed in previous NEPA (F-35A Training Basing EIS, Air Force 2012). The Proposed Action addressed in this EIS does not include any changes to F-35 operations.

19) VERY LARGE ARRAY

Comment Summary: comments concerning electromagnetic impacts at VLA. Request extension of the minimum flight altitude above the 100 feet AGL antenna apex. Special consideration needed to prevent excessive telemetry, communications, and radar transmissions over the array. In-beam or radar beam-on-beam occurrences have the potential to damage the highly-expensive, cryogenically-cooled RF electronics installed on each VLA antenna.

Response: The lowest proposed altitude in this EIS is 500 feet AGL which would not affect the 100-foot AGL antenna apex. The VLA is located within the existing Cato/Smitty airspace and the facility already has agreements with the Air Force regarding certain training activities to deconflict usage while the VLA is operating. See also Response to 5p) *Noise, VLA*.

20) CONSULTATION

Comment Summary: statements that Air Force should consult with U.S. Fish and Wildlife Service or Tribes; questions on status of consultation with regulatory agencies such as U.S. Fish and Wildlife Service, State Historic Preservation Offices, Tribes and Pueblos. Include analysis and consultation concerning Fort Bayard and Carlsbad Irrigation Project National Historic Landmarks.

Response: The interagency and intergovernmental coordination for this proposal is detailed in Section 1.4. The Air Force consulted with and received concurrence from U.S. Fish and Wildlife Service with regards to impacts to threatened and endangered species (see EIS Section 4.5 and Appendix H for details). The Air Force also consulted with and received concurrence from State Historic Preservation Offices and Tribes with regards to impacts to cultural resources and traditional cultural properties (see EIS Section 4.11 and Appendix J for details). The National Park Service, as a cooperating agency, was given the opportunity to review a preliminary final version of the EIS and provided concurrence that their concern about Fort Bayard and Carlsbad Irrigation Project National Historic Landmarks (submitted as a comment during the Draft EIS phase) had been addressed.

21) ENVIRONMENTAL JUSTICE

Comment Summary: government action is environmentally racist towards poor, low populated areas; scoping process did not provide minority and low-income communities greater opportunities for public participation; materials were not provided in Spanish; no statement in EIS that summarizes whether or not the Proposed Action alternatives are likely to have disproportionately high and adverse human health or environmental effects on low-income or minority populations.

Response: The proposed airspace was identified through a systematic process outlined in Section 2.3 and Section 2.4 of the EIS. All public involvement activities are described in Section 1.6 of the EIS. A summary statement has been added to the Executive Summary and Section 4.9 that there would be no disproportionate impact to minority or low-income populations and children under each of the action alternatives. No requests to translate materials were received at any of the public scoping meetings, the public hearings, or through written or electronic communications.

22) MITIGATION

Comment Summary: recommendations for certain mitigation measures to include: Military aircraft should equip with ADS-B, as we have now realized the FAA's January 2, 2020, ADS-B mandate, it is important the military embrace the safety enhancing benefits of this technology; eliminate Talon Low B to allow VFR aircraft maneuvering space to transit to and from airports without entering active SUA and retain access to Victor Airways utilized by IFR aircraft; raise the floor of Talon Low B MOA to 700 feet AGL to avoid pipeline flights; Request the installation of airport surveillance radar (ASR-11) to be installed in the Artesia/Hobbs corridor (32°51' 40", -103°47' 04" area) to serve to fill the existing low level radar gap in the proposed low level areas of the MOA . This would include remote display capabilities (BRITE RADAR display) in ATCT towers in the area to give traffic warnings for traffic in the area, enable military and civilian aircraft the ability to make more practice approaches, and enable ABQ center to local, vector and assist emergency aircraft; Holloman to provide specialized training and funding to area first responders that would be expected to respond to F-16 incidents. This would include Haz-Mat on H-70 (hydrazine) and

composite materials. EIS/ROD should make a 2,000' minimum mandatory over national parks/monuments, national wildlife refuges, big game refuges, and wilderness and primitive areas.

Response: The Air Force developed specific Mitigation Measures to reduce the impacts of the Preferred Alternative in coordination with the cooperating agencies and other stakeholders. The Mitigation Measures included in the EIS are described in Section 7.0. The 2,000-foot altitude restriction over National Parks and Monuments, National Wildlife Refuges, big game refuges, and Wilderness and Primitive Areas in accordance with FAA Advisory Circular 91-36D would be implemented with any of the alternatives (see EIS Section 2.2.2 and Section 7.2). None of these noise sensitive areas exist beneath the proposed Talon MOA (Preferred Alternative). The Air Force will prepare a separate Mitigation Plan that details the specific and legally binding Mitigation Measures for the preferred alternative identified in the Record of Decision. Some mitigations measures that were recommended during the Draft EIS public comment period were not included. These measures and the reason they were not considered are as follows:

- *Install ADS-B on F-16 aircraft*. Automatic Dependent Surveillance-Broadcast (ADS-B) Out is a function of an aircraft's onboard avionics that periodically broadcasts the aircraft's state vector and other required information allowing the aircraft to be tracked by other users of the airspace or surveillance systems on the ground. 14 CFR 91.225 requires that after January 1, 2020 ADS-B Out equipment be installed on all aircraft in Class A airspace. An Interim Final Rule (effective July 18, 2019) modified the requirement for all aircraft to be equipped with ADS-B and to transmit at all times. Specifically, aircraft that are owned/operated by Federal, State, and Local government agencies and conducting missions for national defense, homeland security, and law enforcement purposes can operate aircraft that is not equipped with ADS-B. 14 CFR 91.225(f) states that "The requirements of paragraph (b) of this section do not apply to any aircraft that was not originally certificated with an electrical system, or that has not subsequently been certified with such a system installed." The ADS-B transmission requirement could draw attention to operational vulnerabilities and expose government aircraft performing sensitive missions to immediate risk and compromise the operations security of missions for national defense. This decision was made at the Department of Defense level and the Air Force does not have authority to equip the F-16 aircraft with this technology.
- *Eliminate Talon Low B or raise the floor to 700 or 1,000 feet*. As discussed in EIS Section 7.2, the boundaries of Talon Low A and B were modified during the proposal to avoid conflicts with the approach/departure of Artesia Municipal Airport and Cavern City Air Terminal Airport. While the floor of the MOA was not raised, the overall shape of the low B MOA was modified and reduced to the extent possible for these reasons. The floor of the MOA needs to be 500 feet to meet the training requirements of the F-16 (see EIS Section 2.2.2.2). The use of the low MOA is expected to be relatively low – approximately 2.6 hours per weekday on average (two aircraft) (see EIS Appendix D2, Section D2.3.2.1), and this use would be within the entire low MOA (500 feet AGL up to 12,500 feet MSL). The F-16 training operations don't require that the aircraft remain in the very low altitudes for long periods of time, but rather start in low altitude and ascend to higher altitude. Given the expected frequency of the aircraft patrolling the oilfields and crop dusting activities (daily) and that these aircraft would be patrolling (i.e., focusing their attention downward and operating at lower altitudes), the F-16 pilots operating above at higher altitudes would remain vigilant and instill "see and avoid" procedures to ensure safe operation of

both users. The Air Force did not include a mitigation measure to raise the floor of this MOA since this would impede their ability to meet their training requirements. The potential impact to aircraft flying VFR in the Talon Low B MOA is expected to be minor and does not warrant a specific mitigation measure.

- *Install airport surveillance radar (ASR-11) in the Artesia/Hobbs corridor*. FAA Albuquerque Center (ZAB) conducted a detailed aeronautical study to identify impacts of the proposed airspace on air traffic, as well as the ability of local ATC infrastructure to support. Results were confirmed through a separate Safety Risk Management analysis. The study identified no shortfalls in radar coverage requiring mitigation. .
- *Provide training and funding for area first responders to respond to F-16 incidents*. The area beneath the proposed airspace is vast and includes several cities, towns, and small communities with first responders. A mitigation measure to provide and/or fund training for all area first responders was not included since the land area is so large and much of the area associated with Alternative 1 (the Preferred Alternative) is existing airspace. While training would not be provided wholesale to all local first responders, the Air Force would provide this training to the extent practicable and as needed by area first responders.

23) TECHNICAL ISSUES

Comment Summary: CD didn't work; comment form not functioning; attachment upload not working; requests for confirmation of receipt. Request for hard copy to be mailed.

Response: The project website and comment form were monitored throughout the Draft EIS public comment period for functionality. There was an unsubstantiated claim that the website had size limitations on the attachment uploads. By design, there was not a size limit for attachments. No technical issues were ever identified, and the system did not experience any downtime. Over 6,000 comments were successfully submitted through the website and 152 attachment uploads were provided during the Draft EIS review period.

All the CDs provided during the Draft EIS release were checked through a two-step quality control process and were found to be fully functional. The two large files (main EIS and appendices) were saved in the standard ".pdf" (portable document format) format. Individuals receiving the CDs would need to access the files with any freely available ".pdf" reader software. Commenters were not required to provide any personal contact information when submitting a comment so there was no way for the Air Force to contact these individuals personally, however, a cover letter accompanying all CD copies stated that the full EIS was also available on the website where it could be reviewed or downloaded. The website also provided a list of library repositories where a paper copy of the EIS could be reviewed.

The Draft EIS public comment period lasted for 91 days from November 1, 2019 through January 31, 2020 which provided ample time for all interested persons to review an electronic copy of the Draft EIS on the website or a paper copy in one of the local libraries.

The Air Force was not able to provide confirmation of receipts for individual commenters during the comment period. Commenters that submitted substantive comments during the comment period may locate their name in Table C1 or C2 at the end of this report to see how their comment was addressed. All

comments are included in the Administrative Record regardless of how or when they were submitted or if they were substantive or non-substantive.

In response to the request for a hard copy, the Air Force provided a paper copy to the local library in this individual's area to provide additional access for others in this small community and notified the individual via email where a copy could be reviewed. Given the size of the hard copy document, the Air Force chose to provide copies to local libraries in lieu of personal hard copies. CD copies were provided at no charge to anyone that requested one.

24) WATER RESOURCES

Comment Summary: streams proposed for wild and scenic are in the study area. Refer to Gila National Forest Draft Revised Forest Plan Draft Environmental Impact Statement, published December 2019 (lead agency USDA Forest Service); EIS should analyze impacts to Outstanding National Resource Waters. EIS fails to note the Gila River and headwaters of San Francisco River have been proposed for Wild and Scenic designation.

Response: The 2019 Gila National Forest Environmental Impact Statement, Volume 3 – Draft Revised Forest Plan identifies 224 miles of U.S. Forest Service-eligible Wild and Scenic River segments in the Gila National Forest (USFS 2019). However, no U.S. Forest Service-designated or proposed Wild and Scenic Rivers exist in the areas underlying the proposed new or expanded airspace. Regardless of the listing status, the potential impact to water resources would be associated with chaff and flares. See response to Comment 10f) *Chaff and Flares, water pollutio*n and also Sections 4.12.1.2 and 5.1 of the EIS.

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INDIVIDUAL COMMENTS AND RESPONSES

This section provides a record of the individual substantive comments received during the Draft EIS comment period for the Special Use Airspace Optimization at Holloman AFB EIS. Comments are sorted by Federal and State Agencies; State, County and City Officials; Airports and Pilot Associations; Non-Governmental Organizations; and members of the public. A Comment Response category(ies) is/are provided for each comment to serve as the Air Force response to that comment. In addition to unique substantive comments, a petition and several form letters were received as noted in the table below. The vast majority of the total comments (approximately 16,000 comments) received during the Draft EIS constituted a number of different form letters. A single response is given to each type of form letter, individual names are not provided for form letters or non-substantive variations of those letters.

The Air Force thanks everyone that took the time to review the EIS and provide comments. Your feedback is greatly appreciated and will be used to make an informed decision about the Proposed Action.

Table C-1. Agencies, Elected Officials, and Organizations Comments and Air Force Response

Commenter	Comment Response
Federal and State Agencies	
Federal Aviation Administration	1c) NEPA Process, reasonable alternatives
Environmental Protection Agency, Region 6	Provided "No Comment" letter.
Bureau of Indian Affairs, Southwest Regional Office	Provided "No Comment" letter.
New Mexico State Historic Preservation Office	Provided "Concur" letter.
Arizona State Historic Preservation Office	Provided "Concur" letter.
U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office	Provided "Concur" letter.
U.S. Forest Service, Gila National Forest	6a) Wilderness Areas, incompatibility 13b) Cumulative Impacts, wilderness areas 8a) Economics, recreation and tourism 5l) Noise, modeling software 5j) Noise, data accuracy
White Sands Missile Range	2d) Purpose and Need, WSMR limitations
New Mexico Environment Department	12a) Air Quality, general
New Mexico State University (Richard Clayton)	9e) Civil Aviation, Spaceport and Rio Grande 9f) Civil Aviation, weather diversions
New Mexico Department of Transportation	9a) Civil Aviation, general 9g) Civil Aviation, airport approaches 9b) Civil Aviation, VFR traffic 9c) Civil Aviation, IFR Traffic 8a) Economics, recreation and tourism 10a) Chaff and Flares, fire risk
Department of Interior, National Park Service and Bureau of Land Management	22) Mitigation 18) Transition Zones 8a) Economics, recreation and tourism 5g) Noise, sonic booms 5c) Noise, ambient noise 20) Consultation 5d) Noise, inadequate analysis 5i) Noise, annoyance 5b) Noise, additional references 12b) Air Quality, greenhouse gas emissions

Table C-1. Agencies, Elected Officials, and Organizations Comments and Air Force Response	
Commenter	**Comment Response**
State, County, and City Officials	
Larry Scott *New Mexico House Representative, District 62*	9d) Civil Aviation, radar coverage 9a) Civil Aviation, general
Phelps Anderson *New Mexico House Representative, District 66*	8b) Economics, aviation industry
Jim Townsend *New Mexico House Representative, District 54*	8b) Economics, aviation industry 9a) Civil Aviation, general 1a) NEPA Process, public involvement
Rebecca Dow *New Mexico House Representative, District 38*	3f) Proposed Action, avoidances 10a) Chaff and Flares, fire risk
Dale Janaway *Mayor, City of Carlsbad*	8b) Economics, aviation industry 9a) Civil Aviation, general 11a) Safety, aircraft mishaps
Ken Ladner *Mayor, Town of Silver City*	10a) Chaff and Flares, fire risk 8a) Economics, recreation and tourism 5o) Noise, vibrations 10d) Chaff and Flares, health concerns
Robert Corn *Chaves County Commission*	9a) Civil Aviation, general 9h) Civil Aviation, data questions
Harry Browne *Grant County Commission*	2a) Purpose and Need, airspace is adequate 11b) Safety, fire risk from crashes 7c) Wildlife, startle effect 5g) Noise, sonic booms 5e) Noise, non-auditory concerns 8a) Economics, recreation and tourism 12a) Air Quality, general
Alicia Edwards *Grant County Commission, District 3*	8e) Economics, general
Raul Turrieta *Grant County Assessor*	8c) Economics, housing values
George Sziget *City Commissioner, Truth or Consequences*	5a) Noise, general 8a) Economics, recreation and tourism
Guadalupe Cano *Town of Silver City, District 4*	5e) Noise, non-auditory concerns
Patricia Montgomery *Santa Clara Council*	Non-substantive.
Gabriel Vasquez *Town of Silver City, District 3*	8a) Economics, recreation and tourism
Town Council of the Town of Silver City, NM	(Resubmitted scoping comment letter dated October 24, 2017) 10a) Chaff and Flares, fire risk 8a) Economics, recreation and tourism 5o) Noise, vibration (Resubmitted scoping comment letter dated October 10, 2018) 8e) Economics, general 5a) Noise, general 5e) Noise, non-auditory concerns 7a) Wildlife, general 7c) Wildlife, startle effect 10a) Chaff and Flares, fire risk

Table C-1. Agencies, Elected Officials, and Organizations Comments and Air Force Response	
Commenter	**Comment Response**
Carrie Hamblen *Las Cruces Chamber of Commerce*	8a) Economics, recreation and tourism
Airports, Pilot Associations, and Aviation Related Organizations	
Aircraft Owners and Pilots Association	9b) Civil Aviation, VFR traffic 9g) Civil Aviation, airport approaches 3c) Proposed Action, MOA altitudes 9d) Civil Aviation, radar coverage
New Mexico Pilots Association	9b) Civil Aviation, VFR traffic 9d) Civil Aviation, radar coverage 8a) Economics, recreation and tourism 9g) Civil Aviation, airport approaches 3c) Proposed Action, MOA altitudes 9h) Civil Aviation, data questions
New Mexico Spaceport Authority	9e) Civil Aviation, Spaceport and Rio Grande
New Mexico Airport Managers Association	9g) Civil Aviation, airport approaches 3c) Proposed Action, MOA altitudes
National Association of Flight Instructors	9a) Civil Aviation, general
Corey Needham *Lea County Airport*	11c) Safety, hydrazine 3c) Proposed Action, MOA altitudes 9b) Civil Aviation, VFR traffic 9d) Civil Aviation, radar coverage
Lance Goodrich *Artesia Municipal Airport*	9g) Civil Aviation, airport approaches
Gil Moutray *Seven Rivers Airport*	8b) Economics, aviation industry 9d) Civil Aviation, radar coverage
Jerry Griego *Socorro Municipal Airport*	9a) Civil Aviation, general
Andrew Hume *Las Cruces International Airport*	1a) NEPA Process, public involvement 15) Enforcement of Restrictions 9c) Civil Aviation, IFR Traffic 8a) Economics, recreation and tourism 8b) Economics, aviation industry 9b) Civil Aviation, VFR traffic
Rebekah Wenger *Grant County Airport*	9a) Civil Aviation, general 9c) Civil Aviation, IFR traffic 9h) Civil Aviation, data questions 9g) Civil Aviation, airport approach 9d) Civil Aviation, radar coverage 8b) Economics, aviation industry
American Patrols, Inc.	3c) Proposed Action, MOA Altitudes 9b) Civil Aviation, VFR traffic 9d) Civil Aviation, radar coverage 11a) Safety, aircraft mishaps
Non-Government Organizations	
National Radio Astronomy Observatory	19) Very Large Array 5p) Noise, VLA
New Mexico Backcountry Hunters and Anglers	6a) Wilderness Areas, incompatibility 3c) Proposed Action, MOA altitudes

Table C-1. Agencies, Elected Officials, and Organizations Comments and Air Force Response	
Commenter	**Comment Response**
Trout Unlimited, Gila/Rio Grande Chapter	10a) Chaff and Flares, fire risk 11b) Safety, fire risk from crashes 10d) Chaff and Flares, health concerns 10f) Chaff and Flares, water pollution 6a) Wilderness Areas, incompatibility
Trout Unlimited New Mexico	8a) Economics, recreation and tourism 10a) Chaff and Flares, fire risk 10d) Chaff and Flares, health concerns 2a) Purpose and Need, airspace is adequate
National Parks Conservation Association	2a) Purpose and Need, airspace is adequate 2c) Purpose and Need, additional sorties 2d) Purpose and Need, WSMR limitations 13a) Cumulative Impacts, contiguous block of airspace 5a) Noise, general 7g) Wildlife, T&E 5d) Noise, inadequate analysis 5b) Noise, additional references 7a) Wildlife, general 7d) Wildlife, migratory birds 10d) Chaff and Flares, health concerns 8a) Economics, recreation and tourism 10f) Chaff and Flares, water pollution 10a) Chaff and Flares, fire risk 14) Hazardous Materials 11a) Safety, increased mishaps 7c) Wildlife, startle effect 3f) Proposed Action, avoidances 5e) Noise, non-auditory concerns 13b) Cumulative Impacts, Wilderness Areas 1a) NEPA Process, public involvement
Great Old Broads for Wilderness	6a) Wilderness Areas, incompatibility 7g) Wildlife, T&E 7e) Wildlife, nesting effects 7c) Wildlife, startle effect 10e) Chaff and Flares, air pollution 10f) Chaff and Flares, water pollution 12a) Air Quality, general 10a) Chaff and Flares, fire risk
Backcountry Horsemen	7c) Wildlife, startle effect 10c) Chaff and Flares, dud flares 10a) Chaff and Flares, fire risk 6a) Wilderness Areas, incompatibility
Veterans for Peace, Chapter 63	2a) Purpose and Need, airspace is adequate 7a) Wildlife, general 8a) Economics, recreation and tourism 10a) Chaff and Flares, fire risk 10d) Chaff and Flares, health concerns

Table C-1. Agencies, Elected Officials, and Organizations Comments and Air Force Response	
Commenter	**Comment Response**
Veterans for Peace, Chapter 69	5e) Noise, non-auditory concerns 7a) Wildlife, general 7c) Wildlife, startle effect 8a) Economics, recreation and tourism 8e) Economics, general 10a) Chaff and Flares, fire risk 10f) Chaff and Flares, water pollution
Southern New Mexico Trail Alliance	6a) Wilderness Areas, incompatibility
New Mexico Audubon Council	8a) Economics, recreation and tourism 7e) Wildlife, nesting effects 10a) Chaff and Flares, fire risk 10d) Chaff and Flares, health concerns 2a) Purpose and Need, airspace is adequate
Southwest New Mexico Audubon Society	7a) Wildlife, general 7d) Wildlife, migratory birds 13a) Cumulative Impacts, contiguous block of airspace
Mesilla Valley Audubon Society	(Resubmitted comment from New Mexico Audubon Council) 8a) Economics, recreation and tourism 7e) Wildlife, nesting effects 10a) Chaff and Flares, fire risk 10d) Chaff and Flares, health concerns 2a) Purpose and Need, airspace is adequate
Peaceful Gila Skies	2a) Purpose and Need, airspace is adequate 5a) Noise, general 10a) Chaff and Flares, fire risk 10b) Chaff and Flares, litter 5e) Noise, non-auditory concerns 8a) Economics, recreation and tourism 3a) Proposed Action, sortie numbers 4b) Transients, expansion of activities 5d) Noise, inadequate analysis 11a) Safety, aircraft mishaps 3f) Proposed Action, avoidances 10d) Chaff and Flares, health concerns 6a) Wilderness Areas, incompatibility 13a) Cumulative Impacts, contiguous block of airspace
Continental Divide Trail Coalition	2a) Purpose and Need, airspace is adequate 13b) Cumulative Impacts, Wilderness Areas 8a) Economics, recreation and tourism 17) Continental Divide Trail 1b) NEPA Process, No Action Analysis

Table C-1. Agencies, Elected Officials, and Organizations Comments and Air Force Response	
Commenter	**Comment Response**
New Mexico Wildlife Federation	(submitted batches of Form Comment E) 5a) Noise, general 8a) Economics, recreation and tourism 7c) Wildlife, startle effect 10a) Chaff and Flares, fire risk 10d) Chaff and Flares, health concerns 11b) Safety, fire risk from crashes 2a) Purpose and Need, airspace is adequate 6a) Wilderness Areas, incompatibility
Gila Conservation Coalition - Citizen Comments on Draft EIS	2c) Purpose and Need, additional sorties 2a) Purpose and Need, airspace is adequate 2b) Purpose and Need, pilot shortage 2d) Purpose and Need, WSMR limitations 13a) Cumulative Impacts, contiguous block of airspace 4a) Transients, use of MOAs 4b) Transients, expansion of activities 13b) Cumulative Impacts, Wilderness Areas 5d) Noise, inadequate analysis 5i) Noise, annoyance 5k) Noise, metrics 5b) Noise, additional references 5c) Noise, ambient noise 5j) Noise, data accuracy 5n) Noise, baseline DNL 10f) Chaff and Flares, water pollution 10b) Chaff and Flares, litter 10d) Chaff and Flares, health concerns 10e) Chaff and Flares, air pollution 10c) Chaff and Flares, dud flares 24) Water Resources 11a) Safety, increased mishaps 7c) Wildlife, startle effect 11b) Safety, fire risk from crashes 5e) Noise, non-auditory concerns 14) Hazardous Materials 8a) Economics, recreation and tourism 7d) Wildlife, migratory birds 17) Continental Divide Trail 13b) Cumulative Impacts, Wilderness Areas 8b) Economics, aviation industry 9g) Civil Aviation, airport approaches 1a) NEPA Process, public involvement 9e) Civil Aviation, Spaceport and Rio Grande 1b) NEPA Process, No Action analysis 2f) Purpose and Need, selection criteria 7f) Wildlife, inadequate analysis 10a) Chaff and Flares, fire risk 6a) Wilderness Areas, incompatibility 15) Enforcement of Restrictions 21) Environmental Justice 3b) Proposed Action, Preferred Alternative 3e) Proposed Action, Christa and Kendra ATCAAs

Table C-1. Agencies, Elected Officials, and Organizations Comments and Air Force Response	
Commenter	**Comment Response**
	1d) NEPA Process, Cooperating Agency
Form Comments and Petitions*	
Form Comment A	6a) Wilderness Areas, incompatibility
Form Comment B	10a) Chaff and Flares, fire risk 10b) Chaff and Flares, litter 2a) Purpose and Need, airspace is adequate 6a) Wilderness Areas, incompatibility 7a) Wildlife, general
Form Comment C	2a) Purpose and Need, airspace is adequate 10a) Chaff and Flares, fire risk 10d) Chaff and Flares, health concerns 10f) Chaff and Flares, water pollution 6a) Wilderness Areas, incompatibility
Form Comment D	8e) Economics, general 7c) Wildlife, startle effect 10a) Chaff and Flares, fire risk 10d) Chaff and Flares, health concerns 11a) Safety, aircraft mishaps 2a) Purpose and Need, airspace is adequate 6a) Wilderness Areas, incompatibility
Form Comment E	5a) Noise, general 8a) Economics, recreation and tourism 7c) Wildlife, startle effect 10a) Chaff and Flares, fire risk 10d) Chaff and Flares, health concerns 11b) Safety, fire risk from crashes 2a) Purpose and Need, airspace is adequate 6a) Wilderness Areas, incompatibility
Petition (duplicate of Form Comment D)	8e) Economics, general 7c) Wildlife, startle effect 10a) Chaff and Flares, fire risk 10d) Chaff and Flares, health concerns 11a) Safety, aircraft mishaps 2a) Purpose and Need, airspace is adequate 6a) Wilderness Areas, incompatibility

**Copies of the Form Comments are provided at the end of this Appendix for reference.*

In order to protect personal information, full names of public commenters are not provided. Members of the public that provided a substantive, non-form comment wishing to see how their comment was addressed can locate their name using the following naming convention: *first three letters of last name_first three letters of first name*. For example, John Smith would be: SMI_JOH_001. An "*" is used to represent blank fields (for example, a commenter that did not provide a first name or only provided the first initial). Most comments consisted of more than one issue and each issue is categorized with a comment response. The numbers following each name indicate multiple comments or issues submitted by an individual or in some cases there could be individuals with the same name. Duplicate comments, those submitted multiple times or via different methods by the same commenter, were not removed. Public comments were received through the website, mail, and verbally at the hearings. All comments are included in the administrative record.

Table C-2 Members of the Public

Coded Name	Category
***_DON_001	2a) Purpose and Need, airspace is adequate
***_DON_002	5a) Noise, general
***_DON_003	10e) Chaff and Flares, air pollution
_Anonymous_001	7a) Wildlife, general
_Anonymous_002	5e) Noise, non-auditory concerns
_Anonymous_003	8e) Economics, general
_Anonymous_004	10a) Chaff and Flares, fire risk
_Anonymous_005	10f) Chaff and Flares, water pollution
_Anonymous_006	7a) Wildlife, general
_Anonymous_007	5e) Noise, non-auditory concerns
_Anonymous_008	8e) Economics, general
_Anonymous_009	10a) Chaff and Flares, fire risk
_Anonymous_010	10f) Chaff and Flares, water pollution
_Anonymous_011	7a) Wildlife, general
_Anonymous_012	5e) Noise, non-auditory concerns
_Anonymous_013	8e) Economics, general
_Anonymous_014	10a) Chaff and Flares, fire risk
_Anonymous_015	10f) Chaff and Flares, water pollution
_Anonymous_016	7a) Wildlife, general
_Anonymous_017	5e) Noise, non-auditory concerns
_Anonymous_018	8e) Economics, general
_Anonymous_019	10a) Chaff and Flares, fire risk
_Anonymous_020	10f) Chaff and Flares, water pollution
_Anonymous_021	7a) Wildlife, general
_Anonymous_022	5e) Noise, non-auditory concerns
_Anonymous_023	8e) Economics, general
_Anonymous_024	10a) Chaff and Flares, fire risk
_Anonymous_025	10f) Chaff and Flares, water pollution
A**_RIT_001	8a) Economics, recreation and tourism
ACC_SYL_001	2b) Purpose and Need, pilot shortage
ACC_SYL_002	8e) Economics, general
ACC_SYL_003	10a) Chaff and Flares, fire risk
AIN_TRO_001	8a) Economics, recreation and tourism
AIN_TRO_002	2a) Purpose and Need, airspace is adequate
ALB_KEI_002	2a) Purpose and Need, airspace is adequate
ALD_GEO_001	6a) Wilderness Areas, incompatibility
ALD_GEO_002	10a) Chaff and Flares, fire risk
ALE_CHA_001	3a) Proposed Action, sortie numbers
ALL_KEL_001	5a) Noise, general
ALL_KEL_002	10d) Chaff and Flares, health concerns
ALL_LEE_002	5o) Noise, vibrations
ALL_LEE_003	8a) Economics, recreation and tourism
ALL_VIC_001	8a) Economics, recreation and tourism
ALL_VIC_002	10a) Chaff and Flares, fire risk
ALT_RIC_001	2a) Purpose and Need, airspace is adequate
AND_ANT_001	8a) Economics, recreation and tourism
AND_KUR_001	5a) Noise, general
AND_KUR_002	5a) Noise, general
AND_TOM_001	6a) Wilderness Areas, incompatibility
ARG_J**_001	7a) Wildlife, general
ARG_J**_002	5e) Noise, non-auditory concerns
ARG_J**_003	8e) Economics, general
ARG_J**_004	10a) Chaff and Flares, fire risk
ARG_J**_005	10f) Chaff and Flares, water pollution
AVE_KAR_002	12b) Air Quality, greenhouse gas emissions
BAC_JOA_001	2a) Purpose and Need, airspace is adequate
BAC_JOA_003	8a) Economics, recreation and tourism

Table C-2 Members of the Public (cont.)

Coded Name	Category
BAG_CHA_001	5d) Noise, inadequate analysis
BAG_CHA_002	7f) Wildlife, inadequate analysis
BAG_CHA_003	6a) Wilderness Areas, incompatibility
BAL_JIM_001	3c) Proposed Action, MOA altitudes
BAL_JIM_002	8a) Economics, recreation and tourism
BAL_JIM_004	9b) Civil Aviation, VFR traffic
BAL_MIC_001	1a) NEPA Process, Public Involvement
BAL_MIC_002	2a) Purpose and Need, airspace is adequate
BAR_AND_001	2a) Purpose and Need, airspace is adequate
BAR_CAR_001	5a) Noise, general
BAR_CAR_002	10b) Chaff and Flares, litter
BAR_CAR_003	10a) Chaff and Flares, fire risk
BAR_CAR_004	8a) Economics, recreation and tourism
BAR_JOH_001	8e) Economics, general
BAR_SUE_002	2a) Purpose and Need, airspace is adequate
BAR_TER_001	2a) Purpose and Need, airspace is adequate
BEC_ELA_001	2a) Purpose and Need, airspace is adequate
BEC_RIC_001	10d) Chaff and Flares, health concerns
BEL_PAT_001	7a) Wildlife, general
BEL_PAT_002	5e) Noise, non-auditory concerns
BEL_PAT_003	8e) Economics, general
BEL_PAT_004	10a) Chaff and Flares, fire risk
BEL_PAT_005	10f) Chaff and Flares, water pollution
BEL_STA_001	3h) Proposed Action, expanded training
BEL_STA_002	1c) NEPA Process, reasonable alternatives
BEL_STA_003	2f) Purpose and Need, selection criteria
BEL_STA_004	15) Enforcement of Restrictions
BEL_STA_005	10a) Chaff and Flares, fire risk
BEL_STA_007	11a) Safety, aircraft mishaps
BEL_STA_008	7f) Wildlife, inadequate analysis
BEL_STA_009	8a) Economics, recreation and tourism
BEL_STA_010	5d) Noise, inadequate analysis
BEL_STA_011	5b) Noise, additional references
BEL_STA_012	12b) Air Quality, greenhouse gas emissions
BEL_STA_013	20) Consultation
BEN_BON_002	5d) Noise, inadequate analysis
BEN_BON_003	10d) Chaff and Flares, health concerns
BEN_BRO_001	9a) Civil Aviation, general
BEN_ED*_001	10d) Chaff and Flares, health concerns
BEN_ED*_002	10a) Chaff and Flares, fire risk
BEN_ED*_004	8e) Economics, general
BER_JES_001	2a) Purpose and Need, airspace is adequate
BER_LIN_002	2a) Purpose and Need, airspace is adequate
BER_MAR_001	2a) Purpose and Need, airspace is adequate
BER_PAT_001	10e) Chaff and Flares, air pollution
BER_PAT_002	3h) Proposed Action, expanded training
BER_RAC_001	10f) Chaff and Flares, water pollution
BEV_JOH_002	8e) Economics, general
BEZ_DAV_001	8a) Economics, recreation and tourism
BEZ_DAV_002	5e) Noise, non-auditory concerns
BIC_GEO_001	2a) Purpose and Need, airspace is adequate
BIR_OSC_002	2a) Purpose and Need, airspace is adequate
BIX_KEV_001	7a) Wildlife, general
BIX_KEV_002	8a) Economics, recreation and tourism

Table C-2 Members of the Public (cont.)

Coded Name	Category
BIX_KEV_003	2a) Purpose and Need, airspace is adequate
BLA_KAT_001	15) Enforcement of Restrictions
BLA_KAT_002	10a) Chaff and Flares, fire risk
BLA_KAT_003	2a) Purpose and Need, airspace is adequate
BLA_KAT_004	2a) Purpose and Need, airspace is adequate
BLA_KAT_005	3g) Proposed Action, foreign military
BLA_KAT_006	8a) Economics, recreation and tourism
BLA_KAT_007	5e) Noise, non-auditory concerns
BLA_KAT_008	10d) Chaff and Flares, health concerns
BLA_KAT_009	7a) Wildlife, general
BLA_KAT_010	10a) Chaff and Flares, fire risk
BLA_KAT_011	10e) Chaff and Flares, air pollution
BLA_KAT_012	10f) Chaff and Flares, water pollution
BOO_SHA_001	2a) Purpose and Need, airspace is adequate
BOO_SHA_002	11b) Safety, fire risk from crashes
BOO_SHA_003	11c) Safety, hydrazine
BOO_SHA_005	5d) Noise, inadequate analysis
BOO_SHA_006	5i) Noise, annoyance
BOO_SHA_007	5e) Noise, non-auditory concerns
BOO_SHA_009	10a) Chaff and Flares, fire risk
BOO_SHA_010	10f) Chaff and Flares, water pollution
BOO_SHA_011	5i) Noise, annoyance
BOO_SHA_013	10a) Chaff and Flares, fire risk
BOR_LIS_001	7a) Wildlife, general
BOR_LIS_002	10f) Chaff and Flares, water pollution
BOR_MAR_001	6a) Wilderness Areas, incompatibility
BOR_MAR_002	2a) Purpose and Need, airspace is adequate
BOR_MAR_004	10a) Chaff and Flares, fire risk
BOR_MAR_006	10b) Chaff and Flares, litter
BOS_WIL_001	12a) Air Quality, general
BOS_WIL_002	10f) Chaff and Flares, water pollution
BOV_JOH_001	2a) Purpose and Need, airspace is adequate
BOW_GRA_001	6a) Wilderness Areas, incompatibility
BOX_JUL_001	15) Enforcement of Restrictions
BOX_JUL_002	3h) Proposed Action, expanded training
BOX_JUL_003	11b) Safety, fire risk from crashes
BOY_ALL_002	3a) Proposed Action, sortie numbers
BOY_HEN_002	5d) Noise, inadequate analysis
BOY_HEN_003	4a) Transients, use of MOAs
BOY_HEN_004	5f) Noise, hearing loss
BOY_HEN_005	3a) Proposed Action, sortie numbers
BOY_HEN_006	3f) Proposed Action, avoidances
BOY_HEN_007	15) Enforcement of Restrictions
BOY_HEN_008	8e) Economics, general
BOY_HEN_009	8e) Economics, general
BOY_HEN_010	6a) Wilderness Areas, incompatibility
BOY_HEN_011	16) Dark Skies
BOY_HEN_012	4b) Transients, expansion of activities
BOY_JEF_001	8c) Economics, housing values
BOY_JEF_002	8a) Economics, recreation and tourism
BOY_JEF_003	10c) Chaff and Flares, dud flares
BOY_JEF_005	7c) Wildlife, startle effect
BOY_JEF_006	7a) Wildlife, general
BOY_JEF_007	5d) Noise, inadequate analysis
BOY_JEF_008	10a) Chaff and Flares, fire risk

Table C-2 Members of the Public (cont.)

Coded Name	Category
BOY_JEF_009	11a) Safety, aircraft mishaps
BOY_JEF_010	10d) Chaff and Flares, health concerns
BOY_JEF_011	7a) Wildlife, general
BOY_JEF_012	15) Enforcement of Restrictions
BOY_JEF_013	4b) Transients, expansion of activities
BOY_VIC_001	8e) Economics, general
BRA_CAT_001	6a) Wilderness Areas, incompatibility
BRA_CAT_002	10a) Chaff and Flares, fire risk
BRA_CAT_003	5a) Noise, general
BRA_CAT_004	7a) Wildlife, general
BRA_CAT_005	8e) Economics, general
BRE_BO*_003	6a) Wilderness Areas, incompatibility
BRE_PAU_001	6a) Wilderness Areas, incompatibility
BRO_ROB_001	10a) Chaff and Flares, fire risk
BRO_ROB_002	10d) Chaff and Flares, health concerns
BRO_ROB_003	5a) Noise, general
BRO_ROB_004	2a) Purpose and Need, airspace is adequate
BRO_TYL_001	9b) Civil Aviation, VFR traffic
BRU_DEA_001	10b) Chaff and Flares, litter
BRU_DEA_002	9a) Civil Aviation, general
BUC_JOH_001	13a) Cumulative Impacts, contiguous block of airspace
BUC_JOH_002	7c) Wildlife, startle effect
BUC_JOH_003	8a) Economics, recreation and tourism
BUD_GEO_001	9a) Civil Aviation, general
BUD_GEO_002	2a) Purpose and Need, airspace is adequate
BUD_GEO_003	2a) Purpose and Need, airspace is adequate
BUD_GEO_004	9a) Civil Aviation, general
BUL_KYL_001	12a) Air Quality, general
BUL_KYL_002	8e) Economics, general
BUR_CLI_001	2a) Purpose and Need, airspace is adequate
BUR_JEA_004	12a) Air Quality, general
BUR_JUD_001	5a) Noise, general
BUR_M**_001	7a) Wildlife, general
BUR_M**_002	5e) Noise, non-auditory concerns
BUR_M**_003	8e) Economics, general
BUR_M**_004	10a) Chaff and Flares, fire risk
BUR_M**_005	10f) Chaff and Flares, water pollution
BUR_RIC_001	6a) Wilderness Areas, incompatibility
BUT_DOU_001	10a) Chaff and Flares, fire risk
BUT_DOU_002	7d) Wildlife, migratory birds
BUT_DOU_003	8e) Economics, general
BUT_DOU_004	10d) Chaff and Flares, health concerns
BUT_NAN_001	2a) Purpose and Need, airspace is adequate
BYK_CHR_001	NULL
BYR_JAN_001	2a) Purpose and Need, airspace is adequate
CAL_DEB_003	5o) Noise, vibrations
CAL_DEB_004	10b) Chaff and Flares, litter
CAL_DEB_005	10a) Chaff and Flares, fire risk
CAL_DEB_006	8a) Economics, recreation and tourism
CAL_DEB_009	7d) Wildlife, migratory birds
CAM_CHR_001	6a) Wilderness Areas, incompatibility
CAM_DR._001	7a) Wildlife, general
CAM_DR._002	5e) Noise, non-auditory concerns
CAM_DR._003	8e) Economics, general
CAM_DR._004	10a) Chaff and Flares, fire risk
CAM_DR._005	10f) Chaff and Flares, water pollution
CAM_JEF_001	10a) Chaff and Flares, fire risk

Table C-2 Members of the Public (cont.)

Coded Name	Category
CAN_MAR_001	2a) Purpose and Need, airspace is adequate
CAR_BON_001	7a) Wildlife, general
CAR_BON_002	5e) Noise, non-auditory concerns
CAR_BON_003	8e) Economics, general
CAR_BON_004	10a) Chaff and Flares, fire risk
CAR_BON_005	10f) Chaff and Flares, water pollution
CAR_CAR_002	2a) Purpose and Need, airspace is adequate
CAR_HEN_001	7a) Wildlife, general
CAR_HEN_002	5e) Noise, non-auditory concerns
CAR_HEN_003	8e) Economics, general
CAR_HEN_004	10a) Chaff and Flares, fire risk
CAR_HEN_005	10f) Chaff and Flares, water pollution
CAR_JOH_005	9b) Civil Aviation, VFR traffic
CAR_NAT_001	6a) Wilderness Areas, incompatibility
CAR_NAT_002	2a) Purpose and Need, airspace is adequate
CAR_NAT_003	8a) Economics, recreation and tourism
CAR_ROB_004	6a) Wilderness Areas, incompatibility
CAR_ROB_005	10a) Chaff and Flares, fire risk
CAR_SUS_001	10d) Chaff and Flares, health concerns
CAR_SUS_002	5e) Noise, non-auditory concerns
CAR_SUZ_001	8a) Economics, recreation and tourism
CAR_WAL_001	9g) Civil Aviation, airport approach
CAR_WAL_002	9e) Civil Aviation, Spaceport and Rio Grande
CAR_WIL_001	7e) Wildlife, nesting effects
CAS_KAT_001	6a) Wilderness Areas, incompatibility
CAS_KAT_002	8e) Economics, general
CAV_MAR_001	10a) Chaff and Flares, fire risk
CAV_MAR_002	11b) Safety, fire risk from crashes
CAV_MAR_003	5e) Noise, non-auditory concerns
CAV_MAR_004	10a) Chaff and Flares, fire risk
CAV_MAR_005	11b) Safety, fire risk from crashes
CAV_MAR_006	10b) Chaff and Flares, litter
CAV_MAR_007	5e) Noise, non-auditory concerns
CEL_ELI_002	10a) Chaff and Flares, fire risk
CHA_JAM_001	8a) Economics, recreation and tourism
CHA_MAR_002	6a) Wilderness Areas, incompatibility
CHA_SHA_001	8a) Economics, recreation and tourism
CHA_SHA_002	7c) Wildlife, startle effect
CHA_SHA_003	10d) Chaff and Flares, health concerns
CHA_SHA_004	11a) Safety, aircraft mishaps
CHA_SHA_005	2a) Purpose and Need, airspace is adequate
CHA_SHA_006	10a) Chaff and Flares, fire risk
CHA_SHA_007	5a) Noise, general
CHE_ANN_001	5o) Noise, vibrations
CHE_ANN_002	10a) Chaff and Flares, fire risk
CHE_ANN_003	3h) Proposed Action, expanded training
CHE_CLI_001	2a) Purpose and Need, airspace is adequate
CHE_CLI_002	2d) Purpose and Need, WSMR limitations
CHE_CLI_003	4a) Transients, use of MOAs
CHE_CLI_004	2d) Purpose and Need, WSMR limitations
CHE_CLI_005	9a) Civil Aviation, general
CHE_CLI_006	9a) Civil Aviation, general
CHI_SUE_001	5a) Noise, general
CHI_SUE_002	10a) Chaff and Flares, fire risk

Table C-2 Members of the Public (cont.)

Coded Name	Category
CHI_SUS_001	7c) Wildlife, startle effect
CHI_SUS_002	8c) Economics, housing values
CHU_RAN_001	7a) Wildlife, general
CHU_RAN_002	12b) Air Quality, greenhouse gas emissions
CLE_CHA_002	11a) Safety, aircraft mishaps
COC_JOA_001	10a) Chaff and Flares, fire risk
COL_VIR_001	7a) Wildlife, general
COL_VIR_002	5e) Noise, non-auditory concerns
COL_VIR_003	8e) Economics, general
COL_VIR_004	10a) Chaff and Flares, fire risk
COL_VIR_005	10f) Chaff and Flares, water pollution
CON_JOA_002	3g) Proposed Action, foreign military
CON_JOH_001	8e) Economics, general
CON_JOH_002	12b) Air Quality, greenhouse gas emissions
CON_PHI_001	6a) Wilderness Areas, incompatibility
CON_PHI_002	10a) Chaff and Flares, fire risk
CON_PHI_003	6a) Wilderness Areas, incompatibility
CON_PHI_004	5a) Noise, general
COO_PAU_002	6a) Wilderness Areas, incompatibility
COP_FRE_005	10a) Chaff and Flares, fire risk
COR_JAM_002	8b) Economics, aviation industry
COT_TED_002	8e) Economics, general
COX_EDY_002	10a) Chaff and Flares, fire risk
COX_EDY_003	10f) Chaff and Flares, water pollution
COX_EDY_006	10f) Chaff and Flares, water pollution
CRA_MAR_005	3f) Proposed Action, avoidances
CRA_ROB_002	10a) Chaff and Flares, fire risk
CRA_ROB_003	8a) Economics, recreation and tourism
CRO_APR_001	10a) Chaff and Flares, fire risk
CRO_JAM_002	6a) Wilderness Areas, incompatibility
CRO_JAM_003	5e) Noise, non-auditory concerns
CRO_RIT_001	3c) Proposed Action, MOA altitudes
CRO_ZAC_001	6a) Wilderness Areas, incompatibility
CUE_JOS_001	5g) Noise, sonic booms
CUE_JOS_002	8a) Economics, recreation and tourism
CUM_BUF_001	13b) Cumulative Impacts, wilderness areas
CUR_MAR_002	5a) Noise, general
CUR_MAR_003	8a) Economics, recreation and tourism
CUR_MAR_004	10a) Chaff and Flares, fire risk
CUR_MAR_005	10b) Chaff and Flares, litter
CUR_MAR_006	2a) Purpose and Need, airspace is adequate
DAM_OCE_002	10b) Chaff and Flares, litter
DAM_OCE_004	10e) Chaff and Flares, air pollution
DAN_DEN_001	10d) Chaff and Flares, health concerns
DAV_CAT_001	7a) Wildlife, general
DAV_CAT_002	5e) Noise, non-auditory concerns
DAV_CAT_003	8e) Economics, general
DAV_CAT_004	10a) Chaff and Flares, fire risk
DAV_CAT_005	10f) Chaff and Flares, water pollution
DAW_AMI_001	2a) Purpose and Need, airspace is adequate
DE _VER_001	8a) Economics, recreation and tourism
DE _VER_002	2a) Purpose and Need, airspace is adequate
DEB_AIN_001	6a) Wilderness Areas, incompatibility
DEB_AIN_002	10b) Chaff and Flares, litter
DEC_CIN_001	7c) Wildlife, startle effect

Table C-2 Members of the Public (cont.)

Coded Name	Category
DEE_CAR_002	2a) Purpose and Need, airspace is adequate
DEG_KEN_001	3a) Proposed Action, sortie numbers
DEL_CIN_001	2a) Purpose and Need, airspace is adequate
DEN_DEB_001	10d) Chaff and Flares, health concerns
DEN_DEB_002	16) Dark Skies
DIE_GEO_001	2a) Purpose and Need, airspace is adequate
DIE_PAU_001	2b) Purpose and Need, pilot shortage
DIE_ROM_001	8c) Economics, housing values
DIF_DIA_002	2a) Purpose and Need, airspace is adequate
DIN_DOU_001	8a) Economics, recreation and tourism
DOB_KRI_001	5a) Noise, general
DOC_LAR_001	7c) Wildlife, startle effect
DOD_MAR_001	6a) Wilderness Areas, incompatibility
DOL_ILI_001	6a) Wilderness Areas, incompatibility
DOL_ILI_002	10b) Chaff and Flares, litter
DOL_ILI_003	10a) Chaff and Flares, fire risk
DOL_ILI_004	7a) Wildlife, general
DON_DON_001	9a) Civil Aviation, general
DON_DON_002	5a) Noise, general
DON_DON_003	10a) Chaff and Flares, fire risk
DON_DON_004	9b) Civil Aviation, VFR traffic
DOW_CRA_001	12a) Air Quality, general
DRA_KAR_001	5a) Noise, general
DRA_MAR_001	8b) Economics, aviation industry
DRE_ELY_001	7a) Wildlife, general
DRE_ELY_002	5e) Noise, non-auditory concerns
DRE_ELY_003	8e) Economics, general
DRE_ELY_004	10a) Chaff and Flares, fire risk
DRE_ELY_005	10f) Chaff and Flares, water pollution
DRI_LAR_001	9a) Civil Aviation, general
DRY_FRA_001	7a) Wildlife, general
DRY_FRA_002	5e) Noise, non-auditory concerns
DRY_FRA_003	8e) Economics, general
DRY_FRA_004	10a) Chaff and Flares, fire risk
DRY_FRA_005	10f) Chaff and Flares, water pollution
DUN_DEN_001	6a) Wilderness Areas, incompatibility
DUN_DEN_002	8a) Economics, recreation and tourism
DUN_DEN_003	10d) Chaff and Flares, health concerns
DUN_DEN_004	2a) Purpose and Need, airspace is adequate
DUN_JEF_001	18) Transition Zones
DUN_JEF_002	5d) Noise, inadequate analysis
DUN_JEF_003	5d) Noise, inadequate analysis
DUN_JEF_004	8c) Economics, housing values
DUN_STE_001	2a) Purpose and Need, airspace is adequate
DUP_ROS_002	10a) Chaff and Flares, fire risk
DUP_ROS_003	11b) Safety, fire risk from crashes
DUP_ROS_004	5a) Noise, general
DUP_ROS_005	10d) Chaff and Flares, health concerns
DUP_ROS_006	8c) Economics, housing values
DUP_ROS_007	8a) Economics, recreation and tourism
DUP_ROS_008	2a) Purpose and Need, airspace is adequate
EAR_RIC_002	10a) Chaff and Flares, fire risk
EAS_ALE_002	7c) Wildlife, startle effect
EAS_SHA_003	5o) Noise, vibrations
EDG_AME_002	5e) Noise, non-auditory concerns

Table C-2 Members of the Public (cont.)

Coded Name	Category
EGA_DAV_001	1d) NEPA Process, Cooperating Agency
EGA_DAV_002	2c) Purpose and Need, additional sorties
EGA_DAV_003	2b) Purpose and Need, pilot shortage
EGA_DAV_004	2a) Purpose and Need, airspace is adequate
EGA_DAV_005	2f) Purpose and Need, selection criteria
EGA_DAV_006	7g) Wildlife, T&E
EGA_DAV_007	11a) Safety, aircraft mishaps
EGA_DAV_008	14) Hazardous Materials
EGA_DAV_009	7c) Wildlife, startle effect
EGA_DAV_010	4b) Transients, expansion of activities
EGA_DAV_011	6a) Wilderness Areas, incompatibility
EGA_DAV_012	8a) Economics, recreation and tourism
ELK_DAV_001	10a) Chaff and Flares, fire risk
ELL_CAR_002	10d) Chaff and Flares, health concerns
EMB_JAN_001	8a) Economics, recreation and tourism
EMB_JAN_002	10a) Chaff and Flares, fire risk
ESP_RIC_001	5g) Noise, sonic booms
ESP_RIC_002	6a) Wilderness Areas, incompatibility
EVE_MAR_003	2a) Purpose and Need, airspace is adequate
FAI_JUD_001	5g) Noise, sonic booms
FAN_ROB_001	2a) Purpose and Need, airspace is adequate
FEI_SHA_001	2a) Purpose and Need, airspace is adequate
FEL_TRA_001	6a) Wilderness Areas, incompatibility
FER_E M_001	8e) Economics, general
FER_E M_002	7f) Wildlife, inadequate analysis
FER_E M_003	6a) Wilderness Areas, incompatibility
FER_MIK_001	6a) Wilderness Areas, incompatibility
FER_MIK_002	5d) Noise, inadequate analysis
FIE_LIS_001	7b) Wildlife, additional references
FIE_LIS_002	5c) Noise, ambient noise
FIE_LIS_003	10a) Chaff and Flares, fire risk
FIE_LIS_004	10d) Chaff and Flares, health concerns
FIE_LIS_005	6a) Wilderness Areas, incompatibility
FIE_LIS_006	3h) Proposed Action, expanded training
FIE_LIS_007	7a) Wildlife, general
FIE_LIS_008	5c) Noise, ambient noise
FIE_LIS_009	13a) Cumulative Impacts, contiguous block of airspace
FIE_LIS_010	7a) Wildlife, general
FIE_LIS_011	5e) Noise, non-auditory concerns
FIE_LIS_012	8e) Economics, general
FIE_LIS_013	10a) Chaff and Flares, fire risk
FIE_LIS_014	10f) Chaff and Flares, water pollution
FIE_NOR_001	5e) Noise, non-auditory concerns
FIE_NOR_002	8a) Economics, recreation and tourism
FIN_JUA_001	8b) Economics, aviation industry
FIN_MIR_001	7a) Wildlife, general
FIN_MIR_002	5e) Noise, non-auditory concerns
FIN_MIR_003	8e) Economics, general
FIN_MIR_004	10a) Chaff and Flares, fire risk
FIN_MIR_005	10f) Chaff and Flares, water pollution
FIS_DAN_001	6a) Wilderness Areas, incompatibility
FLE_STE_001	3a) Proposed Action, sortie numbers
FLI_KAT_002	2a) Purpose and Need, airspace is adequate
FLO_GUY_001	9b) Civil Aviation, VFR traffic

Table C-2 Members of the Public (cont.)

Coded Name	Category
FLO_GUY_003	3c) Proposed Action, MOA altitudes
FLO_PAT_002	6a) Wilderness Areas, incompatibility
FOR_JAN_003	10b) Chaff and Flares, litter
FOR_WIL_003	6a) Wilderness Areas, incompatibility
FOX_STE_001	2a) Purpose and Need, airspace is adequate
FRE_BET_001	3f) Proposed Action, avoidances
FRE_MAR_002	2a) Purpose and Need, airspace is adequate
FRE_SCO_001	9f) Civil Aviation, weather diversion
FRE_SCO_002	2d) Purpose and Need, WSMR limitations
FRI_BER_001	6a) Wilderness Areas, incompatibility
FRI_RON_001	6a) Wilderness Areas, incompatibility
FRI_RON_002	2a) Purpose and Need, airspace is adequate
FRO_JOY_001	10d) Chaff and Flares, health concerns
FUE_STE_001	5d) Noise, inadequate analysis
FUR_AND_002	10a) Chaff and Flares, fire risk
FUR_AND_003	10d) Chaff and Flares, health concerns
GAM_ROB_001	7a) Wildlife, general
GAU_NOR_001	6a) Wilderness Areas, incompatibility
GEL_ASH_001	5e) Noise, non-auditory concerns
GEN_JOS_001	1a) NEPA Process, Public Involvement
GEN_JOS_002	5a) Noise, general
GEN_MAR_003	3h) Proposed Action, expanded training
GEN_MAR_004	1a) NEPA Process, Public Involvement
GEO_E**_001	5e) Noise, non-auditory concerns
GEO_E**_002	7c) Wildlife, startle effect
GEO_E**_003	10a) Chaff and Flares, fire risk
GEO_E**_004	2a) Purpose and Need, airspace is adequate
GER_CAR_001	6a) Wilderness Areas, incompatibility
GER_DEL_001	2a) Purpose and Need, airspace is adequate
GIA_DEB_001	7a) Wildlife, general
GIE_MIC_001	7c) Wildlife, startle effect
GIE_MIC_002	10a) Chaff and Flares, fire risk
GIL_JAN_001	7a) Wildlife, general
GIL_JAN_002	5e) Noise, non-auditory concerns
GIL_JAN_003	8e) Economics, general
GIL_JAN_004	10a) Chaff and Flares, fire risk
GIL_JAN_005	10f) Chaff and Flares, water pollution
GIL_MON_001	2a) Purpose and Need, airspace is adequate
GLA_LOG_001	2a) Purpose and Need, airspace is adequate
GLA_LOG_003	3b) Proposed Action, Preferred Alternative
GLA_LOG_004	1b) NEPA Process, No Action Analysis
GLE_CON_001	8a) Economics, recreation and tourism
GLE_CON_002	6a) Wilderness Areas, incompatibility
GLE_CON_003	10a) Chaff and Flares, fire risk
GLE_CON_005	8e) Economics, general
GLO_LAR_001	7c) Wildlife, startle effect
GOL_SUS_001	9b) Civil Aviation, VFR traffic
GOL_SUS_002	9b) Civil Aviation, VFR traffic
GON_FRA_001	8c) Economics, housing values
GON_FRA_002	8a) Economics, recreation and tourism
GON_FRA_003	5e) Noise, non-auditory concerns
GOO_JIM_001	6a) Wilderness Areas, incompatibility
GOO_JIM_002	6a) Wilderness Areas, incompatibility

Table C-2 Members of the Public (cont.)

Coded Name	Category
GOO_PAM_001	6a) Wilderness Areas, incompatibility
GOR_BRU_001	9f) Civil Aviation, weather diversion
GOR_JOH_001	8e) Economics, general
GOR_MIC_001	9a) Civil Aviation, general
GOR_PET_001	7a) Wildlife, general
GOR_PET_002	5e) Noise, non-auditory concerns
GOR_PET_003	8e) Economics, general
GOR_PET_004	10a) Chaff and Flares, fire risk
GOR_PET_005	10f) Chaff and Flares, water pollution
GRA_ALB_001	16) Dark Skies
GRA_BAR_001	10d) Chaff and Flares, health concerns
GRA_BAR_002	2a) Purpose and Need, airspace is adequate
GRA_BAR_003	7a) Wildlife, general
GRA_DAV_001	6a) Wilderness Areas, incompatibility
GRA_DAV_002	10b) Chaff and Flares, litter
GRA_DON_001	10a) Chaff and Flares, fire risk
GRA_DON_002	8a) Economics, recreation and tourism
GRA_DON_003	6a) Wilderness Areas, incompatibility
GRA_DON_004	10a) Chaff and Flares, fire risk
GRA_DON_005	8a) Economics, recreation and tourism
GRA_DON_007	7a) Wildlife, general
GRA_DR._001	16) Dark Skies
GRA_PAT_001	16) Dark Skies
GRA_PAT_002	8a) Economics, recreation and tourism
GRA_PAT_003	16) Dark Skies
GRA_VIC_001	5e) Noise, non-auditory concerns
GRA_VIC_002	8a) Economics, recreation and tourism
GRA_VIC_003	10a) Chaff and Flares, fire risk

Coded Name	Category
GRI_GLE_002	2a) Purpose and Need, airspace is adequate
GRI_GLE_003	6a) Wilderness Areas, incompatibility
GRI_GLE_004	10d) Chaff and Flares, health concerns
GRI_GLE_005	10a) Chaff and Flares, fire risk
GRI_GLE_006	7d) Wildlife, migratory birds
GRI_GLE_007	11a) Safety, aircraft mishaps
GRI_GLE_008	15) Enforcement of Restrictions
GRI_GLE_009	10a) Chaff and Flares, fire risk
GRI_GLE_010	7d) Wildlife, migratory birds
GRI_GLE_011	11a) Safety, aircraft mishaps
GRI_GLE_012	6a) Wilderness Areas, incompatibility
GRI_JAN_001	2a) Purpose and Need, airspace is adequate
GRI_JOS_001	9b) Civil Aviation, VFR traffic
GRO_JEN_001	10b) Chaff and Flares, litter
GRO_RIC_001	6a) Wilderness Areas, incompatibility
GRU_SHA_001	7c) Wildlife, startle effect
GRU_SHA_002	10a) Chaff and Flares, fire risk
GUA_ELI_001	5f) Noise, hearing loss
GUA_GIL_001	5i) Noise, annoyance
GUA_GIL_002	10d) Chaff and Flares, health concerns
GUA_NOR_001	6a) Wilderness Areas, incompatibility
GUA_NOR_002	5d) Noise, inadequate analysis
GUA_ROB_001	8e) economics, general
GUE_DEB_001	10a) Chaff and Flares, fire risk
GUE_DEB_005	10a) Chaff and Flares, fire risk
HAD_MAR_002	2a) Purpose and Need, airspace is adequate

Table C-2 Members of the Public (cont.)

Coded Name	Category
HAD_MAR_003	1a) NEPA Process, Public Involvement
HAD_MAR_004	5d) Noise, inadequate analysis
HAD_MAR_005	10d) Chaff and Flares, health concerns
HAD_MAR_006	12a) Air Quality, general
HAD_MAR_007	8e) Economics, general
HAD_MAR_008	12b) Air Quality, greenhouse gas emissions
HAD_MAR_009	13a) Cumulative Impacts, contiguous block of airspace
HAD_MAR_010	8c) Economics, housing values
HAL_ALL_001	6a) Wilderness Areas, incompatibility
HAL_ALL_002	10a) Chaff and Flares, fire risk
HAL_ALL_003	10b) Chaff and Flares, litter
HAL_ALL_004	11a) Safety, aircraft mishaps
HAL_ALL_005	5e) Noise, non-auditory concerns
HAL_ALL_006	7c) Wildlife, startle effect
HAL_ALL_007	8a) Economics, recreation and tourism
HAL_ALL_009	10d) Chaff and Flares, health concerns
HAL_HAR_002	10d) Chaff and Flares, health concerns
HAL_NAN_001	12a) Air Quality, general
HAL_SHE_001	2a) Purpose and Need, airspace is adequate
HAL_SHE_002	5d) Noise, inadequate analysis
HAL_SHE_003	6a) Wilderness Areas, incompatibility
HAL_SHE_004	5e) Noise, non-auditory concerns
HAL_SHE_005	8a) Economics, recreation and tourism
HAL_SHE_007	5i) Noise, annoyance
HAM_AND_001	2a) Purpose and Need, airspace is adequate
HAN_AMY_001	8a) Economics, recreation and tourism
HAN_LEE_001	5a) Noise, general
HAR_DIA_001	7c) Wildlife, startle effect
HAR_KEL_001	8e) Economics, general
HAR_KEN_001	2a) Purpose and Need, airspace is adequate
HAR_LOI_001	7a) Wildlife, general
HAR_LOI_002	5e) Noise, non-auditory concerns
HAR_LOI_003	8e) Economics, general
HAR_LOI_004	10a) Chaff and Flares, fire risk
HAR_LOI_005	10f) Chaff and Flares, water pollution
HAS_E**_001	6a) Wilderness Areas, incompatibility
HAS_E**_002	2a) Purpose and Need, airspace is adequate
HAU_LES_001	11b) Safety, fire risk from crashes
HAU_LES_002	2a) Purpose and Need, airspace is adequate
HAU_LES_004	13b) Cumulative Impacts, wilderness areas
HAV_JAN_001	8a) Economics, recreation and tourism
HAV_JEF_003	8a) Economics, recreation and tourism
HAW_DOR_001	10a) Chaff and Flares, fire risk
HAW_TOM_001	7a) Wildlife, general
HAW_TOM_002	5e) Noise, non-auditory concerns
HAW_TOM_003	8e) Economics, general
HAW_TOM_004	10a) Chaff and Flares, fire risk
HAW_TOM_005	10f) Chaff and Flares, water pollution
HAY_TIM_001	10d) Chaff and Flares, health concerns
HEA_KAR_001	8a) Economics, recreation and tourism
HEA_KAR_002	6a) Wilderness Areas, incompatibility
HEA_KAR_003	10b) Chaff and Flares, litter
HEA_LAU_001	6a) Wilderness Areas, incompatibility
HEA_LAU_002	2a) Purpose and Need, airspace is adequate

Table C-2 Members of the Public (cont.)

Coded Name	Category
HEL_RON_002	6a) Wilderness Areas, incompatibility
HEL_RON_003	1b) NEPA Process, No Action Analysis
HEL_RON_004	3f) Proposed Action, avoidances
HEL_RON_005	12a) Air Quality, general
HEL_RON_006	1b) NEPA Process, No Action Analysis
HEL_RON_007	10a) Chaff and Flares, fire risk
HEL_RON_008	3f) Proposed Action, avoidances
HEL_RON_009	7b) Wildlife, additional references
HEL_RON_010	6a) Wilderness Areas, incompatibility
HEL_RON_011	7f) Wildlife, inadequate analysis
HEL_RON_012	12a) Air Quality, general
HEL_RON_013	12a) Air Quality, general
HEL_RON_014	12a) Air Quality, general
HEL_RON_015	12a) Air Quality, general
HEL_RON_016	12a) Air Quality, general
HEL_RON_017	12a) Air Quality, general
HEL_RON_018	12a) Air Quality, general
HEL_RON_019	12a) Air Quality, general
HEL_RON_020	12a) Air Quality, general
HEL_RON_021	12a) Air Quality, general
HEL_RON_022	12a) Air Quality, general
HEL_RON_023	12a) Air Quality, general
HEL_RON_024	12a) Air Quality, general
HEL_RON_025	12a) Air Quality, general
HEL_RON_026	12a) Air Quality, general
HEL_RON_027	6a) Wilderness Areas, incompatibility
HEL_RON_028	12a) Air Quality, general
HEL_RON_029	3f) Proposed Action, avoidances
HEL_RON_030	3c) Proposed Action, MOA altitudes
HEL_RON_031	22) Mitigation
HEL_RON_032	5i) Noise, annoyance
HEL_RON_033	3f) Proposed Action, avoidances
HEL_RON_034	6a) Wilderness Areas, incompatibility
HEL_RON_035	12a) Air Quality, general
HEL_RON_036	6a) Wilderness Areas, incompatibility
HEL_RON_037	6a) Wilderness Areas, incompatibility
HEL_RON_038	10b) Chaff and Flares, litter
HEL_RON_039	12a) Air Quality, general
HEL_RON_040	5a) Noise, general
HEL_RON_041	5l) Noise, modeling software
HEL_RON_042	5b) Noise, additional references
HEL_RON_043	5e) Noise, non-auditory concerns
HEL_RON_045	22) Mitigation
HEL_RON_047	5b) Noise, additional references
HEL_RON_048	11c) Safety, hydrazine
HEL_RON_049	7g) Wildlife, T&E
HEL_RON_050	7g) Wildlife, T&E
HEL_RON_051	7g) Wildlife, T&E
HEL_RON_052	7g) Wildlife, T&E
HEL_RON_053	7g) Wildlife, T&E
HEL_RON_054	7d) Wildlife, migratory birds
HEL_RON_055	22) Mitigation
HEL_RON_056	7b) Wildlife, additional references
HEL_RON_057	6a) Wilderness Areas, incompatibility
HEL_RON_058	6a) Wilderness Areas, incompatibility
HEL_RON_059	1d) NEPA Process, Cooperating Agency
HEL_RON_060	1d) NEPA Process, Cooperating Agency
HEL_RON_061	1c) NEPA Process, reasonable alternatives
HEL_RON_062	22) Mitigation
HEL_RON_063	6a) Wilderness Areas, incompatibility
HEL_RON_064	6a) Wilderness Areas, incompatibility

Table C-2 Members of the Public (cont.)

Coded Name	Category
HEL_RON_065	5d) Noise, inadequate analysis
HEL_RON_066	5l) Noise, modeling software
HEL_RON_067	5b) Noise, additional references
HEL_RON_068	13b) Cumulative Impacts, wilderness areas
HEL_RON_069	10a) Chaff and Flares, fire risk
HEL_RON_070	22) Mitigation
HEM_BOB_002	7a) Wildlife, general
HEM_BOB_003	5e) Noise, non-auditory concerns
HEM_BOB_004	8e) Economics, general
HEM_BOB_005	10a) Chaff and Flares, fire risk
HEM_BOB_006	10f) Chaff and Flares, water pollution
HER_ADR_001	8a) Economics, recreation and tourism
HER_CON_002	8a) Economics, recreation and tourism
HER_CON_004	3h) Proposed Action, expanded training
HER_DAV_001	7b) Wildlife, additional references
HER_WIL_002	10a) Chaff and Flares, fire risk
HER_WIL_006	11b) Safety, fire risk from crashes
HIR_CAR_001	6a) Wilderness Areas, incompatibility
HOF_RAN_001	2a) Purpose and Need, airspace is adequate
HOL_CAR_001	10a) Chaff and Flares, fire risk
HOL_JUD_001	8c) Economics, housing values
HOL_LIN_001	10d) Chaff and Flares, health concerns
HOL_LIN_002	6a) Wilderness Areas, incompatibility
HOL_MAR_003	15) Enforcement of Restrictions
HOL_MAR_004	11a) Safety, aircraft mishaps
HOL_MAR_005	11b) Safety, fire risk from crashes
HOR_MIC_001	10d) Chaff and Flares, health concerns
HOS_PAT_001	8a) Economics, recreation and tourism
HOU_DAL_001	2a) Purpose and Need, airspace is adequate
HOU_DAL_002	2d) Purpose and Need, WSMR limitations
HOU_DAL_003	12a) Air Quality, general
HOU_DAL_004	10a) Chaff and Flares, fire risk
HOU_DAL_005	5a) Noise, general
HOU_DAL_006	7b) Wildlife, additional references
HOU_DAL_007	6a) Wilderness Areas, incompatibility
HOU_DAL_008	10f) Chaff and Flares, water pollution
HOU_DAL_009	5o) Noise, vibrations
HOU_DAL_010	8a) Economics, recreation and tourism
HOU_DAL_011	8c) Economics, housing values
HOU_DAL_012	16) Dark Skies
HOU_DAL_013	3h) Proposed Action, expanded training
HOU_KAR_001	2a) Purpose and Need, airspace is adequate
HOV_PAU_001	2a) Purpose and Need, airspace is adequate
HUL_MAR_001	6a) Wilderness Areas, incompatibility
HUM_LOU_001	23) Technical Issues
HUM_LOU_002	3g) Proposed Action, foreign military
HUM_LOU_003	5i) Noise, annoyance
HUM_LOU_004	5g) Noise, sonic booms
HUM_LOU_005	5e) Noise, non-auditory concerns
HUM_LOU_006	5g) Noise, sonic booms
HUM_LOU_007	12a) Air Quality, general
HUM_LOU_009	7c) Wildlife, startle effect
HUM_LOU_010	5a) Noise, general
HUM_LOU_011	1a) NEPA Process, Public Involvement
HUM_LOU_012	23) Technical Issues

Table C-2 Members of the Public (cont.)

Coded Name	Category
HUM_LOU_013	3h) Proposed Action, expanded training
HUM_LOU_014	8a) Economics, recreation and tourism
HUM_LOU_015	10c) Chaff and Flares, dud flares
HUM_LOU_016	2d) Purpose and Need, WSMR limitations
HUM_LOU_017	12a) Air Quality, general
HUM_LOU_018	2d) Purpose and Need, WSMR limitations
HUM_LOU_019	12a) Air Quality, general
HUN_BAR_001	9e) Civil Aviation, Spaceport and Rio Grande
HUN_BAR_002	9c) Civil Aviation, IFR traffic
HUN_BAR_003	9g) Civil Aviation, airport approach
HUN_BAR_004	9b) Civil Aviation, VFR traffic
HUN_BAR_005	9d) Civil Aviation, radar coverage
HUN_BAR_006	9a) Civil Aviation, general
HUN_BAR_007	8b) Economics, aviation industry
HUR_MAT_001	6a) Wilderness Areas, incompatibility
HUR_MAT_002	5d) Noise, inadequate analysis
HUT_MIC_001	6a) Wilderness Areas, incompatibility
HUT_MIC_002	15) Enforcement of Restrictions
INA_GEO_001	10f) Chaff and Flares, water pollution
ITT_MIC_001	2a) Purpose and Need, airspace is adequate
JAN_BIL_001	7a) Wildlife, general
JAN_BIL_002	2c) Purpose and Need, additional sorties
JEF_THO_001	9b) Civil Aviation, VFR traffic
JEN_TIM_001	3c) Proposed Action, MOA altitudes
JEN_TIM_003	8b) Economics, aviation industry
JEN_TIM_004	11a) Safety, aircraft mishaps
JOH_ANI_001	8a) Economics, recreation and tourism
JOH_ELI_001	7a) Wildlife, general
JOH_ELI_002	5e) Noise, non-auditory concerns
JOH_ELI_003	8e) Economics, general
JOH_ELI_004	10a) Chaff and Flares, fire risk
JOH_ELI_005	10f) Chaff and Flares, water pollution
JOH_JOR_002	9b) Civil Aviation, VFR traffic
JOH_MIC_003	2a) Purpose and Need, airspace is adequate
JOI_SUE_001	7a) Wildlife, general
JOI_SUE_002	5e) Noise, non-auditory concerns
JOI_SUE_003	8e) Economics, general
JOI_SUE_004	10a) Chaff and Flares, fire risk
JOI_SUE_005	10f) Chaff and Flares, water pollution
JON_GWY_001	8a) Economics, recreation and tourism
JON_GWY_003	10a) Chaff and Flares, fire risk
JON_MAR_002	5e) Noise, non-auditory concerns
KAR_JON_001	5e) Noise, non-auditory concerns
KAR_NIC_001	17) Continental Divide Trail
KAS_TAN_001	5a) Noise, general
KAS_TAN_002	10a) Chaff and Flares, fire risk
KAS_TAN_003	10f) Chaff and Flares, water pollution
KAS_TAN_004	11a) Safety, aircraft mishaps
KAZ_ELL_001	23) Technical Issues
KAZ_ELL_002	1a) NEPA Process, Public Involvement
KAZ_ELL_003	1a) NEPA Process, Public Involvement
KAZ_ELL_004	18) Transition Zones
KEA_PAT_001	8a) Economics, recreation and tourism
KEA_PAT_002	10e) Chaff and Flares, air pollution

Table C-2 Members of the Public (cont.)

Coded Name	Category
KEE_KAR_001	6a) Wilderness Areas, incompatibility
KEI_FRA_001	6a) Wilderness Areas, incompatibility
KEI_FRA_002	2a) Purpose and Need, airspace is adequate
KEI_FRA_003	10a) Chaff and Flares, fire risk
KEL_BIL_001	2a) Purpose and Need, airspace is adequate
KEY_CAT_001	6a) Wilderness Areas, incompatibility
KEY_CAT_002	8a) Economics, recreation and tourism
KHA_SAT_001	8a) Economics, recreation and tourism
KHA_SAT_002	1a) NEPA Process, Public Involvement
KHA_SAT_003	3f) Proposed Action, avoidances
KHA_SAT_004	4a) Transients, use of MOAs
KHA_SAT_005	5o) Noise, vibrations
KIL_KRI_001	9b) Civil Aviation, VFR traffic
KIN_DR_001	10f) Chaff and Flares, water pollution
KIN_FRE_001	5g) Noise, sonic booms
KIN_KAR_002	14) Hazardous Materials
KIN_KAR_003	2a) Purpose and Need, airspace is adequate
KIN_KEL_001	7f) Wildlife, inadequate analysis
KIN_KEL_002	7b) Wildlife, additional references
KIN_KEL_003	8a) Economics, recreation and tourism
KIN_KEL_004	20) Consultation
KIN_MAR_001	7a) Wildlife, general
KIN_MAR_002	5e) Noise, non-auditory concerns
KIN_MAR_003	8e) Economics, general
KIN_MAR_004	10a) Chaff and Flares, fire risk
KIN_MAR_005	10f) Chaff and Flares, water pollution
KIN_PAU_001	2a) Purpose and Need, airspace is adequate
KIS_DAV_001	11c) Safety, hydrazine
KIS_DAV_002	6a) Wilderness Areas, incompatibility
KLE_TON_001	6a) Wilderness Areas, incompatibility
KOE_NAV_001	8a) Economics, recreation and tourism
KOE_NAV_002	10d) Chaff and Flares, health concerns
KOE_NAV_004	7f) Wildlife, inadequate analysis
KOF_WAL_001	1a) NEPA Process, Public Involvement
KOR_MER_001	5a) Noise, general
KRU_DOR_001	2a) Purpose and Need, airspace is adequate
KUA_SAN_001	6a) Wilderness Areas, incompatibility
KUK_DAV_001	10a) Chaff and Flares, fire risk
KUK_DAV_002	5a) Noise, general
KUK_DAV_003	10b) Chaff and Flares, litter
KUK_DAV_004	8e) Economics, general
KUK_DAV_005	7a) Wildlife, general
KUK_DAV_006	5e) Noise, non-auditory concerns
KUK_DAV_007	2a) Purpose and Need, airspace is adequate
LAC_GWE_002	2a) Purpose and Need, airspace is adequate
LAC_GWE_003	10f) Chaff and Flares, water pollution
LAC_GWE_004	10b) Chaff and Flares, litter
LAC_GWE_005	10e) Chaff and Flares, air pollution
LAC_JOH_001	7a) Wildlife, general
LAC_JOH_002	5e) Noise, non-auditory concerns
LAC_JOH_003	8e) Economics, general
LAC_JOH_004	10a) Chaff and Flares, fire risk
LAC_JOH_005	10f) Chaff and Flares, water pollution
LAC_JOH_006	1c) NEPA Process, reasonable alternatives
LAC_JOH_007	1b) NEPA Process, No Action Analysis

Table C-2 Members of the Public (cont.)

Coded Name	Category
LAC_JOH_008	7f) Wildlife, inadequate analysis
LAC_JOH_009	4b) Transients, expansion of activities
LAC_JOH_010	8c) Economics, housing values
LAC_JOH_011	3a) Proposed Action, sortie numbers
LAC_JOH_012	7a) Wildlife, general
LAC_JOH_013	5b) Noise, additional references
LAC_JOH_014	5c) Noise, ambient noise
LAC_JOH_015	1d) NEPA Process, Cooperating Agency
LAC_JOH_016	12b) Air Quality, greenhouse gas emissions
LAF_DIA_001	14) Hazardous Materials
LAF_DIA_002	5a) Noise, general
LAF_PAU_002	2a) Purpose and Need, airspace is adequate
LAM_CAR_003	2a) Purpose and Need, airspace is adequate
LAM_CAT_002	2a) Purpose and Need, airspace is adequate
LAN_GIN_001	10b) Chaff and Flares, litter
LAN_JOH_001	2a) Purpose and Need, airspace is adequate
LAN_JOH_002	11a) Safety, aircraft mishaps
LAN_JOH_003	10a) Chaff and Flares, fire risk
LAP_WIL_001	3b) Proposed Action, Preferred Alternative
LAP_WIL_002	22) Mitigation
LAP_WIL_003	2a) Purpose and Need, airspace is adequate
LAP_WIL_005	2a) Purpose and Need, airspace is adequate
LAP_WIL_006	2a) Purpose and Need, airspace is adequate
LAP_WIL_008	5e) Noise, non-auditory concerns
LAP_WIL_011	24) Water Resources
LAP_WIL_012	24) Water Resources
LAP_WIL_013	8a) Economics, recreation and tourism
LAP_WIL_014	5d) Noise, inadequate analysis
LAP_WIL_015	6a) Wilderness Areas, incompatibility
LAP_WIL_015	22) Mitigation
LAP_WIL_017	22) Mitigation
LAP_WIL_018	5d) Noise, inadequate analysis
LAP_WIL_019	7c) Wildlife, startle effect
LAP_WIL_020	10b) Chaff and Flares, litter
LAP_WIL_021	3f) Proposed Action, avoidances
LAP_WIL_022	22) Mitigation
LAP_WIL_023	22) Mitigation
LAP_WIL_024	15) Enforcement of Restrictions
LAP_WIL_025	22) Mitigation
LAP_WIL_027	5a) Noise, general
LAP_WIL_028	5a) Noise, general
LAP_WIL_029	5a) Noise, general
LAP_WIL_030	22) Mitigation
LAT_DAL_001	10a) Chaff and Flares, fire risk
LAT_DAV_001	10a) Chaff and Flares, fire risk
LAT_DAV_002	6a) Wilderness Areas, incompatibility
LAT_DEA_001	11a) Safety, aircraft mishaps
LAY_JIM_002	2a) Purpose and Need, airspace is adequate
LAZ_MAR_001	6a) Wilderness Areas, incompatibility
LAZ_MAR_002	10a) Chaff and Flares, fire risk
LAZ_MAR_003	2a) Purpose and Need, airspace is adequate
LEA_CHA_004	6a) Wilderness Areas, incompatibility
LEA_ERI_001	10a) Chaff and Flares, fire risk
LEA_KIR_002	7e) Wildlife, nesting effects
LEI_BIL_001	7a) Wildlife, general
LEL_LOR_001	6a) Wilderness Areas, incompatibility
LEV_MAR_001	8e) Economics, general

Table C-2 Members of the Public (cont.)

Coded Name	Category
LEV_MAR_002	6a) Wilderness Areas, incompatibility
LEV_MIC_001	12b) Air Quality, greenhouse gas emissions
LEW_ANI_001	7a) Wildlife, general
LEW_ANI_002	5a) Noise, general
LEW_ANI_003	10a) Chaff and Flares, fire risk
LIC_JUD_001	8e) Economics, general
LIN_CHR_001	7a) Wildlife, general
LIN_CHR_002	10a) Chaff and Flares, fire risk
LIN_TED_002	8b) Economics, aviation industry
LIN_TED_003	9e) Civil Aviation, Spaceport and Rio Grande
LIN_WIL_001	8a) Economics, recreation and tourism
LIP_CYN_001	10d) Chaff and Flares, health concerns
LIS_CHR_001	8a) Economics, recreation and tourism
LIS_CHR_002	5a) Noise, general
LIS_CHR_003	7c) Wildlife, startle effect
LIS_CHR_004	10a) Chaff and Flares, fire risk
LIS_CHR_005	10b) Chaff and Flares, litter
LIS_CHR_006	10d) Chaff and Flares, health concerns
LIS_CHR_007	11a) Safety, aircraft mishaps
LIS_CHR_008	2a) Purpose and Need, airspace is adequate
LIS_CYN_001	2a) Purpose and Need, airspace is adequate
LIS_TON_001	10f) Chaff and Flares, water pollution
LIV_PET_001	6a) Wilderness Areas, incompatibility
LIV_PET_002	6a) Wilderness Areas, incompatibility
LIV_ROB_001	6a) Wilderness Areas, incompatibility
LON_STE_001	3b) Proposed Action, Preferred Alternative
LOR_DAN_001	7a) Wildlife, general
LOR_DAN_002	5e) Noise, non-auditory concerns
LOR_DAN_003	8e) Economics, general
LOR_DAN_004	8a) Economics, recreation and tourism
LOR_DAN_005	2a) Purpose and Need, airspace is adequate
LOR_DAN_006	2a) Purpose and Need, airspace is adequate
LOR_DAN_007	8e) Economics, general
LOW_ANN_001	8a) Economics, recreation and tourism
LOW_ANN_003	10a) Chaff and Flares, fire risk
LOW_ANN_007	8a) Economics, recreation and tourism
LOW_CHR_001	2a) Purpose and Need, airspace is adequate
LOW_LYN_001	2a) Purpose and Need, airspace is adequate
LOW_LYN_002	10a) Chaff and Flares, fire risk
LOW_LYN_003	10f) Chaff and Flares, water pollution
LUE_G*A_001	7a) Wildlife, general
LUE_G*A_002	5e) Noise, non-auditory concerns
LUE_G*A_003	8e) Economics, general
LUE_G*A_004	10a) Chaff and Flares, fire risk
LUE_G*A_005	10f) Chaff and Flares, water pollution
LUN_DOU_001	6a) Wilderness Areas, incompatibility
MAG_DAM_001	2a) Purpose and Need, airspace is adequate
MAG_L*A_001	7a) Wildlife, general
MAG_L*A_002	5e) Noise, non-auditory concerns
MAG_L*A_003	8e) Economics, general
MAG_L*A_004	10a) Chaff and Flares, fire risk
MAG_L*A_005	10f) Chaff and Flares, water pollution
MAI_JAM_001	2a) Purpose and Need, airspace is adequate
MAL_KAR_002	10a) Chaff and Flares, fire risk
MAL_KAR_003	10d) Chaff and Flares, health concerns

Table C-2 Members of the Public (cont.)

Coded Name	Category
MAL_TAN_001	2a) Purpose and Need, airspace is adequate
MAM_RON_001	2a) Purpose and Need, airspace is adequate
MAR_CAR_002	3f) Proposed Action, avoidances
MAR_CAR_003	15) Enforcement of Restrictions
MAR_CAR_004	10b) Chaff and Flares, litter
MAR_CAR_005	16) Dark Skies
MAR_DAV_002	5e) Noise, non-auditory concerns
MAR_DEB_004	9a) Civil Aviation, general
MAR_DEM_001	7a) Wildlife, general
MAR_DEM_002	5e) Noise, non-auditory concerns
MAR_DEM_003	8e) Economics, general
MAR_DEM_004	10a) Chaff and Flares, fire risk
MAR_DEM_005	10f) Chaff and Flares, water pollution
MAR_KAI_001	6a) Wilderness Areas, incompatibility
MAR_RIC_001	10d) Chaff and Flares, health concerns
MAR_RIC_002	9d) Civil Aviation, radar coverage
MAR_STE_003	2a) Purpose and Need, airspace is adequate
MAT_MIK_001	2a) Purpose and Need, airspace is adequate
MAU_JIM_001	2a) Purpose and Need, airspace is adequate
MAX_PAU_001	8b) Economics, aviation industry
MAX_PAU_002	9e) Civil Aviation, Spaceport and Rio Grande
MAY_ROS_001	5g) Noise, sonic booms
MAY_ROS_002	8e) Economics, general
MCA_ELI_001	8c) Economics, housing values
MCC_KIM_001	8a) Economics, recreation and tourism
MCC_LYN_001	8a) Economics, recreation and tourism
MCC_LYN_002	7c) Wildlife, startle effect
MCC_LYN_003	5e) Noise, non-auditory concerns
MCC_LYN_004	10a) Chaff and Flares, fire risk
MCC_SYL_001	12a) Air Quality, general
MCC_WAR_001	8a) Economics, recreation and tourism
MCC_WIL_001	7a) Wildlife, general
MCC_WIL_002	5e) Noise, non-auditory concerns
MCC_WIL_003	8e) Economics, general
MCC_WIL_004	10a) Chaff and Flares, fire risk
MCC_WIL_005	10f) Chaff and Flares, water pollution
MCF_SCO_001	5a) Noise, general
MCF_SCO_002	7g) Wildlife, T&E
MCG_JAM_001	2a) Purpose and Need, airspace is adequate
MCG_JAM_002	8a) Economics, recreation and tourism
MCG_JAM_003	10a) Chaff and Flares, fire risk
MCG_JAM_004	10d) Chaff and Flares, health concerns
MCG_JAM_005	10b) Chaff and Flares, litter
MCG_MAR_004	6a) Wilderness Areas, incompatibility
MCH_C**_001	7a) Wildlife, general
MCH_C**_002	5e) Noise, non-auditory concerns
MCH_C**_003	8e) Economics, general
MCH_C**_004	10a) Chaff and Flares, fire risk
MCH_C**_005	10f) Chaff and Flares, water pollution
MCK_BRU_001	6a) Wilderness Areas, incompatibility
MCK_CHA_001	6a) Wilderness Areas, incompatibility
MCK_SAR_001	5e) Noise, non-auditory concerns
MCK_TIM_004	5d) Noise, inadequate analysis
MCK_TIM_005	13a) Cumulative Impacts, contiguous block of airspace

Table C-2 Members of the Public (cont.)

Coded Name	Category
MCK_TIM_006	15) Enforcement of Restrictions
MCK_TIM_007	5c) Noise, ambient noise
MCK_TIM_008	5j) Noise, data accuracy
MCK_TIM_009	5d) Noise, inadequate analysis
MCK_TIM_011	5d) Noise, inadequate analysis
MCK_TIM_013	5a) Noise, general
MCK_TIM_014	5a) Noise, general
MCK_TIM_017	5d) Noise, inadequate analysis
MCK_TIM_018	5c) Noise, ambient noise
MCW_EDM_001	10a) Chaff and Flares, fire risk
MCW_EDM_002	5a) Noise, general
MED_RIC_001	2a) Purpose and Need, airspace is adequate
MET_CAR_001	2a) Purpose and Need, airspace is adequate
MET_CAR_003	10b) Chaff and Flares, litter
MET_CAR_004	5a) Noise, general
MET_CAR_005	7a) Wildlife, general
MET_CAR_006	10a) Chaff and Flares, fire risk
MET_CAR_007	5d) Noise, inadequate analysis
MET_CAR_009	5e) Noise, non-auditory concerns
MET_CAR_010	8e) Economics, general
MET_CAR_011	8a) Economics, recreation and tourism
MET_CAR_012	8c) Economics, housing values
MET_CAR_013	13a) Cumulative Impacts, contiguous block of airspace
MET_CAR_014	10b) Chaff and Flares, litter
MET_CAR_015	10f) Chaff and Flares, water pollution
MET_CAR_016	10e) Chaff and Flares, air pollution
MET_CAR_017	15) Enforcement of Restrictions
MET_CAR_018	3h) Proposed Action, expanded training
MIE_MIC_001	5p) Noise, VLA
MIE_MIC_002	19) Very Large Array
MIJ_MAR_001	10a) Chaff and Flares, fire risk
MIJ_MAR_002	11a) Safety, aircraft mishaps
MIL_ANN_002	6a) Wilderness Areas, incompatibility
MIL_CAR_001	1b) NEPA Process, No Action Analysis
MIL_CAR_002	13a) Cumulative Impacts, contiguous block of airspace
MIL_CAR_003	1a) NEPA Process, Public Involvement
MIL_CAR_004	10d) Chaff and Flares, health concerns
MIL_CHR_001	6a) Wilderness Areas, incompatibility
MIL_EDW_002	5e) Noise, non-auditory concerns
MIL_EDW_003	7c) Wildlife, startle effect
MIL_KEN_001	6a) Wilderness Areas, incompatibility
MIL_MAR_003	7f) Wildlife, inadequate analysis
MIL_MAR_004	7b) Wildlife, additional references
MIL_MEL_001	5a) Noise, general
MIL_MEL_002	5a) Noise, general
MIL_MEL_004	10d) Chaff and Flares, health concerns
MIL_MEL_005	10c) Chaff and Flares, dud flares
MIL_MEL_009	10d) Chaff and Flares, health concerns
MIL_MEL_010	5o) Noise, vibrations
MIL_MEL_011	10a) Chaff and Flares, fire risk
MIL_MEL_012	11a) Safety, aircraft mishaps
MIL_MEL_013	2a) Purpose and Need, airspace is adequate
MIL_MEL_014	14) Hazardous Materials
MIL_MEL_015	10c) Chaff and Flares, dud flares
MIL_MEL_016	5o) Noise, vibrations

Table C-2 Members of the Public (cont.)

Coded Name	Category
MIL_MEL_017	10a) Chaff and Flares, fire risk
MIL_MEL_018	11b) Safety, fire risk from crashes
MIL_MEL_019	2a) Purpose and Need, airspace is adequate
MIL_RAL_001	2a) Purpose and Need, airspace is adequate
MIL_RAL_002	6a) Wilderness Areas, incompatibility
MIT_R.L_001	7a) Wildlife, general
MIT_R.L_002	5e) Noise, non-auditory concerns
MIT_R.L_003	8e) Economics, general
MIT_R.L_004	10a) Chaff and Flares, fire risk
MIT_R.L_005	10f) Chaff and Flares, water pollution
MIT_RIC_002	7a) Wildlife, general
MIT_RIC_003	5e) Noise, non-auditory concerns
MIT_RIC_004	8e) Economics, general
MIT_RIC_005	10a) Chaff and Flares, fire risk
MIT_RIC_006	10f) Chaff and Flares, water pollution
MOE_MIC_002	10a) Chaff and Flares, fire risk
MOI_JEN_001	10a) Chaff and Flares, fire risk
MOI_JEN_002	2a) Purpose and Need, airspace is adequate
MOO_STE_002	6a) Wilderness Areas, incompatibility
MOR_DAN_004	9a) Civil Aviation, general
MOR_DAN_005	9g) Civil Aviation, airport approach
MOR_DAN_006	9b) Civil Aviation, VFR traffic
MOR_DAN_007	9c) Civil Aviation, IFR traffic
MOR_DAN_008	10a) Chaff and Flares, fire risk
MOR_DAN_009	8a) Economics, recreation and tourism
MOR_DEB_001	11b) Safety, fire risk from crashes
MOR_DON_001	10b) Chaff and Flares, litter
MOR_DON_002	10a) Chaff and Flares, fire risk
MOR_MAR_001	5a) Noise, general
MOR_MAR_002	10a) Chaff and Flares, fire risk
MOR_MYR_002	11b) Safety, fire risk from crashes
MOR_NOR_001	6a) Wilderness Areas, incompatibility
MOR_PAM_001	6a) Wilderness Areas, incompatibility
MOR_PAM_002	5i) Noise, annoyance
MOR_PAM_003	5e) Noise, non-auditory concerns
MOR_PAM_004	2a) Purpose and Need, airspace is adequate
MOR_PAM_005	5b) Noise, additional references
MOR_PAM_006	5i) Noise, annoyance
MOR_PAM_007	5e) Noise, non-auditory concerns
MOR_PAM_008	6a) Wilderness Areas, incompatibility
MOR_PAM_010	22) Mitigation
MOR_PAM_011	3g) Proposed Action, foreign military
MOS_RHE_001	6a) Wilderness Areas, incompatibility
MOU_MIK_001	8e) Economics, general
MOU_MIK_002	10a) Chaff and Flares, fire risk
MOU_MIK_003	8c) Economics, housing values
MOU_MIK_004	8a) Economics, recreation and tourism
MOU_SUE_001	5g) Noise, sonic booms
MUL_JAM_002	12b) Air Quality, greenhouse gas emissions
MUL_JAM_003	21) Environmental Justice
MUL_LAR_001	3g) Proposed Action, foreign military
MUR_CEI_001	6a) Wilderness Areas, incompatibility
MUR_CEI_002	6a) Wilderness Areas, incompatibility
MUR_DEB_001	14) Hazardous Materials

Table C-2 Members of the Public (cont.)

Coded Name	Category
MUT_ILE_001	5e) Noise, non-auditory concerns
MUT_ILE_002	8a) Economics, recreation and tourism
MUT_PAT_001	13b) Cumulative Impacts, wilderness areas
MUT_PAT_002	8a) Economics, recreation and tourism
MUT_PAT_003	10a) Chaff and Flares, fire risk
MUT_PAT_004	3c) Proposed Action, MOA altitudes
MYE_GRE_001	8d) Economics, wind energy
MYR_BRE_001	6a) Wilderness Areas, incompatibility
NAK_KAR_003	8a) Economics, recreation and tourism
NAK_KAR_004	10a) Chaff and Flares, fire risk
NEL_JAM_001	6a) Wilderness Areas, incompatibility
NEL_JAM_002	5d) Noise, inadequate analysis
NEL_JAM_003	8a) Economics, recreation and tourism
NER_KRI_001	8c) Economics, housing values
NER_KRI_003	10a) Chaff and Flares, fire risk
NER_KRI_004	10c) Chaff and Flares, dud flares
NER_KRI_005	10f) Chaff and Flares, water pollution
NER_KRI_007	10b) Chaff and Flares, litter
NER_KRI_008	5a) Noise, general
NET_CRY_001	10d) Chaff and Flares, health concerns
NET_CRY_002	8c) Economics, housing values
NET_CRY_003	7d) Wildlife, migratory birds
NET_CRY_004	7c) Wildlife, startle effect
NET_CRY_005	6a) Wilderness Areas, incompatibility
NET_CRY_006	5e) Noise, non-auditory concerns
NEU_IRE_001	7a) Wildlife, general
NEU_IRE_002	5e) Noise, non-auditory concerns
NEU_IRE_003	8e) Economics, general
NEU_IRE_004	10a) Chaff and Flares, fire risk
NEU_IRE_005	10f) Chaff and Flares, water pollution
NEW_JAM_001	5a) Noise, general
NEW_JAM_002	7a) Wildlife, general
NEW_JAM_003	5o) Noise, vibrations
NEW_JAM_004	8c) Economics, housing values
NEW_JAM_005	12b) Air Quality, greenhouse gas emissions
NEW_JAM_006	5o) Noise, vibrations
NEW_JAM_007	5o) Noise, vibrations
NEW_MAR_001	2a) Purpose and Need, airspace is adequate
NEW_MAR_001	7c) Wildlife, startle effect
NEW_MAR_002	5a) Noise, general
NEW_MAR_002	7b) Wildlife, additional references
NEW_MAR_003	10d) Chaff and Flares, health concerns
NEW_MAR_003	7b) Wildlife, additional references
NEW_MAR_004	10d) Chaff and Flares, health concerns
NEW_MAR_004	10a) Chaff and Flares, fire risk
NEW_MAR_005	10d) Chaff and Flares, health concerns
NEW_MAR_005	6a) Wilderness Areas, incompatibility
NEW_MAR_006	6a) Wilderness Areas, incompatibility
NEW_NAT_001	2a) Purpose and Need, airspace is adequate
NEW_NAT_002	3f) Proposed Action, avoidances
NEW_ROB_001	2a) Purpose and Need, airspace is adequate
NIC_DEB_001	3d) Proposed Action, overflight restrictions
NIC_DEB_002	3e) Proposed Action, Christa and Kendra ATCAAs

Table C-2 Members of the Public (cont.)

Coded Name	Category
NIC_SAN_001	2a) Purpose and Need, airspace is adequate
NIC_WIL_002	9a) Civil Aviation, general
NIE_THO_001	6a) Wilderness Areas, incompatibility
NOL_PAT_001	6a) Wilderness Areas, incompatibility
NOL_PAT_002	3h) Proposed Action, expanded training
NOL_SAN_001	2a) Purpose and Need, airspace is adequate
NOL_SAN_002	6a) Wilderness Areas, incompatibility
NOR_AMY_001	10a) Chaff and Flares, fire risk
NOR_DEN_001	6a) Wilderness Areas, incompatibility
NUN_GRE_001	2a) Purpose and Need, airspace is adequate
NUN_GRE_002	3e) Proposed Action, Christa and Kendra ATCAAs
NUN_GRE_003	5d) Noise, inadequate analysis
NUN_GRE_004	3b) Proposed Action, Preferred Alternative
NUN_GRE_005	2a) Purpose and Need, airspace is adequate
NUN_GRE_006	10a) Chaff and Flares, fire risk
NUN_GRE_008	1b) NEPA Process, No Action Analysis
OAT_MAR_001	2a) Purpose and Need, airspace is adequate
OBA_PEG_001	5g) Noise, sonic booms
OBE_KYL_001	6a) Wilderness Areas, incompatibility
OCO_MIC_001	7a) Wildlife, general
OCO_MIC_001	8a) Economics, recreation and tourism
OCO_MIC_002	5e) Noise, non-auditory concerns
OCO_MIC_003	8e) Economics, general
OCO_MIC_004	10a) Chaff and Flares, fire risk
OCO_MIC_005	10f) Chaff and Flares, water pollution
ORR_MAR_001	6a) Wilderness Areas, incompatibility
OSS_PET_002	7g) Wildlife, T&E
OST_PAU_001	7a) Wildlife, general
OST_PAU_002	5e) Noise, non-auditory concerns
OST_PAU_003	8e) Economics, general
OST_PAU_004	10a) Chaff and Flares, fire risk
OST_PAU_005	10f) Chaff and Flares, water pollution
OSU_BRE_001	6a) Wilderness Areas, incompatibility
OVE_CHR_004	7d) Wildlife, migratory birds
OVE_CHR_005	7b) Wildlife, additional references
OVE_CHR_006	7d) Wildlife, migratory birds
OVE_CHR_007	7b) Wildlife, additional references
OVE_CHR_008	11b) Safety, fire risk from crashes
OVE_CHR_009	2d) Purpose and Need, WSMR limitations
OVE_CHR_010	8a) Economics, recreation and tourism
OVE_GAR_001	2a) Purpose and Need, airspace is adequate
OVE_KAT_001	7f) Wildlife, inadequate analysis
OVE_KAT_002	1a) NEPA Process, Public Involvement
OVE_WIL_001	7f) Wildlife, inadequate analysis
OVE_WIL_002	7b) Wildlife, additional references
OVE_WIL_003	3g) Proposed Action, foreign military
PAF_LIN_001	6a) Wilderness Areas, incompatibility
PAF_LIN_002	10d) Chaff and Flares, health concerns
PAF_LIN_003	3h) Proposed Action, expanded training
PAL_JIM_001	5a) Noise, general
PAL_SAM_001	7c) Wildlife, startle effect
PAL_SAM_002	5e) Noise, non-auditory concerns

Table C-2 Members of the Public (cont.)

Coded Name	Category
PAR_DAV_002	6a) Wilderness Areas, incompatibility
PAR_LIZ_001	7c) Wildlife, startle effect
PAR_MAU_001	2a) Purpose and Need, airspace is adequate
PAT_DEB_001	11a) Safety, aircraft mishaps
PAT_DEB_002	10a) Chaff and Flares, fire risk
PAT_DON_001	6a) Wilderness Areas, incompatibility
PAT_JOA_002	10d) Chaff and Flares, health concerns
PAV_AND_001	6a) Wilderness Areas, incompatibility
PAX_JIM_001	6a) Wilderness Areas, incompatibility
PAX_JIM_002	10a) Chaff and Flares, fire risk
PAY_AND_001	12b) Air Quality, greenhouse gas emissions
PAY_AND_002	8c) Economics, housing values
PAY_AND_003	8a) Economics, recreation and tourism
PAY_AND_004	7c) Wildlife, startle effect
PAY_WEN_001	5g) Noise, sonic booms
PER_DOU_001	6a) Wilderness Areas, incompatibility
PET_PAU_001	2a) Purpose and Need, airspace is adequate
PET_ROB_002	6a) Wilderness Areas, incompatibility
PET_ROB_003	2a) Purpose and Need, airspace is adequate
PEV_S*A_002	8a) Economics, recreation and tourism
PHI_TOM_001	17) Continental Divide Trail
PHI_TRU_001	2a) Purpose and Need, airspace is adequate
PHI_TRU_002	6a) Wilderness Areas, incompatibility
PHI_TRU_003	10a) Chaff and Flares, fire risk
PHI_TRU_004	10b) Chaff and Flares, litter
PHI_WEN_003	2a) Purpose and Need, airspace is adequate
PHI_WEN_004	3h) Proposed Action, expanded training
PHI_WEN_005	5e) Noise, non-auditory concerns
PHI_WEN_007	13a) Cumulative Impacts, contiguous block of airspace
PLA_RAY_001	2a) Purpose and Need, airspace is adequate
POD_STA_001	12a) Air Quality, general
POL_EMI_001	8a) Economics, recreation and tourism
POL_EMI_002	8c) Economics, housing values
POL_EMI_003	15) Enforcement of Restrictions
POL_EMI_004	8a) Economics, recreation and tourism
POR_SUS_003	7a) Wildlife, general
POR_SUS_004	5e) Noise, non-auditory concerns
POR_SUS_005	8a) Economics, recreation and tourism
POT_MAR_001	7a) Wildlife, general
POT_MAR_002	5e) Noise, non-auditory concerns
POT_MAR_003	8e) Economics, general
POT_MAR_004	10a) Chaff and Flares, fire risk
POT_MAR_005	10f) Chaff and Flares, water pollution
PRA_MAR_002	7d) Wildlife, migratory birds
PRI_DAN_001	9e) Civil Aviation, Spaceport and Rio Grande
PRI_RYA_001	3c) Proposed Action, MOA altitudes
PRI_TAN_001	8b) Economics, aviation industry
PRI_TAN_002	9c) Civil Aviation, IFR traffic
PRI_TAN_003	11a) Safety, aircraft mishaps
PRI_TAN_004	8b) Economics, aviation industry
PRI_TAN_005	8a) Economics, recreation and tourism

Table C-2 Members of the Public (cont.)

Coded Name	Category
PRI_TAN_006	11a) Safety, aircraft mishaps
PRO_LOR_002	7b) Wildlife, additional references
PRO_LOR_003	7e) Wildlife, nesting effects
PRY_ELL_001	1a) NEPA Process, Public Involvement
PRY_ELL_002	2a) Purpose and Need, airspace is adequate
PRY_ELL_003	5e) Noise, non-auditory concerns
PRY_ELL_004	10a) Chaff and Flares, fire risk
PRY_ELL_005	10f) Chaff and Flares, water pollution
PRY_ELL_006	8a) Economics, recreation and tourism
PRY_JOH_001	2a) Purpose and Need, airspace is adequate
PUT_JAR_001	9a) Civil Aviation, general
PUT_JAR_004	9c) Civil Aviation, IFR traffic
PUT_JAR_005	8e) Economics, general
PUT_JER_001	9a) Civil Aviation, general
PUT_JER_002	8b) Economics, aviation industry
RAD_MIC_001	9a) Civil Aviation, general
RAD_MIC_002	8a) Economics, recreation and tourism
RAK_LIN_001	7a) Wildlife, general
RAK_LIN_002	5e) Noise, non-auditory concerns
RAK_LIN_003	8e) Economics, general
RAK_LIN_004	10a) Chaff and Flares, fire risk
RAK_LIN_005	10f) Chaff and Flares, water pollution
RAM_LAU_001	5e) Noise, non-auditory concerns
RAN_DEE_001	6a) Wilderness Areas, incompatibility
RAN_PET_001	6a) Wilderness Areas, incompatibility
RAN_PET_002	8a) Economics, recreation and tourism
RAN_PET_003	5a) Noise, general
RAT_ART_001	5e) Noise, non-auditory concerns
RAT_ART_002	11b) Safety, fire risk from crashes
RAT_ART_003	5e) Noise, non-auditory concerns
RAY_JEF_001	6a) Wilderness Areas, incompatibility
RAY_JEF_002	10d) Chaff and Flares, health concerns
RAY_JEF_003	5e) Noise, non-auditory concerns
RAY_KAT_001	2a) Purpose and Need, airspace is adequate
RAY_KAT_002	5e) Noise, non-auditory concerns
RAY_KAT_003	6a) Wilderness Areas, incompatibility
RAY_KAT_004	7f) Wildlife, inadequate analysis
RAY_KAT_005	12b) Air Quality, greenhouse gas emissions
RAY_SUS_001	10f) Chaff and Flares, water pollution
REG_RIC_001	5a) Noise, general
REG_RIC_002	10a) Chaff and Flares, fire risk
REG_RIC_003	2a) Purpose and Need, airspace is adequate
REI_MIC_001	6a) Wilderness Areas, incompatibility
REI_MIC_002	10b) Chaff and Flares, litter
REI_MIC_003	2a) Purpose and Need, airspace is adequate
REX_ED*_001	5e) Noise, non-auditory concerns
REX_ED*_002	5o) Noise, vibrations
REY_GLO_001	2a) Purpose and Need, airspace is adequate
RIC_CHR_002	5e) Noise, non-auditory concerns
RIC_CHR_003	8a) Economics, recreation and tourism
RIC_JAN_001	15) Enforcement of Restrictions
RIC_STE_001	9c) Civil Aviation, IFR traffic

Table C-2 Members of the Public (cont.)

Coded Name	Category
RIC_TRI_001	2a) Purpose and Need, airspace is adequate
RIC_WIL_001	10a) Chaff and Flares, fire risk
RIC_WIL_002	10f) Chaff and Flares, water pollution
RIN_MAR_002	11b) Safety, fire risk from crashes
RIV_AND_001	9d) Civil Aviation, radar coverage
ROB_DAV_001	2a) Purpose and Need, airspace is adequate
ROB_WIL_003	7c) Wildlife, startle effect
ROC_SHA_001	6a) Wilderness Areas, incompatibility
ROC_SHA_002	5b) Noise, additional references
ROD_FRE_001	8a) Economics, recreation and tourism
ROD_FRE_002	7c) Wildlife, startle effect
ROD_SOR_001	6a) Wilderness Areas, incompatibility
ROD_SOR_002	10a) Chaff and Flares, fire risk
ROG_JOH_001	6a) Wilderness Areas, incompatibility
ROK_JOH_001	6a) Wilderness Areas, incompatibility
ROK_JOH_002	5d) Noise, inadequate analysis
ROK_JOH_003	7c) Wildlife, startle effect
ROK_JOH_004	10b) Chaff and Flares, litter
ROK_JOH_005	10a) Chaff and Flares, fire risk
ROS_DAV_001	7a) Wildlife, general
ROS_DAV_002	5e) Noise, non-auditory concerns
ROS_DAV_003	8e) Economics, general
ROS_DAV_004	10a) Chaff and Flares, fire risk
ROS_DAV_005	10f) Chaff and Flares, water pollution
ROT_CAR_001	6a) Wilderness Areas, incompatibility
ROU_JIL_001	2a) Purpose and Need, airspace is adequate
ROZ_LAU_001	6a) Wilderness Areas, incompatibility
ROZ_LAU_002	5a) Noise, general
ROZ_LAU_003	10a) Chaff and Flares, fire risk
ROZ_LAU_004	11a) Safety, aircraft mishaps
RUC_LAR_001	9e) Civil Aviation, Spaceport and Rio Grande
RUD_JOE_001	7d) Wildlife, migratory birds
RUD_JOE_002	12a) Air Quality, general
RUD_JOE_003	10a) Chaff and Flares, fire risk
RUE_LOR_001	6a) Wilderness Areas, incompatibility
RUF_MAR_001	7d) Wildlife, migratory birds
RUF_MAR_002	8a) Economics, recreation and tourism
SAB_KAT_001	2a) Purpose and Need, airspace is adequate
SAE_JOE_001	8e) Economics, general
SAM_CEC_001	7a) Wildlife, general
SAM_CEC_002	2a) Purpose and Need, airspace is adequate
SAN_TED_001	9a) Civil Aviation, general
SAR_DON_001	6a) Wilderness Areas, incompatibility
SAR_RIC_001	10b) Chaff and Flares, litter
SAR_RIC_002	7a) Wildlife, general
SAR_RIC_005	2a) Purpose and Need, airspace is adequate
SCA_DR._001	6a) Wilderness Areas, incompatibility
SCH_CHR_001	2a) Purpose and Need, airspace is adequate
SCH_CHR_002	11a) Safety, aircraft mishaps
SCH_CHR_003	10a) Chaff and Flares, fire risk
SCH_CHR_004	5e) Noise, non-auditory concerns
SCH_CHR_005	16) Dark Skies
SCH_CHR_006	10b) Chaff and Flares, litter

Table C-2 Members of the Public (cont.)

Coded Name	Category
SCH_CHR_007	8a) Economics, recreation and tourism
SCH_MIC_001	6a) Wilderness Areas, incompatibility
SCH_MIC_002	5d) Noise, inadequate analysis
SCH_MIC_003	10a) Chaff and Flares, fire risk
SCH_MIC_004	8a) Economics, recreation and tourism
SCH_MIC_005	3h) Proposed Action, expanded training
SCH_MIC_006	2a) Purpose and Need, airspace is adequate
SCH_ROB_001	6a) Wilderness Areas, incompatibility
SCH_SHE_004	7a) Wildlife, general
SCH_SHE_005	5e) Noise, non-auditory concerns
SCH_SHE_006	8e) Economics, general
SCH_SHE_007	10a) Chaff and Flares, fire risk
SCH_SHE_008	10f) Chaff and Flares, water pollution
SCO_DOR_001	6a) Wilderness Areas, incompatibility
SCO_GOR_001	10a) Chaff and Flares, fire risk
SEL_DON_001	2a) Purpose and Need, airspace is adequate
SHA_GAR_001	10a) Chaff and Flares, fire risk
SHA_GAR_002	10d) Chaff and Flares, health concerns
SHA_MAR_007	6a) Wilderness Areas, incompatibility
SHA_MAR_008	2a) Purpose and Need, airspace is adequate
SHA_MAR_009	10a) Chaff and Flares, fire risk
SHA_TRI_001	2a) Purpose and Need, airspace is adequate
SHE_GIL_001	6a) Wilderness Areas, incompatibility
SHE_JAN_002	6a) Wilderness Areas, incompatibility
SHE_TOD_001	5g) Noise, sonic booms
SHE_TOD_002	7a) Wildlife, general
SHE_TOD_003	8a) Economics, recreation and tourism
SHE_TOD_004	8c) Economics, housing values
SHI_DAV_001	2a) Purpose and Need, airspace is adequate
SHI_SUS_001	2a) Purpose and Need, airspace is adequate
SHO_HEL_001	5e) Noise, non-auditory concerns
SHO_LYN_001	2a) Purpose and Need, airspace is adequate
SHU_SUS_001	8e) Economics, general
SIA_GEO_001	7c)Wildlife, startle effect
SIE_SUS_003	2a) Purpose and Need, airspace is adequate
SIL_GRA_001	10a) Chaff and Flares, fire risk
SIL_SCO_001	6a) Wilderness Areas, incompatibility
SIM_OSC_001	8a) Economics, recreation and tourism
SIN_DAV_001	10a) Chaff and Flares, fire risk
SIN_DAV_002	10b) Chaff and Flares, litter
SIW_ALL_001	2a) Purpose and Need, airspace is adequate
SIW_ALL_002	3h) Proposed Action, expanded training
SIW_ALL_003	2a) Purpose and Need, airspace is adequate
SIW_ALL_004	3a) Proposed Action, sortie numbers
SIW_ALL_005	4b) Transients, expansion of activities
SIW_ALL_006	13a) Cumulative Impacts, contiguous block of airspace
SIW_ALL_007	2c) Purpose and Need, additional sorties
SIW_ALL_008	3b) Proposed Action, Preferred Alternative
SIW_ALL_009	9f) Civil Aviation, weather diversion
SIW_ALL_010	1a) NEPA Process, Public Involvement
SIW_ALL_012	13a) Cumulative Impacts, contiguous block of airspace

Table C-2 Members of the Public (cont.)

Coded Name	Category
ŠKA_DIT_001	2a) Purpose and Need, airspace is adequate
ŠKA_DIT_002	10a) Chaff and Flares, fire risk
ŠKA_DIT_003	10d) Chaff and Flares, health concerns
SLA_PAU_001	6a) Wilderness Areas, incompatibility
SLE_BIL_001	7a) Wildlife, general
SLE_BIL_002	5e) Noise, non-auditory concerns
SLE_BIL_003	8e) Economics, general
SLE_BIL_004	10a) Chaff and Flares, fire risk
SLE_BIL_005	10f) Chaff and Flares, water pollution
SLI_BEA_001	10d) Chaff and Flares, health concerns
SMA_ANN_001	6a) Wilderness Areas, incompatibility
SMA_ANN_002	2a) Purpose and Need, airspace is adequate
SMA_SUE_001	5a) Noise, general
SMI_CIN_001	7a) Wildlife, general
SMI_CIN_002	5e) Noise, non-auditory concerns
SMI_CIN_003	8e) Economics, general
SMI_CIN_004	10a) Chaff and Flares, fire risk
SMI_CIN_005	10f) Chaff and Flares, water pollution
SMI_DEN_002	6a) Wilderness Areas, incompatibility
SMI_KAR_001	7a) Wildlife, general
SMI_KAR_002	5e) Noise, non-auditory concerns
SMI_KAR_003	8e) Economics, general
SMI_KAR_004	10a) Chaff and Flares, fire risk
SMI_KAR_005	10f) Chaff and Flares, water pollution
SMO_HOW_001	8e) Economics, general
SMO_SHA_002	8a) Economics, recreation and tourism
SMO_SHA_003	5a) Noise, general
SMO_SHA_004	10b) Chaff and Flares, litter
SNI_DAL_001	9a) Civil Aviation, general
SNO_SAM_001	9g) Civil Aviation, airport approach
SON_ELI_001	10b) Chaff and Flares, litter
SON_JOH_001	10a) Chaff and Flares, fire risk
SON_JOH_002	6a) Wilderness Areas, incompatibility
SOR_GIL_001	8b) Economics, aviation industry
SOR_GIL_003	6a) Wilderness Areas, incompatibility
SOR_GIL_004	8a) Economics, recreation and tourism
SOR_GIL_005	7a) Wildlife, general
SOR_GIL_006	3h) Proposed Action, expanded training
SPA_JON_001	2a) Purpose and Need, airspace is adequate
SPA_JON_002	5a) Noise, general
STA_CEC_001	5a) Noise, general
STA_CEC_002	8a) Economics, recreation and tourism
STA_CEC_003	10a) Chaff and Flares, fire risk
STA_CEC_007	10a) Chaff and Flares, fire risk
STA_KAR_001	7c) Wildlife, startle effect
STA_KAR_002	7c) Wildlife, startle effect
STA_NAN_001	6a) Wilderness Areas, incompatibility
STA_SCO_002	9g) Civil Aviation, airport approach
STE_DAV_002	3c) Proposed Action, MOA altitudes
STE_DON_001	3a) Proposed Action, sortie numbers
STE_DON_002	5d) Noise, inadequate analysis
STE_DON_003	7f) Wildlife, inadequate analysis
STE_DON_004	6a) Wilderness Areas, incompatibility
STE_DON_005	5e) Noise, non-auditory concerns

Table C-2 Members of the Public (cont.)

Coded Name	Category
STE_DON_006	10c) Chaff and Flares, dud flares
STE_GAV_001	2a) Purpose and Need, airspace is adequate
STE_JIM_001	2a) Purpose and Need, airspace is adequate
STI_NAT_001	2a) Purpose and Need, airspace is adequate
STI_RIC_001	8e) Economics, general
STO_DR._001	8a) Economics, recreation and tourism
STO_JOH_001	16) Dark Skies
STO_JOH_002	5d) Noise, inadequate analysis
STO_JOH_003	6a) Wilderness Areas, incompatibility
STO_JOH_004	7f) Wildlife, inadequate analysis
STO_JOH_007	5b) Noise, additional references
STO_JOY_001	6a) Wilderness Areas, incompatibility
STO_MAR_003	2a) Purpose and Need, airspace is adequate
STO_MAR_004	2d) Purpose and Need, WSMR limitations
STO_MAR_005	12a) Air Quality, general
STO_MAR_006	10a) Chaff and Flares, fire risk
STO_MAR_007	11b) Safety, fire risk from crashes
STO_MAR_008	5i) Noise, annoyance
STO_MAR_009	7b) Wildlife, additional references
STO_MAR_010	5c) Noise, ambient noise
STO_MAR_011	6a) Wilderness Areas, incompatibility
STO_MAR_012	10f) Chaff and Flares, water pollution
STR_CAR_001	3g) Proposed Action, foreign military
STR_JUL_002	11b) Safety, fire risk from crashes
STR_JUL_003	10d) Chaff and Flares, health concerns
STR_JUL_004	2a) Purpose and Need, airspace is adequate
SUM_WIL_001	2a) Purpose and Need, airspace is adequate
SUT_SHR_002	2a) Purpose and Need, airspace is adequate
SWE_CHA_001	8a) Economics, recreation and tourism
SZA_MAR_001	2a) Purpose and Need, airspace is adequate
TAI_S*A_001	8a) Economics, recreation and tourism
TEE_KEV_001	2a) Purpose and Need, airspace is adequate
THO_KAY_001	7g) Wildlife, T&E
THO_LYN_001	7a) Wildlife, general
THO_LYN_002	5e) Noise, non-auditory concerns
THO_LYN_003	8e) Economics, general
THO_LYN_004	10a) Chaff and Flares, fire risk
THO_LYN_005	10f) Chaff and Flares, water pollution
THO_MAR_001	7a) Wildlife, general
THO_MAR_002	5e) Noise, non-auditory concerns
THO_MAR_003	8e) Economics, general
THO_MAR_004	10a) Chaff and Flares, fire risk
THO_MAR_005	10f) Chaff and Flares, water pollution
THO_THE_001	6a) Wilderness Areas, incompatibility
THO_THE_002	5k) Noise, metrics
THO_THE_003	11a) Safety, aircraft mishaps
TIS_BIL_001	8e) Economics, general
TIT_DIA_001	11a) Safety, aircraft mishaps
TIW_BAR_001	7a) Wildlife, general
TIW_BAR_002	5a) Noise, general
TIW_BAR_003	10a) Chaff and Flares, fire risk
TIW_BIL_001	7a) Wildlife, general
TIW_BIL_002	5e) Noise, non-auditory concerns
TIW_BIL_003	8e) Economics, recration and tourism
TIW_BIL_004	10a) Chaff and Flares, fire risk

Table C-2 Members of the Public (cont.)

Coded Name	Category
TIW_BIL_005	10f) Chaff and Flares, water pollution
TOL_JOS_001	10a) Chaff and Flares, fire risk
TRE_RAY_001	6a) Wilderness Areas, incompatibility
TRE_RAY_002	7c) Wildlife, startle effect
TUE_CYN_001	6a) Wilderness Areas, incompatibility
TUL_CON_001	5g) Noise, sonic booms
TUS_KAT_002	10a) Chaff and Flares, fire risk
TUS_KAT_003	10d) Chaff and Flares, health concerns
TUT_ROB_001	7a) Wildlife, general
TUT_ROB_002	5e) Noise, non-auditory concerns
TUT_ROB_003	8e) Economics, general
TUT_ROB_004	10a) Chaff and Flares, fire risk
TUT_ROB_005	10f) Chaff and Flares, water pollution
ULI_ROS_001	6a) Wilderness Areas, incompatibility
USH_STE_001	9g) Civil Aviation, airport approach
USH_STE_002	9c) Civil Aviation, IFR traffic
USH_STE_003	9g) Civil Aviation, airport approach
UYS_RYN_001	9b) Civil Aviation, VFR traffic
VAN_DIA_001	2a) Purpose and Need, airspace is adequate
VAN_EMI_002	10a) Chaff and Flares, fire risk
VAN_EMI_003	10d) Chaff and Flares, health concerns
VAN_EMI_004	10f) Chaff and Flares, water pollution
VAN_JOH_001	6a) Wilderness Areas, incompatibility
VAN_JOH_002	3f) Proposed Action, avoidances
VAR_DOR_001	6a) Wilderness Areas, incompatibility
VAT_SHE_002	2a) Purpose and Need, airspace is adequate
VEL_JUA_001	8e) Economics, general
VER_DAV_001	8a) Economics, recreation and tourism
VER_DAV_002	8c) Economics, housing values
VIL_LOR_001	11a) Safety, aircraft mishaps
WAG_RAY_001	12b) Air Quality, greenhouse gas emissions
WAL_ERI_001	2a) Purpose and Need, airspace is adequate
WAL_JAN_001	10a) Chaff and Flares, fire risk
WAL_JAN_002	6a) Wilderness Areas, incompatibility
WAL_JAN_003	11b) Safety, fire risk from crashes
WAL_JAN_004	7a) Wildlife, general
WAL_JAN_005	5e) Noise, non-auditory concerns
WAL_JAN_006	8e) Economics, general
WAL_JAN_007	10a) Chaff and Flares, fire risk
WAL_JAN_008	10f) Chaff and Flares, water pollution
WAL_JAN_009	10a) Chaff and Flares, fire risk
WAL_JAN_010	11b) Safety, fire risk from crashes
WAL_JAN_011	6a) Wilderness Areas, incompatibility
WAL_JAN_012	7g) Wildlife, T&E
WAL_JER_001	6a) Wilderness Areas, incompatibility
WAL_JER_002	6a) Wilderness Areas, incompatibility
WAL_RIC_001	9b) Civil Aviation, VFR traffic
WAL_RIC_002	3c) Proposed Action, MOA altitudes
WAR_DAN_001	11c) Safety, hydrazine
WAR_DAN_002	5a) Noise, general
WAR_WIL_002	10a) Chaff and Flares, fire risk
WAS_CAR_001	7a) Wildlife, general
WAS_CAR_002	5e) Noise, non-auditory concerns
WAS_CAR_003	8e) Economics, general

Table C-2 Members of the Public (cont.)

Coded Name	Category
WAS_CAR_004	10a) Chaff and Flares, fire risk
WAS_CAR_005	10f) Chaff and Flares, water pollution
WAT_FRA_001	6a) Wilderness Areas, incompatibility
WAU_KYM_001	6a) Wilderness Areas, incompatibility
WAU_KYM_002	2a) Purpose and Need, airspace is adequate
WEB_JON_001	20) Consultation
WEC_CAR_001	2a) Purpose and Need, airspace is adequate
WEC_CAR_002	10a) Chaff and Flares, fire risk
WEC_CAR_003	2a) Purpose and Need, airspace is adequate
WEC_CAR_004	10a) Chaff and Flares, fire risk
WEC_CAR_005	8e) Economics, general
WEC_CAR_006	10b) Chaff and Flares, litter
WEC_RON_001	2a) Purpose and Need, airspace is adequate
WEC_RON_002	10f) Chaff and Flares, water pollution
WEC_RON_004	10a) Chaff and Flares, fire risk
WEC_RON_005	7a) Wildlife, general
WEC_RON_006	5e) Noise, non-auditory concerns
WEC_RON_007	5o) Noise, vibrations
WEC_RON_008	10d) Chaff and Flares, health concerns
WEI_PAU_001	2a) Purpose and Need, airspace is adequate
WEI_PAU_002	8e) Economics, general
WEI_YUR_001	10a) Chaff and Flares, fire risk
WEL_TEI_001	7a) Wildlife, general
WEL_TEI_002	5e) Noise, non-auditory concerns
WEL_TEI_003	12a) Air Quality, general
WEL_TEI_004	10a) Chaff and Flares, fire risk
WEL_TEI_005	10f) Chaff and Flares, water pollution
WEN_SAM_001	8e) Economics, general
WEN_SAM_002	5b) Noise, additional references
WEN_SAM_003	8c) Economics, housing values
WEN_SAM_005	5g) Noise, sonic booms
WEN_SAM_006	7b) Wildlife, additional references
WEN_SAM_007	3f) Proposed Action, avoidances
WEN_SAM_009	8e) Economics, general
WEN_SAM_011	7c) Wildlife, startle effect
WES_WIL_001	3h) Proposed Action, expanded training
WET_SAL_001	6a) Wilderness Areas, incompatibility
WHI_RIC_001	NULL
WIE_TRE_001	11a) Safety, aircraft mishaps
WIG_JAM_001	9c) Civil Aviation, IFR traffic
WIG_JAM_002	9a) Civil Aviation, general
WIG_JAM_003	9c) Civil Aviation, IFR traffic
WIG_JAM_004	9h) Civil Aviation, data questions
WIG_JAM_005	9g) Civil Aviation, airport approach
WIG_JAM_006	9d) Civil Aviation, radar coverage
WIG_JAM_007	8b) Economics, aviation industry
WIG_JAM_008	9a) Civil Aviation, general
WIG_JAM_009	9a) Civil Aviation, general
WIG_JAM_010	8b) Economics, aviation industry
WIL_GRA_001	10a) Chaff and Flares, fire risk
WIL_GRA_002	8e) Economics, general
WIL_JAM_001	2a) Purpose and Need, airspace is adequate
WIL_JOH_003	4b) Transients, expansion of activities
WIL_JOH_004	2a) Purpose and Need, airspace is adequate

Table C-2 Members of the Public (cont.)

Coded Name	Category
WIL_JOH_005	8a) Economics, recreation and tourism
WIL_JOH_007	7a) Wildlife, general
WIL_JOH_008	5e) Noise, non-auditory concerns
WIL_JOH_009	8e) Economics, general
WIL_JOH_010	10a) Chaff and Flares, fire risk
WIL_JOH_011	10f) Chaff and Flares, water pollution
WIL_JON_001	10a) Chaff and Flares, fire risk
WIL_JON_002	10b) Chaff and Flares, litter
WIL_MEG_002	10b) Chaff and Flares, litter
WOC_KEN_001	6a) Wilderness Areas, incompatibility
WOC_KEN_002	5e) Noise, non-auditory concerns
WOC_KEN_003	2a) Purpose and Need, airspace is adequate
WOF_ROB_001	13a) Cumulative Impacts, contiguous block of airspace
WOF_ROB_003	3h) Proposed Action, expanded training
WOL_MON_001	10a) Chaff and Flares, fire risk
WOL_MON_002	6a) Wilderness Areas, incompatibility
WOL_PAT_002	8a) Economics, recreation and tourism
WOL_PAT_003	7a) Wildlife, general
WOO_RAN_001	9b) Civil Aviation, VFR traffic
WOO_RAN_002	5d) Noise, inadequate analysis
WOO_RAN_003	2d) Purpose and Need, WSMR limitations
WOO_TIM_001	5e) Noise, non-auditory concerns
WOO_TIM_002	10a) Chaff and Flares, fire risk
WOO_TIM_003	10b) Chaff and Flares, litter
WOR_CRI_001	6a) Wilderness Areas, incompatibility
WOR_CRI_002	10a) Chaff and Flares, fire risk
WOR_CRI_003	2a) Purpose and Need, airspace is adequate
WRI_RUS_001	2d) Purpose and Need, WSMR limitations
WYB_BRY_002	2a) Purpose and Need, airspace is adequate
WYN_DIA_001	5e) Noise, non-auditory concerns
WYN_DIA_002	5e) Noise, non-auditory concerns
YAR_MAR_001	8a) Economics, recreation and tourism
YAT_JOH_001	9g) Civil Aviation, airport approach
YAT_JOH_002	9g) Civil Aviation, airport approach
YAT_JOH_003	11a) Safety, aircraft mishaps
YEH_MAX_002	2a) Purpose and Need, airspace is adequate
YEH_MAX_003	2c) Purpose and Need, additional sorties
YOL_JAN_001	7a) Wildlife, general
YOL_JAN_002	5e) Noise, non-auditory concerns
YOL_JAN_003	8e) Economics, general
YOL_JAN_004	10a) Chaff and Flares, fire risk
YOL_JAN_005	10f) Chaff and Flares, water pollution
ZAG_SCO_001	6a) Wilderness Areas, incompatibility
ZAG_SCO_002	2a) Purpose and Need, airspace is adequate
ZIM_ADE_001	6a) Wilderness Areas, incompatibility
ZIM_PAU_003	6a) Wilderness Areas, incompatibility
ZUM_JOS_001	6a) Wilderness Areas, incompatibility
ZUM_JOS_002	10a) Chaff and Flares, fire risk

FORM COMMENT A

While I recognize the important role Holloman plays in our national security, I do not think expanding airspace to conduct trainings over the Gila and Aldo Leopold Wilderness Areas or the Organ Mountains-Desert Peaks National Monument is appropriate.

Please choose Alternative 1. This plan provides adequate airspace for F-16 trainings without threatening some of New Mexico's most cherished public lands.

FORM COMMENT B

Dear Holloman Air Force Base: Thank you for accepting my comments on the Draft Environmental Impact Statement (DEIS) for the Holloman Air Force Base proposal to expand F-16 training airspace over southern New Mexico. I oppose Alternatives 2 and 3 given the potential for significant impacts to the Gila, Aldo Leopold, Apache Kid, Withington, Bosque del Apache, Sierra de las Uvas, Broad Canyon, and Robledo Wildernesses. Low-level flights by supersonic fighter jets would shatter the area's natural sounds, ruin the wilderness experience for visitors, and stress native wildlife. Dropping flares increases the chances of human-ignited fires. Chaff dropped from jets becomes trash and could harm wildlife. The future of Holloman Air Force Base is not at risk, since the current airspace is already adequate according to the DEIS. We as a nation should not sacrifice America's National Wilderness Preservation System—including the Gila Wilderness, the world's first Wilderness area—when there are better places for military training. The Air Force acknowledges that Alternative 1—expansion and reconfiguration of Talon MOA, east of Alamogordo—meets its training needs with the fewest risks and impacts. While I recognize the role of Holloman's F-16 pilot training mission to national defense, Alternative 1 clearly best meets those needs. Thank you for consideration of my comments.

FORM COMMENT C

The U.S. Air Force is proposing up to 10,000 F-16 fighter jet "sorties" a year over America's (and the world's) first Wilderness—the Gila—and seven other Wildernesses in southern New Mexico—the Aldo Leopold, Apache Kid, Withington, Bosque del Apache, Sierra de las Uvas, Broad Canyon, and Robledo Wildernesses. The area's wild character would no doubt be harmed by the invasion and noise of these countless military overflights, including those just 100 feet above the ground.

Although the Air Force acknowledges that its current airspace is adequate, Holloman Air Force Base (AFB) wants to expand its F-16 pilot training airspace over these Wilderness areas. Specially, the Air Force proposes an annual additional 10,000 flights, plus discharge of 15,000 flares and 15,000 bundles of chaff.

Flares allegedly burn out far above ground level, but there are documented cases of them being mistakenly released at low altitudes, reaching the ground and igniting fires. Meanwhile, chaff bundles contain up to 5 million aluminum-coated glass fibers up to two inches long, designed to stay airborne as long as possible and settle to the earth after several hours. Military studies on the effects of chaff on wildlife, humans, and water quality leave many questions unanswered. For example, does inhaled or ingested chaff harm wildlife? When chaff lands in rivers and streams, does it affect aquatic life and water quality?

We shouldn't sacrifice America's National Wilderness Preservation System—including the Gila Wilderness, the world's first Wilderness area—when there are better places for this military training.

FORM COMMENT D

I'm writing with a comment on the Draft Environmental Impact Statement (DEIS) for the Holloman Air Force Base proposal to expand F-16 training airspace over southern New Mexico. I oppose Alternatives 2 and 3 because of their potential to damage our quality of life, health and local economies. Extreme noise from training operations will disturb the peace and quiet of rural communities and national forests and wilderness areas, affecting our retiree, tourism and outdoor recreation economies. Extreme noise also startles wildlife and livestock. Dropping of flares will increase wildfire risk in an area that's already vulnerable to catastrophic wildfire and lacks adequate resources for firefighting. The use of chaff will pollute our environment and potentially affect public health. Finally, the proposal will put us at increased risk from military aircraft crashes. The future of Holloman Air Force Base is not at risk, since the DEIS itself states that the current airspace is already adequate. We must not sacrifice the historically rich, culturally important and exceptionally beautiful Gila Wilderness — the first wilderness area ever designated in the United States — or any other tranquil places in southwestern New Mexico that are critical to state and local economies. The Air Force acknowledges that Alternative 1 (expansion and reconfiguration of the Talon military operation area east of Alamogordo) meets its training needs with the fewest risks and impacts. I urge you to select Alternative 1.

FORM COMMENT E

Thank you for accepting my comments on the draft Environmental Impact Statement (DEIS) for the Holloman Air Force Base proposal to expand F-16 training airspace over southern New Mexico.

I oppose Alternatives 2 and 3 given the potential for significant impacts to SW New Mexico's quality of life, health, and local economies.

Specifically, extreme noise for training operations, especially low-level flights (500 feet above ground level – day and night) will disturb the tranquil peace and quiet of rural communities, the Gila & Cibola National Forests and their respective wilderness areas. This in turn will significantly affect our retiree, tourism, and outdoor recreation economies. Also, extreme noise startles wildlife and livestock – affecting ranching, hunting, and backcountry recreation.

Dropping of flares creates an increased level of wildfire risk to an area already vulnerable to catastrophic wildfire and rural communities and town have limited resources for fighting fires. The DEIS did not offer a plan of action in such an event.

The use of chaff (material dropped from planes to evade detection) will pollute the environment and potentially could affect wildlife and public health.

Finally, the DEIS proposal puts SW New Mexico at increased risk from military aircraft crashes and the potential to cause catastrophic forest fires.

The future of Holloman Air Force Base is not at risk, since the current airspace is already adequate according to the Draft Environmental Impact Statement (DEIS). We as a nation should not sacrifice America's first Wilderness Area, the Gila Wilderness, and other special places in southwestern New Mexico that are critical to state and local economies.

The Air Force acknowledges that Alternative 1 – expansion and reconfiguration of the existing training area (Talon MOA) east of Alamogordo – meets its training needs with the fewest risk and impacts. We recognize the role of Holloman's F-16 pilot training mission to national defense. Alternative 1 best meets those needs.

Petition

The Air Force released its Draft Environmental Impact Statement (DEIS) for the Holloman Air Force Base proposal to expand F-16 training airspace over southern New Mexico. I oppose Alternative 2 and 3 given the potential for significant impacts on the quality of life, health and local economies in the Gila Region and Rio Grande Valley from Socorro to Las Cruces.

- Extreme noise from training operations will disturb the peace and quiet of rural communities and and national forests and wilderness areas affecting our retiree, tourism and outdoor recreation economies. Extreme noise also startles horses, livestock and wildlife affecting ranching, hunting, and backcountry recreation.
- Dropping of flares creates an increased level of wildfire risk to an area already vulnerable to catastrophic wildfire and that doesn't have many resources for firefighting.
- The use of chaff pollutes our environment and potentially affects public health.
- Finally, the proposal puts us at increased risk from military aircraft crashes.

The future of Holloman Air Force Base is not at risk, since the current airspace is already adequate according to the DEIS. We as a nation should not sacrifice America's first Wilderness Area, the Gila Wilderness, and other special places in southwestern New Mexico that are critical to state and local economies. The Air Force acknowledges that Alternative 1 – expansion and reconfiguration of Talon MOA, east of Alamogordo – meets its training needs with the fewest risks and impacts. We recognize the role of Holloman's F-16 pilot training mission to national defense. Alternative 1 best meets those needs.

APPENDIX D
AIRSPACE APPENDICES

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ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AGL	above ground level
ARTCCs	Air Route Traffic Control Centers
ATC	Air Traffic Control
ATCAA	Air Traffic Control Assigned Airspace
ATS	Air Traffic Service
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
FL	flight level
GA	General Aviation
IFR	Instrument Flight Rules
KTAS	knots true airspeed
MOA	Military Operations Area
MSL	mean sea level
NAS	National Airspace System
NAVAID	navigation aid
nm	nautical mile
PDARS	Performance Data Analysis and Reporting System
ROI	Region of Influence
SUA	Special Use Airspace
U.S.	United States
VFR	Visual Flight Rules
WSMR	White Sands Missile Range

D1 AIRPORTS IN REGION OF INFLUENCE

D1.1 INTRODUCTION

Federal Aviation Administration (FAA) air traffic controllers are responsible for ensuring the safe flight of aircraft through the National Airspace System (NAS). Requirements for reporting airport aircraft operations are detailed in FAA Joint Order 7210.55G, *Operational Data Reporting Requirements.* This Environmental Impact Statement (EIS) uses airport data operations reported to the FAA as the baseline for analyzing the potential effects on aircraft operations at airports located beneath or in close proximity (within 25 nautical miles [nm]) to the existing and proposed Military Operations Area/Air Traffic Control Assigned Airspace (MOAs/ATCAAs). This 25 nm radius defines the Region of Influence (ROI) for each alternative.

There are two types of airports, towered and non-towered, that are further subdivided into Civil Airports that are open to the general public; Military/Federal Government Airports that are operated by the military or other agencies of the Federal Government; and Private Airports that are designated for private or restricted use and not open to the general public. Towered airports have an operating control tower in which Air Traffic Control (ATC) is responsible for providing the safe, orderly and expeditious flow of air traffic and all pilots are required to maintain two-way radio communication with ATC. Non-towered airports do not have operating control towers and, although advisable, two-way radio communications are not required.

D1.2 ROI FOR TALON MOA

Figure D1-1 shows the airports within the Talon MOA ROI. **Table D1-1** provides information for each of the public and private airports located beneath or in close proximity (within 25 nm) to the existing and proposed Talon MOA. There are no military airports within the ROI for the Talon MOA. Detailed discussions of each publicly owned airport follows the table. The airport operations data provided in **Table D1-1** was obtained from data reported to the FAA for each airport.

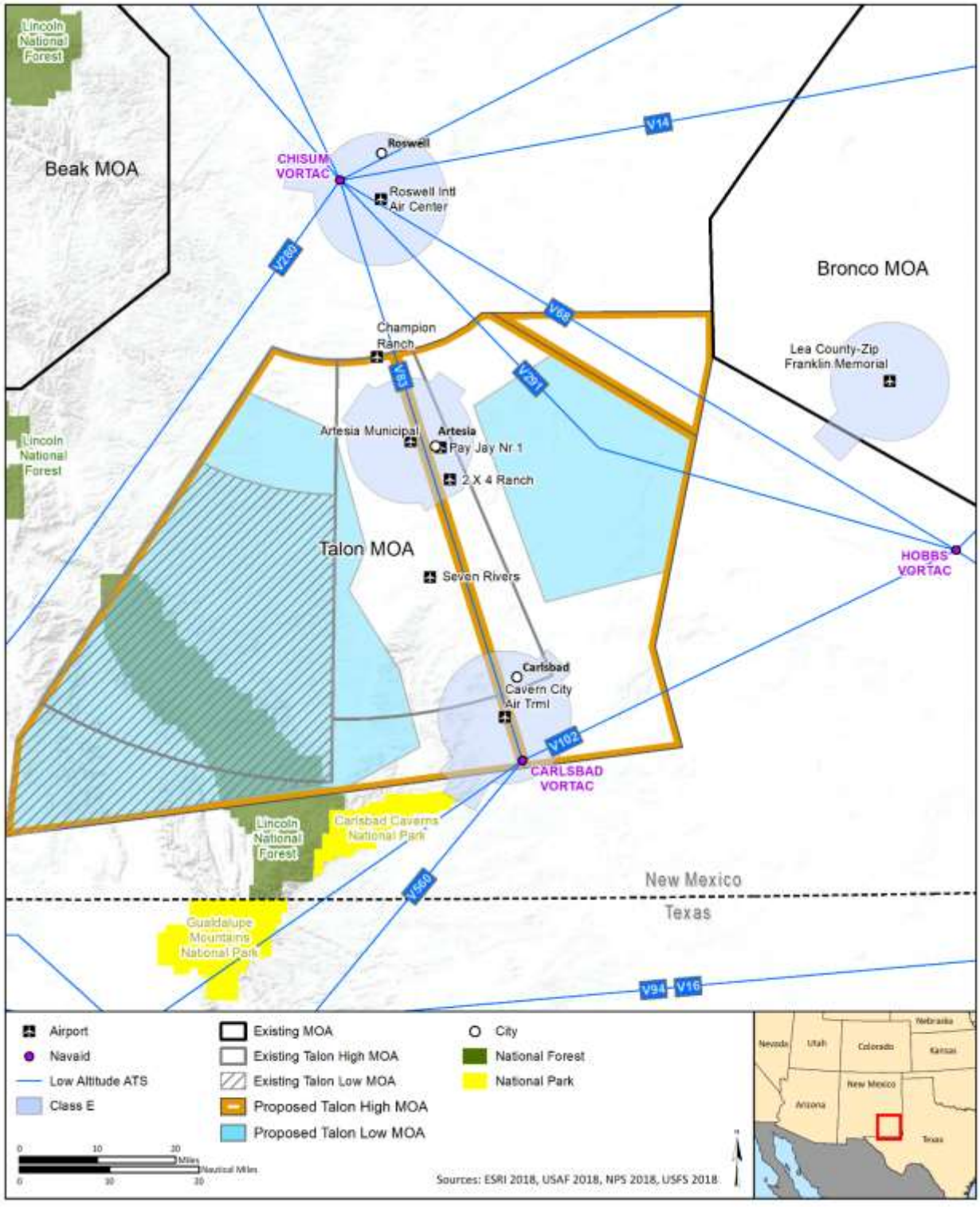

Figure D1-1. Airports in Talon MOA ROI

Table D1-1. Airports in Talon MOA ROI					
Airport Name (Airport Code)	**Airport Ownership**	**Existing Associated Airspace**	**Proposed Associated Airspace**	**Based Aircraft**	**Annual Operations[1]**
Artesia Municipal Airport (ATS), Artesia, New Mexico	Public	Talon High East MOA	Talon High A and B MOAs	25 Single Engine 4 Multi-Engine 1 Jet	GA Local = 4,400 GA Itinerant = 7,150 Military = 2,500
Cavern City Air Terminal Airport (CNM), Carlsbad, New Mexico	Public	Talon High East MOA	Talon High A and B MOAs	19 Single Engine 4 Multi-Engine 2 Jet 2 Helicopters	Commercial = 2,669 Air Taxi = 303 Military = 240 GA Local = 1,925 GA Itinerant = 1,725
Lea County-Zip Franklin Memorial Airport (EO6), Lovington, New Mexico	Public	Bronco 3 MOA	Bronco 3 MOA	11 Single Engine 1 Multi-Engine	GA Local = 1,100 GA Itinerant = 1,100
Roswell International Air Center Airport (ROW), Roswell, New Mexico[1]	Public	None	None	35 Single Engine 3 Multi-Engine 3 Jet 2 Helicopter	Commercial = 1,652 Air Taxi = 4,718 Military = 10,282 GA Local = 6,593 GA Itinerant = 2,301
Seven Rivers Airport (62NM), Carlsbad, New Mexico	Private	Talon High East MOA	Talon High A MOA	4 Single Engine 1 Multi-Engine	GA Local = 50 GA Itinerant = 250
2 X 4 Ranch Airport (NM47), Artesia, New Mexico	Private	Talon High East MOA	Talon High B MOA	None Reported	None Reported
Champion Ranch Airport (01NM), Artesia, New Mexico	Private	Talon High East MOA	Talon High A MOA	None Reported	None Reported
Pay Jay Nr 1/2 Heliport (NM45), Artesia, New Mexico	Private	Talon High East MOA	Talon High B MOA	None Reported	None Reported

Source: Skyvector 2019.
Notes: [1]Northern Boundary of the existing and proposed Talon MOA created by an 18 mile arc centered on Roswell Airport's Distance Measuring Equipment (Roswell 18 DME Arc).
Legend: ATS-Air Traffic Service; MOA-Military Operations Area; ROI – Region of Influence; GA – General Aviation

D1.2.1 Public Airports

Artesia Municipal Airport (ATS), is located 3 miles west of Artesia, New Mexico and beneath the northern quadrant of the existing Talon High East MOA. The airport, publicly owned by the City of Artesia, is a non-towered airport with approach/departure services provided by Roswell Approach Control and Albuquerque ARTCC when Roswell Approach Control is closed. Artesia Municipal Airport is a general aviation airport and no commercial flight services are offered. The airport is located within Class E airspace that extends upward from 700 feet Above Ground Level (AGL) within a 7-mile radius of the airport with Class E extensions to the northwest, northeast, and southeast. The majority of the Class E airspace is located below the floor of the existing Talon High East MOA. Artesia has two runways, Runway 13/31 and Runway 04/22 with published approach to runway 13/31. There were 14,050 airport operations reported to the FAA for the 12-month period ending April 5, 2017; 11,550 were local or itinerant general aviation flights (SkyVector 2019).

Cavern City Air Terminal Airport (CNM), is located 5 miles southwest of Carlsbad, New Mexico, just outside of the existing Talon High East MOA and beneath the border of the proposed Talon High A and B MOAs. The airport, publicly owned by the City of Carlsbad, is a non-towered airport with approach/departure services through Albuquerque ARTCC. Flight services are offered by New Mexico Airlines with daily flights scheduled to Alamogordo, El Paso and Albuquerque. The airport is located within Class E airspace that extends upward from 700 feet AGL within a 7-mile radius of the airport. The northern portion of the Class E airspace is located below the floor of the existing Talon High East MOA. Cavern City has four runways, 03/21, 14R/32L, 14L/32R and 08/26 with published approaches to runways 03/21 and 14R/32L. There were 6,682 airport operations reported to the FAA for the 12 month period ending December 31, 2015; 3,650 were local or itinerant general aviation flights (SkyVector 2019).

Lea County-Zip Franklin Memorial Airport (EO6), is located 3 miles west of Lovington, New Mexico. This airport is not located beneath any of the existing or proposed SUA addressed in this EIS; however, it is located beneath the existing Bronco 3 MOA which would be adjacent to the proposed Talon High C MOA. The airport is approximately 48 miles east of the existing Talon High East MOA, and approximately 20 miles from the proposed Talon High C MOA. The airport, publicly owned by Lea County, is a non-towered airport with approach/departure services provided by Fort Worth ARTCC. Flight services are provided by United Express Airlines with flights to Houston, Texas, four days per week. The airport is located within Class E airspace that extends upward from 700 feet AGL within a 7-mile radius of the airport with a Class E extension to the southwest. The airport has two runways, 03/21 and 12/30 with published approaches to runway 03/21. There were 2,200 general aviation operations reported to the FAA for the 12 month period ending April 3, 2017 (SkyVector 2019).

Roswell International Air Center Airport (ROW), is located 3 miles south of Roswell, New Mexico. This airport is located to the north of the existing Talon High East and West MOAs. The airport is not located beneath existing or proposed airspace, but it is located approximately 16 miles to the north of the proposed Talon High B and C MOAs. Roswell International Air Center Airport is publicly owned by the City of Roswell. It is a towered airport with approach/departure services offered from 6:00 a.m. to 9:00 p.m. Albuquerque ARTCC provides these services when airport approach control is closed. The airport offers services to Dallas Fort Worth, Texas, and Phoenix, Arizona, via American Airlines. The airport is located within Class D airspace that extends for five nm, Class E airspace that extends upward from 700 feet AGL within a 10-nm radius of the airport, and a Class E extension to the northwest. The airport has

two runways, Runway 03/21 and Runway 17/35. There were 25,546 airport operations reported to the FAA for the 12 month period ending December 31, 2017 (SkyVector 2019).

D1.2.2 Private Airports

Four private airports lie within the ROI for Talon MOA. Aircraft operating from private airports typically fly using VFR and at lower altitudes where radar coverage is limited or non-existent. These private airports are located beneath the existing Talon High East MOA and the proposed Talon High A and B MOAs. As can be seen in **Table D1-1**, only the Seven Rivers Airport reported operational statistics to the FAA. There were 300 general aviation operations reported for the 12-month period ending February 3, 1987; no updated operations have been reported. PDARS data for these private airports is not available.

D1.3 ROI FOR CATO, SMITTY, AND LOBOS MOAS, AND CHRISTA AND KENDRA ATCAAS

Figure D1-2 shows the airports within the ROI for the Cato, Smitty, and Lobos MOAs, and Christa and Kendra ATCAAs. **Table D1-2** provides information for each of the public and private airports located beneath or in close proximity (within 25 nm) to the existing and proposed Cato, Smitty and Lobos MOAs and Christa and Kendra ATCAAs. Detailed discussions of public owned airports follow the table. Two military airfields, Holloman AFB (HMN) and Stallion AAF (98E) lie within the boundaries of R-5107D; operations from these airfields would not be affected by modification or establishment of SUA to the west of WSMR and are therefore not included in the table.

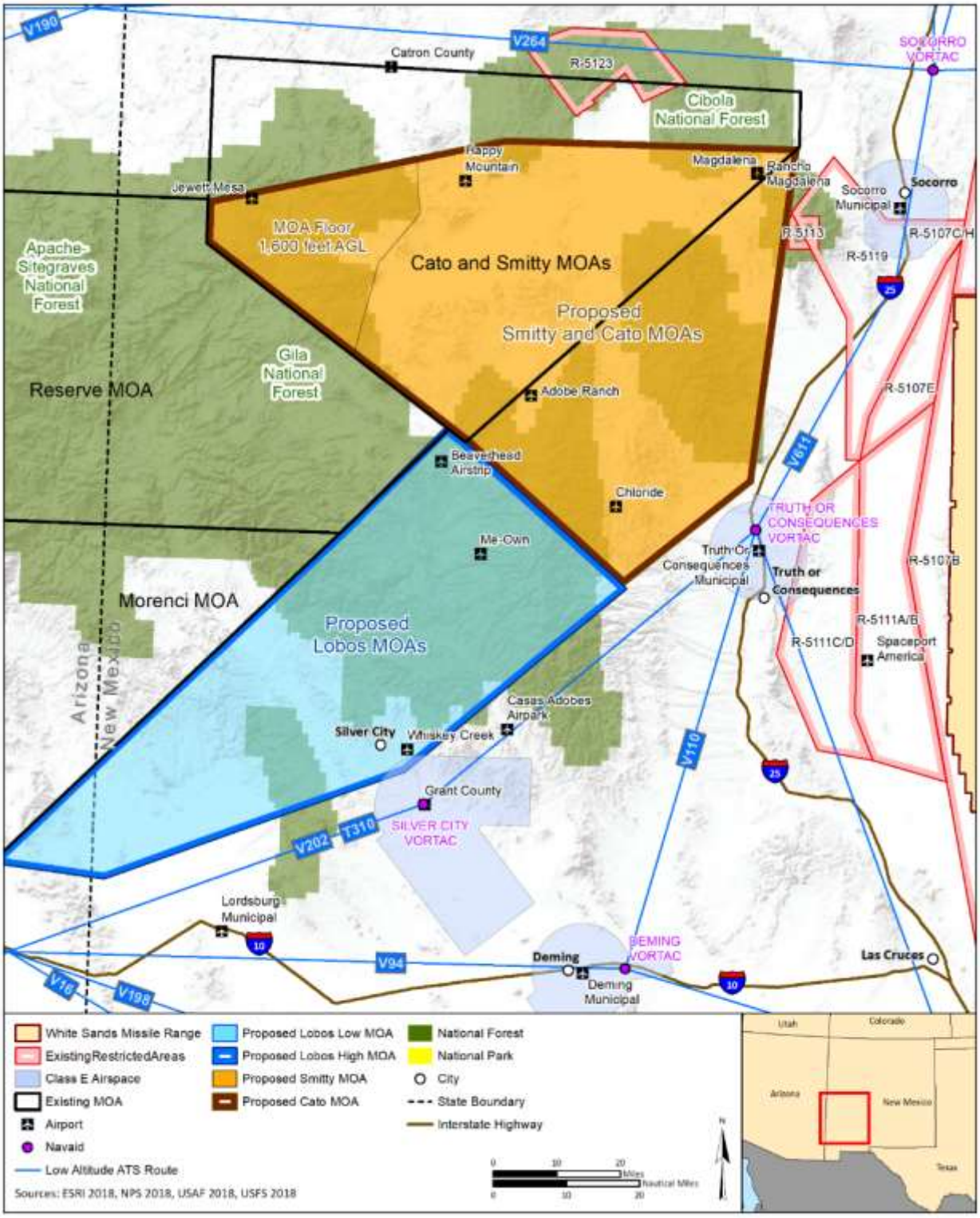

Figure D1-2. Airports in Cato, Smitty, Lobos MOAs and Christa and Kendra ATCAAs ROI

Table D1-2. Airports in Cato, Smitty, Lobos MOA and Christa and Kendra ATCAAs ROI					
Airport Name	**Airport Ownership**	**Existing Associated Airspace**	**Proposed Associated Airspace**	**Based Aircraft**	**Annual Operations[1]**
Grant County (SVC), Silver City, New Mexico	Public	None	Proposed Lobos MOA and Proposed Kendra ATCAA	15 Single Engine 2 Multi-Engine 1 Helicopter	Commercial = 1,250 Air Taxi = 375 Military = 500 GA Local = 2,000
Lordsburg Municipal (LSB), Lordsburg, New Mexico	Public	None	None	4 Single Engine	Military = 600 GA Local = 1,800 GA Itinerant = 2,400
Whiskey Creek (94E), Silver City, New Mexico	Private [Open to the public]	None	Proposed Lobos MOA	12 Single Engine 3 Multi-Engine 1 Helicopter	GA Local = 300 GA Itinerant = 800
Deming Municipal (DMN), Deming, New Mexico	Public	None	None	17 Single Engine 1 Multi-Engine 1 Jet	Air Taxi = 960 Military = 9,125 GA Local = 6,570 GA Itinerant = 12,000
Truth or Consequences Municipal (TCS), Truth or Consequences, New Mexico	Public	None	Proposed Christa and Kendra ATCAAs	23 Single Engine 5 Ultralights	Military = 1,200 GA Local = 4500 GA Itinerant = 10,000
Socorro Municipal (ONM), Socorro, New Mexico	Public	None	Proposed Christa ATCAA	14 Single Engine 1 Helicopter	Military = 100 GA Local = 2,500 GA Itinerant = 2,000
Catron County Heliport (C54), Quemado, New Mexico	Public	Cato and Smitty MOAs	None	None Reported	GA Itinerant = 12
Jewett Mesa (13Q), (USFS) Apache Creek, New Mexico	Public	Cato and Smitty MOAs	Cato and Smitty MOAs	None Reported	GA Itinerant = 30
Magdalena Airport (N29), Magdalena, New Mexico	Public	Cato and Smitty MOAs	Cato and Smitty MOAs	1-Single Engine	Military = 40 GA Local = 400 GA Itinerant = 500
Beaverhead Airstrip (13NM) (USFS, Gila NF), Silver City, New Mexico	Public (Private Use)	None	Proposed Lobos MOA	None Reported	GA Itinerant = 50
Me-Own Airport (1NM0) (USFS, Gila N.F.) 30 NE Silver City, New Mexico)	Public (Private Use)	None	Proposed Lobos MOA	None Reported	GA Itinerant = 30 (1984)
Casa Adobes Airpark (NM69) Mimbres, New Mexico)	Private	None	Proposed Kendra ATCAA	None Reported	None Reported

Table D1-2. Airports in Cato, Smitty, Lobos MOA and Christa and Kendra ATCAAs ROI (cont.)					
Airport Name	**Airport Ownership**	**Existing Associated Airspace**	**Proposed Associated Airspace**	**Based Aircraft**	**Annual Operations[1]**
Spaceport America (9NM9), 20 miles SE of Truth or Consequences, New Mexico	Private	Restricted Airspace (R5111)	None	2 Jets	None Reported
Rancho Magdalena (NM01), Magdalena, New Mexico	Private	Cato and Smitty MOAs	Cato and Smitty MOAs	None Reported	None Reported
Happy Mountain Airport (NM 41), Pie Town, New Mexico	Private	Cato and Smitty MOAs	Cato and Smitty MOAs	None Reported	None Reported
Chloride Airport (NM51), Chloride, New Mexico	Private	None	Cato and Smitty MOAs	None Reported	None Reported
Monte Preito Ranch Airport (57NM), Claunch, New Mexico	Private	Restricted Airspace (R-5107 C/H)	None	None Reported	Not Reported
Adobe Ranch Airport (NM37), Truth or Consequences, New Mexico	Private	None	Cato and Smitty MOAs	None Reported	None Reported

Source: Skyvector 2019.
Legend: MOA-Military Operations Area; ATCAA-Air Traffic Control Assigned Airspace; GA – general aviation

D1.3.1 Public Airports

Grant County Airport (SVC) is located 10 miles southeast of Silver City, New Mexico and near the southeastern border of the proposed Lobos MOA and near the southern border of the proposed Kendra ATCAA. The airport, publicly owned by Grant County, is a non-towered airport with approach and departure services provided by Albuquerque Center. The airport is located within Class E airspace that extends upward from 700 feet AGL within a 7-mile radius of the airport with Class E extensions to the east and southeast. A portion of their Class E airspace would be located within the proposed Lobos MOA, and a portion would also be below the proposed Kendra ATCAA. Grant County Airport has four runways, 08/26, 17/35, 12/30 and 03/21 with published approaches to Runway 08/26. There were 9,125 airport operations reported to the FAA for the 12-month period ending December 31, 2017; 500 of the operations were associated with military aircraft (SkyVector 2019). Based on analysis of PDARS information, during the 4 months used for data analysis, 237 civilian and 7 military flights departing or arriving at Grant County Airport transited through the airspace associated with the proposed Cato and Smitty MOAs; 764 civilian and 6 military transited through the airspace proposed for Lobos High MOA; and 464 civilian and 7 military flights transit through the airspace associated with Lobos Low MOA (ATAC 2018).

Lordsburg Municipal Airport (LSB) is located one mile southeast of Lordsburg, New Mexico and approximately 15 nm south of the proposed Lobos MOA. The airport, publicly owned by the City Lordsburg, is a non-towered airport with no approach/departure services offered. There is no Class E

airspace associated with the airport. The Lordsburg Municipal Airport has one runway, 12/30 with no published approaches. There were 4,800 airport operations reported to the FAA for the 12-month period ending April 12, 2017; 600 of the operations were associated with military aircraft (SkyVector 2019).

Whiskey Creek Airport (94E) is located 4 miles east of Silver City, New Mexico, and would be beneath the proposed Lobos MOA. The airport is privately owned by 94 ECHO LLC, but is open to the public for use. The airport is a non-towered airport without approach/departure services provided by the FAA. The airport is located just outside of Grant County's Class E airspace. There is one runway, 17/35, with no published approaches. The runway is closed to aircraft over 10,000 pounds. There were 1,100 airport operations reported to the FAA for the 12-month period ending March 12, 2017 (SkyVector 2019).

Deming Municipal Airport (DMN) is located two miles southeast of Deming, New Mexico, approximately 20 miles south of the proposed Kendra ATCAA. The airport, publicly owned by the City of Deming, is a non-towered airport with approach/departure services provided by Albuquerque ARTCC. The airport is located within Class E airspace that extends upward from 700 feet AGL within a 7-mile radius of the airport with Class E extensions to the east and southwest. This airport has two runways, 08/26 and 04/22 with published approaches to Runway 04/22 and 08. There were 28,655 airport operations reported to the FAA for the 12-month period ending March 7, 2017; 9,125 of the operations were associated with military aircraft (SkyVector 2019).

Truth or Consequences Municipal Airport (TCS) is located 6 miles north of Truth or Consequences, New Mexico and would be beneath the proposed Kendra ATCAA. The airport, publicly owned by the City of Truth or Consequences, is a non-towered airport with approach/departure services provided by Albuquerque ARTCC. The airport is located within Class E airspace that extends upward from 700 feet AGL within a 7-mile radius of the airport with Class E extensions to the north and southeast. The Class E extension to the southeast lies partially within R-5111C/D. The Truth or Consequences Municipal Airport has five runways, 11/29, 01/19, 15/33 and 07/25 with an RNAV (GPS) and a VOR approach published for Runway 13/31 only. There were 16,700 airport operations reported to the FAA for the 12-month period ending April 8, 2017; 1,200 of the operations were associated with military aircraft (SkyVector 2019).

Socorro Municipal Airport (ONM) is located 3 miles south of Socorro, New Mexico and would be beneath the proposed Christa ATCAA. The airport, publicly owned by the City Socorro, is a non-towered airport with approach/departure services provided by Albuquerque ARTCC. The airport is located within Class E airspace that extends upward from 700 feet AGL within a 7-mile radius of the airport. The Socorro Municipal Airport has two runways, 15/33 and 06/24 with an RNAV (GPS) to Runway 33 and a VOR approach published for Runway 15. There were 4,600 airport operations reported to the FAA for the 12-month period ending April 9, 2017; 100 of the operations were associated with military aircraft (SkyVector 2019).

Catron County Heliport (C54) is located eight miles east of Quemado, New Mexico at the northern edge of the existing Cato and Smitty MOA and within the area proposed for return to the NAS under Alternatives 2 and 3. The heliport, publicly owned by Catron County, is a non-towered heliport with no approach/departure services offered. There is no Class E airspace associated with this heliport. The heliport has one helipad with no published approaches. There were 12 operations reported to the FAA for the 12-month period ending April 9, 2017 (Skyvector 2019).

Jewett Mesa Airport (13Q) is located 10 miles north of Apache Creek, New Mexico and beneath the existing and proposed Cato and Smitty MOAs. The airport, publicly owned by the U.S. Forest Service, is

a non-towered seasonally operated airport with no approach/departure services offered. Jewett Mesa Airport is open to the public from May through September and is closed at all other times. There is no Class E airspace associated with this airport. The airport has one runway 06/24; there are no published approaches. There were 30 operations reported to the FAA for the 12 month period ending April 12, 2017 (SkyVector 2019).

Magdalena Airport (N29) is located three miles west of Magdalena, New Mexico near the northeast corner of the existing and proposed Cato and Smitty MOAs. The Smitty MOA excludes airspace 2000 feet AGL and below surrounding the airport. Magdalena Airport, publicly owned by the Village of Magdalena, is a non-towered airport with no approach/departure services offered. There is no Class E airspace associated with this airport. The airport has one runway 02/20; there are no published approaches. There were 940 operations reported to the FAA for the 12-month period ending April 9, 2017; 40 of the operations were associated with military aircraft (SkyVector 2019).

Beaverhead Airstrip (13NM) is located 39 miles north of Silver City, New Mexico to the east of the existing Reserve MOA and to the south of the existing Cato and Smitty MOAs. This airstrip would be beneath the proposed Lobos MOA. Although the U.S. Forest Service, Gila National Forest, publicly owns the airport, it is maintained as a private use airport. There is no Class E airspace associated with this airport. The airport has one dirt runway 12/30; there are no published approaches. There were 50 operations reported to the FAA for the 12-month period ending January 27, 1984; no updated operations have been reported (SkyVector 2019).

Me-Own Airport (1NM0) is located 30 miles northeast of Silver City, New Mexico to the east of the existing Reserve MOA and would be beneath the proposed Lobos MOA. Although the airport is publicly owned by the U.S. Forest Service, Gila National Forest, it is maintained as a private use airport. There is no Class E airspace associated with this airport. The airport has one dirt runway 14/32; there are no published approaches. There were 30 operations reported to the FAA for the 12-month period ending January 27, 1984; no updated operations have been reported (SkyVector 2019).

D1.3.2 Private Airports

There are seven private airports in the ROI for Cato, Smitty, Lobos MOAs and Christa and Kendra ATCAAs. Aircraft operating from private airports typically fly using VFR and at lower altitudes where radar coverage is limited or non-existent. As can be seen in **Table D1-2**, none of the private airports reported operational statistics to the FAA. PDARS data for these airports are not available.

D1.4 REFERENCES

ATAC 2017. Holloman Special Use Airspace Modifications, Holloman Air Force Base, October 20.

ATAC 2018. Holloman Addendum Report, September 25.

Skyvector 2019. FAA Airport Data, All airports listed.

D2 AIRSPACE IMPACTS ANALYSIS

D2.1 INTRODUCTION

This analysis is in support of the EIS for Special Use Airspace Optimization to Support Existing Aircraft at Holloman Air Force Base. This EIS is evaluating a baseline condition and three proposed action alternatives. These are explained in detail in chapter 2 of the EIS. A short summary is offered here. The United States (U.S.) Air Force proposes to optimize the Special Use Airspace (SUA) available for current and anticipated future pilot training at Holloman Air Force Base (AFB). Much of the SUA used by pilots assigned to Holloman AFB was developed for legacy aircraft more than 30 years ago. As such, it does not have the optimum volume or attributes needed to meet the training requirements of pilots flying modern aircraft. Reconfiguring existing airspace and establishing new airspace would improve the availability of suitable training airspace for pilots stationed at Holloman AFB.

This analysis of impacts to airspace supports the Environmental Impact Statement (EIS) for SUA Optimization at Holloman AFB, located in southern New Mexico. Holloman AFB's mission is F-16 pilot training. Each component of training requires airspace that has appropriate area, altitudes, proximity to the base, and attributes, such as ability to use defensive countermeasures or certain types of munitions. Consequently, the features of available airspace determine where training sorties can occur. Air-to-air training activities normally take place in a Military Operations Area (MOA) with an overlying Air Traffic Control Assigned Airspace (ATCAA) requested as needed to expand the MOA's altitude. Air-to-ground training activities that include the release of live ordnance are considered hazardous to non-participating aircraft and must be performed in a Restricted Area associated with a military training range. Some training activities require a combination of MOA and restricted areas. A range of restricted areas and MOAs in the vicinity of Holloman AFB are currently available for F-16 pilot training. The available MOAs are scheduled by Holloman, Cannon, and Kirtland AFBs. The available restricted areas are associated with U.S. Army ranges scheduled by White Sands Missile Range (WSMR) and Fort Bliss.

When airspace appropriate for a specific training mission is not available at the appropriate time during the pilot's training, training is delayed, which disrupts the progress of pilots in training and potentially results in an inability to complete the entire program in a timely manner. The EIS evaluates the impacts of three alternatives for modifying existing airspace and establishing new airspace in order to provide readily available and adequately sized training airspace with appropriate attributes needed to conduct training missions. The baseline and the three alternatives are discussed below.

D2.1.1 Baseline

F-16 aircraft based at Holloman AFB currently use restricted airspace at WSMR and Fort Bliss and MOAs, particularly the existing Talon MOAs (East/West/Low), and Talon ATCAAs (East/West) for training.

D2.1.2 Alternative 1 – Talon MOA and ATCAA

The existing Talon MOA complex would be reconfigured and expanded to the south and east. The low MOA would become two MOAs – the Talon Low A and Talon Low B. The Talon High East and West MOAs would be changed in size and divided into the Talon High A, B, and C MOAs. The floor of the proposed low MOAs would be raised to 500 feet above ground level (AGL) from the existing floor of 300

feet AGL. Up to 10,000 F-16 pilot training sorties annually (3,700 in low MOAs, 6,300 in high MOAs/ATCAA) would occur in the proposed SUA. Approximately 10% of sorties would include supersonic flight in the ATCAA, above 30,000 feet above mean sea level (MSL). Chaff and flares would be used with restrictions.

D2.1.3 Alternative 2– Smitty/Cato, Lobos MOAs and Lobos, Cato, Kendra, and Christa ATCAAs

Airspace just west of the WSMR would be reconfigured, and new blocks of airspace established. The existing Smitty and overlying Cato MOAs and Cato ATCAA would have new boundaries. The northern portion of these MOAs would be returned to the National Airspace System (NAS) as Class A and Class E airspace. This area of the MOAs is encroached upon by Victor Airway V264 and Jet Route J74, so returning this airspace to the NAS will ease that conflict and facilitate civil use of the area. Additionally, a Lobos High MOA, Lobos Low MOA, and Lobos A/B/C ATCAAs would be established south and west of the existing Cato/Smitty MOAs. Finally, two additional ATCAAs (Christa and Kendra) would be established to bridge from the WSMR to the Cato and Lobos ATCAAs. Up to 9,100 F-16 pilot training sorties would occur annually (3,600 in Lobos Low and Smitty MOAs and 5,500 in Lobos High and Cato MOAs/ATCAAs). Approximately 10% of sorties would include supersonic flight in ATCAAs above 30,000 feet MSL. Chaff and flare would be used with restrictions.

D2.1.4 Alternative 3 – Talon, Smitty/Cato, Lobos MOAs and Talon, Cato, Kendra, Christa ATCAAs

Alternative 3 is a combination of the first two alternatives with a few exceptions: the Talon High C MOA and ATCAA and Lobos Low MOA would not be created. The total proposed aircraft operations and chaff and flare use would be spread across all MOAs. In the Talon MOA, 2,600 F-16 pilot training sorties would occur in low MOAs and 4,200 in high MOAs/ATCAAs. In the Cato/Smitty and Lobos MOAs, 1,100 training flights would occur in Smitty MOA (low) and 2,100 in Cato (high) and Lobos High MOAs/ATCAAs.

D2.2 METHODOLOGY

D2.2.1 Data Source

To analyze the existing traffic in the project's area of influence, a request was made to the Federal Aviation Administration (FAA) to use its Performance Data Analysis and Reporting System (PDARS) data. The PDARS continuously collects flight plan and radar track data from systems located at Air Route Traffic Control Centers, Terminal Radar Approach Control Facilities, and air traffic control towers. To represent one year, four months of data, evenly spaced throughout the year prior to beginning this analysis, were requested: October 2015, January 2016, April 2016, and July 2016. These months are assumed to adequately represent seasonal fluctuations. It is assumed that total counts can be multiplied by three to estimate annual numbers. Only flights using an active Mode III transponder are counted in PDARS dataset. VFR flights that do not use Mode III would be counted by individual airports for their operational totals, but would not show up in the PDARS database.

D2.2.2 Filtering of Flight Tracks

For each area analyzed (proposed locations of SUA), all historical flight tracks from PDARS data that traversed through the proposed SUA during the hours that it would be in use (Monday-Friday from 7:00 a.m. until 10:00 p.m.) were identified. These counts for the representative 4 months were then annualized.

For each of these tracks, the origin and destination airport were identified and counted – providing a list of the number of flights per year traveling to and from each airport. The number of unique combinations of origin and destination airports was in the thousands, with many combinations occurring only once. The list was reduced to focus on the most frequently occurring airport origin-destination pairings, in order to represent the majority of traffic potentially affected by the Proposed Action and produce a manageable and meaningful analysis.

D2.2.3 Impacts to Flights

The distance between each of the most common origin-destination pairings was calculated as a straight line ("great circle" route). Though this is not likely the actual routing used, it represents a best-case straight-line distance directly from the origin airport to the destination airport. A great-circle calculator was used to determine the shortest distance (between two points on a sphere) for the route between the two airports.

Since this great-circle route passed through some portion of the proposed SUA, an additional routing was calculated that would represent flight paths using a navigational aid (NAVAID) or "fix" that would route flights outside the proposed SUA for each alternative. Great-circle routes were identified from origin to fix, and from the fix to the destination, and added together to produce the total distance between the origin and destination that would result from rerouting flights around the proposed SUA for each alternative. The distance change was calculated by comparing to the original straight-line routing, and time change was determined using a speed estimate. For airline traffic, the assumption was a speed of approximately 450 knots true airspeed (KTAS) (0.78 Mach at flight level [FL] 350 [about 35,000 feet]), based on the most frequently observed aircraft in the PDARS dataset. All calculations assume no wind. An example of this can be seen in **Figure D2-1**.

In this case, the shortest path between Phoenix, AZ and Houston, TX is represented by the green line. During times that the Lobos MOA would be active (under Alternatives 2 and 3), this flight track would intersect the proposed Lobos MOA. Aircraft could instead be re-routed via the San Simon VORTAC (shown on Figure D3-1 as the blue line). This re-routed flight track is 1,018 nautical miles, as opposed to the direct route that is 1,009 nautical miles. This is a 0.9% increase in distance (shown later in this appendix, in **Table D2-11**). This additional distance corresponds to 1.2 extra minutes, with the altitude and speed assumptions above. Note that in this example (and most of the others), since the proposed action is for the new airspace to only operate during times when the White Sands Missile Range (WSMR) is active, nearly all of these flights would already have to be re-routed to avoid the WSMR. As shown in Figure D3-1, the green line (optimal route or the "great circle" route) intersects WSMR, and would have already been routed closer to the blue line anyway under the existing conditions. So the 0.9% change given in the example above would likely be even smaller. This is the methodology used below for the tabular results.

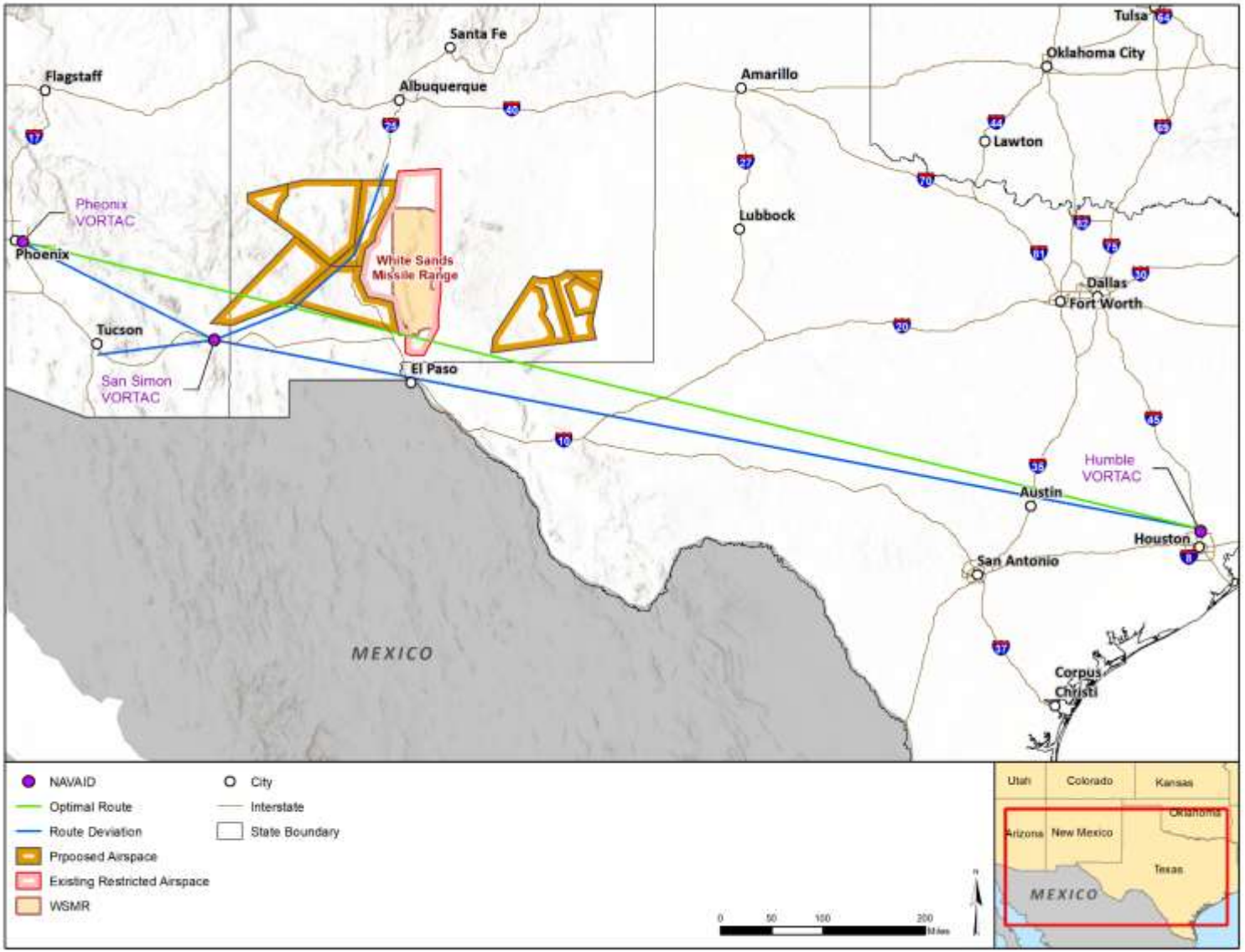

Figure D2-1. Example for routing between Phoenix, AZ and Houston, TX

For the low MOAs, most of the non-military traffic is general aviation, much of which is operated under visual flight rules (VFR), which would not be restricted from operating within a MOA. In this case, the approach to analysis was to determine the amount of time (per day) that military traffic could be present, given the operational sortie counts for each alternative.

D2.2.4 Overall Trend

Though not part of the methodology, it is worth noting that the overwhelming majority of flights in the PDARS data operated predominately east-west through the area of interest. The two major areas of proposed airspace change lie immediately east (for the Talon airspace) or west (for the Cato/Smitty/Lobos) of the SUA above the WSMR. Since WSMR is in operation during the same time the proposed SUA would be available (Monday-Friday from 7:00 a.m. until 10:00 p.m.), a great deal of the existing airline traffic already routes around the proposed airspace, as they avoid WSMR.

D2.3 ALTERNATIVE 1 – TALON MOA AND ATCAA

D2.3.1 Airline Traffic (Above FL180)

Approximately 57,000 flights per year traverse through the area encompassing the proposed new Talon ATCAA during the times the SUA and overlying ATCAA could be used (Monday-Friday from 7:00 a.m. until 10:00 p.m). Not all of these flights would be affected by military operations in the proposed ATCAA.

Table D2-1 shows the number of military sorties in the airspace, the hours per year and day and the percent of time the ATCAAs would be in use under Alternative 1. Alternative 1 would affect this area's airline traffic for about 59% of the training day, on average, including the Holloman-based F-16 use and the transient use of the proposed airspace. The majority of these airline flights are roughly east-west, and intersect mainly with the edges of the proposed ATCAAs. The proposed Talon ATCAAs are near the WSMR on the east side, and most east-west traffic in the Class A airspace is normally required to go around the WSMR during these hours. Note that these sortie counts differ slightly from the sorties listed in Appendix F, *Noise*, for a combination of reasons including: some training sorties in the F-16 syllabus only use certain altitudes for a particular set of training requirements; some transient sorties also do not use a full range of altitudes; and some training events use more or less than the listed two aircraft per event.

Table D2-1. Military Usage of Proposed Talon ATCAAs under Alternative 1

Metric	Talon ATCAAs	Assumptions
Number of Military Sorties	6,930	Includes Holloman F-16 plus transient military
Hours per year	2,310	Assumes 2 aircraft per period for 40 minutes in the airspace
Hours per day	8.9	260 flying days per year
% of training hours affected	59%	15 hours per day from 7:00 a.m. until 10:00 p.m.

Table D2-2 lists the types of aircraft included in the PDARs dataset. The most common are either 737 variants (31%) or Airbus (312/320/321) variants (17%). This mix of aircraft was typical in each alternative evaluated, and is the reason for the assumption (in **Section D2.2.3**) that the speed used was 0.78M/450 KTAS for converting distance to time.

Table D2-2 Aircraft Types Intersecting Proposed Talon ATCAAs under Alternative 1	
737-800	14%
A-321	11%
737-700	11%
A-320 Prestige	6%
VC-1 ACJ	5%
Embraer 170	4%
757-200	4%
737-300	3%
767-300	3%
737-900	3%
Challenger 870	2%
MD-83	2%
Challenger 890	2%
Eagle	1%
MD-82	1%
A-300B4-600	1%
C-26 Metro	1%
ERJ-145XR	1%
560XL Citation Excel	1%
MD-11	1%
200 Super King Air	1%
560 Citation 5	1%
BAe-125-700	1%
Mystare 20	1%
757-300	1%
525 Citation CJ1	1%
C-20F Gulfstream 4	1%
750 Citation 10	1%
BD-100 Challenger 300	1%
MD-90	1%
CL-600 Challenger 650	1%
Others	15%

For this dataset, there were 398 origin airports, and 418 destination airports, making possible more than 166,000 origin-destination pairings, a number too large for meaningful individual analysis. The most frequent pairings were used to represent the impacts to the largest number of flights and travelers. The analysis of impacts to airline traffic evaluated routes that traversed the proposed Talon ATCAA leaving from the five most common origin airports to each of their five most common destinations (for a total of

twenty-five route combinations). Each row in **Table D2-3** shows an origin airport and the shaded areas in the rows are the destination airports (and the return routes would be the opposite). In each cell, the topmost number is the great-circle optimum route length (rounded to nearest nautical mile [nm]). Below that is NAVAID or fix used to estimate the re-route (shown as "via" in the table), and the route length adjusted around the proposed ATCAA (which is the sum of two great-circle routes: Origin to the fix, and fix to destination). The "delta" is the percent difference between the optimum and re-routed route lengths, and finally, the extra minutes required to fly the extended route, based on the airspeed assumptions listed in **Section D2.2.3**. Route lengths vary from about 700 to over 2,000 nm. The average required change in distance would be 0.25 %, and the average additional required minutes of travel are approximately 21 seconds. The largest deviation required is less than 3 minutes.

These small deviations in route length and time are attributable to the large distances between origin and destination airports, which allow for very small angular (heading) changes to avoid the proposed ATCAA. Most of the flights in the area would have already routed to avoid the WSMR during the times of concern, and planned flight tracks may have traversed the very edges of the proposed ATCAA; therefore changing routes requires a relatively tiny correction. For several origin-destination pairings, the re-route distance was exactly the same as the optimum flight track distance – this was a case for routes that passed through the extreme edges of the proposed airspace or where the actual aircraft flight paths flown were not near the optimal route already (such as historical diversions for weather). On those routes (such as DFW to LAS, the re-routing NAVAID is listed as "n/a").

Table D2-3. Most Common Commercial Airport Pairings Intersecting Proposed Talon ATCAAs under Alternative 1[1]

Origin	Destination									
ATL	**PHX**	1379	**TUS**	1339	**LAX**	1691	**SAN**	1644	**ELP**	1114
	via: CME	1384	via: CME	1340	via: n/a	1691	via: n/a	1644	via: INK	1118
	delta	0.4%	delta	0.1%	delta	0.0%	delta	0.0%	delta	0.4%
	extra minutes	0.67	extra minutes	0.13	extra minutes	0.00	extra minutes	0.00	extra minutes	0.53
DAL	**PHX**	764	**LAX**	1083	**SAN**	1027	**ELP**	488	**SDL**	759
	via: CME	764	via: n/a	1083	via: n/a	1027	via: INK	491	via: n/a	759
	delta	0.0%	delta	0.0%	delta	0.0%	delta	0.6%	delta	0.0%
	extra minutes	0.00	extra minutes	0.00	extra minutes	0.00	extra minutes	0.40	extra minutes	0.00
DFW	**LAX**	1073	**SAN**	1017	**PHX**	754	**SNA**	1047	**TUS**	706
	via: n/a	1073	via: n/a	1018	via: n/a	754	n/a	1047	via: CME	710
	delta	0.0%	delta	0.1%	delta	0.0%	delta	0.0%	delta	0.6%
	extra minutes	0.00	extra minutes	0.13	extra minutes	0.00	extra minutes		extra minutes	0.53
IAH	**ABQ**	744	**LAX**	1379	**LAS**	1222	**SNA**	1346	**SFO**	1635
	via: MAF-CME	763	via: INK-EWM	1382	via: MAF-CME	1228	via: EWM	1347	via: SSO	1642
	delta	2.6%	delta	0.2%	delta	0.5%	delta	0.0%	delta	0.4%
	extra minutes	2.53	extra minutes	0.40	extra minutes	0.80	extra minutes	0.13	extra minutes	0.93
LAX	**DFW**	1073	**MSY**	1670	**MIA**	2342	**IAH**	1379	**ATL**	1946
	via: n/a	1073	via: CME	1671	via: CME	2345	via: INK-EWM	1382	via: n/a	1946
	delta	0.0%	delta	0.1%	delta	0.1%	delta	0.2%	delta	0.0%
	extra minutes	0.00	extra minutes	0.13	extra minutes	0.40	extra minutes	0.40	extra minutes	0.00

Note: [1] In each destination airport cell, the topmost number is the great-circle optimum route length (rounded to nearest nm). The row "via" is the estimated re-route distance using a NAVAID or fix. The "delta" is the percent difference between the optimum and re-routed route lengths. The "extra minutes" is the added time to re-route the flight.

Legend: Airport and NavAid codes: ABQ - Albuquerque; ATL - Atlanta; CME - Chisum; DAL - Dallas-Love; DFW - Dallas-Ft Worth; ELP - El Paso; EWM - Newman; IAH - Houston-Bush; INK - Wink; LAS - Las Vegas; LAX - Los Angeles; MAF - Midland; MIA - Miami; MSY - New Orleans; PHX - Phoenix; SAN - San Diego; SDL - Scottsdale; SFO - San Francisco; SNA - Orange County; SSO – San Simon; TUS - Tucson; VNY - Van Nuys.

D2.3.2 MOA Traffic

D2.3.2.1 Talon Low A/B MOAs

The impact of using the proposed Talon Low A MOA would be roughly the same as using the existing Talon Low MOA. It is located in roughly the same position and has a slightly different shape. The proposed Talon Low B MOA would be new SUA from 500 feet AGL up to 12,500 feet MSL in an area that does not currently have SUA. There would be a relatively low military demand for the low MOA airspace compared to the higher airspace blocks. It is assumed that the proposed Talon Low B MOA would have half of the traffic for the Talon Low A and B combined. Adding transient military use to the Holloman-based F-16s, results in the use numbers shown in **Table D2-4**. The Talon Low B is expected to be in use by military aircraft for about 678 hours per year, or about 2.6 hours per day on the average training day. This represents about 17% of the available time (Monday-Friday from 7:00 a.m. until 10:00 p.m.).

Table D2-4. Proposed Military Usage of Talon Low B MOA under Alternative 1

Metric		Assumptions
Number of Military Sorties	2,035	Includes Holloman F-16 plus transient military
Hours per year	678	Assumes 2 aircraft per period for 40 minutes in the airspace
Hours per day	2.6	260 flying days per year
% of hours affected	17%	15 hours per day from 7:00 a.m. until 10:00 p.m.

Legend: MOA – Military Operations Area

PDARS data show that under current conditions about 2,100 civilian flights per year use this airspace proposed to become the Talon Low B MOA. The aircraft types in that historical dataset are shown in **Table D2-5**.

Table D2-5. Aircraft Types Intersecting Proposed Talon Low B MOA under Alternative 1

Super King Air 350	18%
A36 Bonanza 36	12%
Cessna 210	6%
58 Baron	5%
560XL Citation Excel	4%
Cessna 421	4%
Cessna 182	3%
35 Bonanza	2%
Cessna 206	2%
Falcon 2000	2%
Seneca	2%
Cessna 310	2%
Eagle	2%
200 Super King Air	2%
525B Citation CJ3	2%

Table D2-5. Aircraft Types Intersecting Proposed Talon Low B MOA under Alternative 1 (cont.)	
525 Citation CJ1	2%
18 (piston)	2%
Cessna 172	2%
SR-22	2%
650 Citation 3	1%
Archer 2	1%
560 Citation 5	1%
59 other aircraft	36%

Table D2-6 shows the origin-destination airport pairings for the most common flights that crossed through the area of the proposed Talon Low B MOA, in order of the most to least common. The distance between airports was calculated as straight-line using a great-circle distance as described in **Section D2.2.3**. The re-route NAVAID column shows the NAVAIDs or fixes that would be required to avoid the Talon Low B airspace, and the following columns show the longer re-routed distance, the change in distance, the percentage that change represents, and the possible time in minutes that the new routing would add (assuming 180 KTAS). Aircraft flying using both Instrument Flight Rules (IFR) and VFR would rarely fly the exact great-circle route, but this measure provides a good comparison of the ideal (straight-line) route to the re-route that would be required when the Talon B MOA would be active if the aircraft is under IFR. VFR aircraft would not have to re-route, but if the pilots chose to avoid the MOA, the change would be as shown in **Table D2-6**. These route modifications would be required when the proposed Talon Low B was active under the Alternative 1, which would be about 17% of the time between Monday-Friday from 7:00 a.m. until 10:00 p.m.

Table D2-6 Top Civil Airport Pairings in Proposed Talon Low B MOA under Alternative 1									
Origin Airport	**Destination Airport**	**Number per year**	**Number per week**	**Great-Circle Distance**	**Re-route NAVAID**	**Re-route Distance (nm)**	**Delta (nm)**	**% Difference**	**Time in minutes[1]**
MAF	ATS	165	3.2	127	CNM	140	13	10%	4.3
ELP	LBB	150	2.9	256	CNM-HOB	261	5	2%	1.7
ATS	MAF	126	2.4	127	CNM	140	13	10%	4.3
LBB	ELP	60	1.2	256	HOB-CNM	261	5	2%	1.7
LBB	ATS	36	0.7	142	HOMEX	169	27	19%	9.0
MAF	SRR	33	0.6	191	HOB-CME	195	4	2%	1.3
ATS	FTW	21	0.4	359	CNM	383	24	7%	8.0
ROW	ODO	21	0.4	136	HOB	138	2	1%	0.7
APA	CNM	18	0.3	434	WUDRU	458	24	6%	8.0
ATS	LBB	18	0.3	142	HOMEX	169	27	19%	9.0
ODO	SRR	18	0.3	184	HOB-CME	189	5	3%	1.7

***Note*:** [1] Time in minutes assume 180 knots true airspeed.
Legend: APA - Denver-Centennial; ATS - Artesia; CME – Chisum; CNM - Cavern City;; ELP - El Paso; FTW - Ft Worth-Meacham; HOB – Hobbs; HOMEX – navigational fix; LBB - Lubbock; MAF - Midland; ODO - Odessa; ROW - Roswell; SRR - Sierra Blanca; WUDRU – navigational fix; Time in minutes assumes 180 knots true airspeed; GC Dist. – Great-Circle distance

D2.3.2.2 Talon High A/B/C MOAs

The Proposed Talon High A MOA would have very similar effects on civil traffic as the existing Talon High East/West MOAs as they are very similar in size and shape. The Proposed Talon High B and C MOAs are almost entirely in airspace that is not currently SUA and would affect local civil traffic to some extent. Of those two, the Talon High B would have regular use, and the Talon C would have occasional use under Alternative 1.

Table D2-7 shows the projected use of the proposed Talon High A/B and Talon High C MOAs for Alternative 1. The Talon High A/B and Talon High C MOAs would be active approximately 59% and 2% of the time, respectively, between Monday-Friday from 7:00 a.m. until 10:00 p.m.

Table D2-7. Military Usage of Talon High A/B and C MOAs under Alternative 1			
Metric	**Talon High A/B MOAs**	**Talon High C MOA**	**Assumptions**
Number of Military Sorties	6,930	275	Includes Holloman F-16 plus transient military
Hours per year	2,310	92	Assumes 2 aircraft per period for 40 minutes in the airspace
Hours per day	8.9	0.4	260 flying days per year
% of hours affected	59%	2.3%	15 hours per day from 7:00 a.m. until 10:00 p.m.

PDARS data for the location of the proposed Talon High A/B MOAs for flights during the time period (Monday-Friday from 7:00 a.m. until 10:00 p.m.) when the MOAs could be active, show approximately 2,724 civilian flights annually in this airspace. The distribution of aircraft types appearing in the PDARS data is shown in **Table D2-8**.

Table D2-8. Aircraft Types Intersecting Proposed Talon High B/C MOA under Alternative 1	
PC-12 Eagle	17%
Super King Air 350	12%
99 Airliner	6%
560XL Citation Excel	4%
200 Super King Air	4%
58 Baron	3%
Falcon 2000	3%
C-26 Metro	3%
Cessna 421	3%
525 Citation CJ1	3%
560 Citation 5	3%
90 (A90) King Air	2%
ERJ-145XR	2%
650 Citation 3	2%
525C Citation CJ4	2%
C-99	2%
525B Citation CJ3	2%
69 other aircraft	27%

Table D2-9 shows the airport pairings for the most common flights that crossed through the area of the proposed Talon High B/C MOAs by order of the most to least common. The number of times per year for each route was extrapolated from PDARS data. The distance between airports was calculated straight-line using a great-circle distance. The alteration to the route (the "via" column) shows the NAVAIDs or fixes that would be required to avoid the Talon High B/C airspace, and the following columns show the longer re-routed distance, the change in distance with the percentage that change represents, and the possible time in minutes that the new routing would add (assuming 210 KTAS). Aircraft flying both IFR and VFR would rarely fly the exact great-circle route, but this measure provides a good comparison of the ideal (straight-line) route to the one that would be required when the Talon High B/C MOAs would be active if the aircraft is under IFR. VFR aircraft would not have to modify their plan, but if the pilots chose to avoid the MOA, the change would be as shown in **Table D2-9**. These modifications would be required when the Talon High B/C was active under the Alternative 1, which would be about 17% of the time between Monday-Friday from 7:00 a.m. until 10:00 p.m. **Table D2-9** also shows a few routes which would be only required when the Talon High C MOA is active. Those routes would be unaffected by activation of the Talon High B MOA. Some routes are listed with altitude restrictions instead of new routing. Especially for airports that are beneath the proposed Talon High B MOA (Artesia and Cavern City), it would be possible for pilots to remain below the floor of the MOA when flying these routes, eliminating the need for re-routing and not impacting flight time. For instance, the most common airport pairing in the PDARS data is the route from Artesia to Midland, TX. Aircraft departing Artesia could remain below 12,500 feet MSL for the first 30nm of their flight. For many pilots, this restriction would be of no consequence, as they prefer operation at such altitudes.

For those that could operate at higher altitudes, climbs would be delayed until clear of the Talon MOAs. This would apply to IFR traffic and any VFR traffic that opts to remain clear of the MOAs. VFR aircraft are not restricted from flying through MOAs. Recall that the Talon B and C MOAs would be active about 59% and 3% of the time between Monday-Friday from 7:00 a.m. until 10:00 p.m.

This analysis of the Talon High MOAs does not include the case when the Talon Low MOAs would be active at the same time – in that case, aircraft would need to route as described in **Section D2.3.2.1.**

Table D2-9 Top Civil Airport Pairings in Proposed Talon High B/C MOAs under Alternative 1										
Origin Airport	**Destination Airport**	**Number per year**	**Number per week**	**Great-Circle Distance**	**Re-route NAVAID**	**Distance (nm)**	**Delta (nm)**	**% Difference**	**Time in minutes**	**Stay below 12,500 feet MSL**
ATS	MAF	183	3.5	127						30nm
CNM	DFW	174	3.3	368						20nm
CNM	LBB	132	2.5	147						30nm
CNM	ABQ	90	1.7	200						47nm
HOB	ABQ	78	1.5	220	CAPRO[1]	225	5	2%	1.5	
ABQ	HOB	60	1.2	220	CAPRO[1]	225	5	2%	1.5	
IAH	ROW	51	1.0	510	CAPRO[1]	518	8	2%	2.4	
ATS	LBB	48	0.9	142						32nm
CNM	APA	48	0.9	434	DYETT	467	33	8%	9.9	47nm

Note [1] Only required when proposed Talon High C MOA active.

Legend: ABQ - Albuquerque; APA - Denver-Centennial; ATS - Artesia; CAPRO – navigational fix; CNM - Cavern City; DFW - Dallas/Fort Worth; DYETT – navigational fix; HOB - Lea County; IAH - Houston-; LBB - Lubbock; MAF - Midland; ROW – Roswell.

D2.4 ALTERNATIVE 2 - SMITTY/CATO, LOBOS, MOAS AND CATO, LOBOS, KENDRA CHRISTA ATCAAS

D2.4.1 Airline Traffic (Above FL180)

Approximately 74,000 flights per year traverse through the proposed reconfigured Cato ATCAA and newly established Lobos, Christa, and Kendra ATCAAs during the times the SUA and overlying ATCAA could be used (Monday-Friday from 7:00 a.m. until 10:00 p.m). These flights would not, however, all be affected by military operations in the proposed ATCAA.

Table D2-10 shows the number of military sorties in the airspace, the hours per year and day and the percent of time the ATCAAs would be in use. Alternative 2 would affect this area's airline traffic for about 39% of the training day, on average, including the Holloman-based F-16 use and the transient use of the proposed airspace.

Table D2-10. Military Usage of Cato, Lobos, Christa, and Kendra ATCAAs under Alternative 2

Metric		Assumptions
Number of Military Sorties	6,050	Includes Holloman F-16 plus transient military
Hours per year	1,512	Assumes 2 aircraft per period for 30 minutes in the airspace
Hours per day	5.8	260 flying days per year
% of training hours affected	39%	15 hours per day from 7:00 a.m. until 10:00 p.m.

Table D2-11 lists the types of aircraft included in the PDARs dataset. The majority are either 737 variants (40%) or Airbus (312/320/321) variants (23%). This mix of aircraft was typical in each alternative evaluated, and is the reason for the assumption that the speed used was 450 KTAS for converting distance to time (see **Section D2.2.3**).

Table D2-11 Aircraft Types Intersecting Proposed ATCAAs under Alternative 2

737-800	18%
737-700	15%
A-320 Prestige	9%
A-321	7%
A-319	7%
Embraer 170	5%
737-900	4%
Challenger 890	3%
757-200	3%
737-300	3%
Eagle	2%
Challenger 870	2%
767-300	1%
MD-83	1%
C-20F Gulfstream 4	1%
750 Citation 10	1%
560XL Citation Excel	1%

Table D2-11 Aircraft Types Intersecting Proposed ATCAAs under Alternative 2 (cont.)	
MD-82	1%
BD-100 Challenger 300	1%
757-300	1%
CL-600 Challenger 650	1%
experimental	1%
C-37 Gulfstream 5	1%
MD-11	1%
777-200	1%
Challenger 800	1%
Others	12%

For this alternative, there were 317 origin airports, and 303 destination airports in the dataset, making possible more than 96,000 origin-destination pairings, a number too large for meaningful individual analysis. The most frequent pairings were used to represent the impacts to the largest number of flights and travelers.

The ten busiest origin-destination airport pairings accounted for about a quarter of all of the filtered flights that occurred during the times when the proposed airspace could be active (Monday-Friday from 7:00 a.m. until 10:00 p.m). The analysis of impacts to airline traffic evaluated routes leaving from the five most common origin airports to each of their five most common destinations (for a total of twenty-five route combinations). Since the return routes would be similar, this analysis actually covers 50 of the most common airport pairings. **Table D2-12** shows these pairings. Each row in the table represents an origin airport and the shaded areas in the rows are the connecting airport (and the return routes would be the opposite). In each cell, the topmost number is the great-circle optimum route length (rounded to nearest nm). Below that is the NAVAID or fix, in this case an airport, used to estimate the re-route (shown as "via" in the table) and the route length adjusted around the proposed ATCAA (which is the sum of two great-circle routes: origin to the fix, and fix to destination), also in nautical miles. The "delta" is the percent difference between the optimum and re-routed route lengths, and finally, the extra minutes required to fly each extended route are given, based on the airspeed assumptions listed in **Section D2.2.3**. Route lengths vary from a few hundred to over 2,000 nm. The average required change in distance is 0.36 %, and the average additional travel time is approximately 34 seconds. The largest deviation required requires less than two additional minutes of flight time.

These small deviations in route length and time are attributable to the large distances to the origin and destination airports, which allow for very small angular (heading) differences to avoid the proposed ATCAAs. Most of the flights in the area would have already routed to avoid the WSMR during the times of concern, and planned flight tracks may have traversed the very edges of the proposed ATCAAs; therefore changing routes requires a relatively tiny correction. For two airport pairings (DFW to LAS and LAS to MMMX) the re-route distance was exactly the same as the optimum route distance – this was a case for routes that passed through the extreme edges of the proposed airspace or where the actual aircraft flight paths flown were not near the optimal route already (such as historical diversions for weather).

Table D2-12. Most Common Commercial Airport Pairings Intersecting Proposed ATCAAs under Alternative 2[1]

Origin	Destination									
PHX	AUS	872	ELP	347	HOU	1020	IAH	1009	SAT	843
	via: SSO	880	via: SSO	351	via: SSO	1028	via: SSO	1018	via: SSO	847
	delta	0.9%	delta	1.2%	delta	0.8%	delta	0.9%	delta	0.5%
	extra minutes	1.07	extra minutes	0.53	extra minutes	1.07	extra minutes	1.20	extra minutes	0.53
LAX	AUS	1242	DFW	2342	IAH	2342	MIA	2342	MSY	1670
	via: SSO	1243	via: SSO	2346	via: SSO	2346	via: SSO	2346	via: SSO	1678
	delta	0.1%	delta	0.2%	delta	0.2%	delta	0.2%	delta	0.5%
	extra minutes	0.13	extra minutes	0.53	extra minutes	0.53	extra minutes	0.53	extra minutes	1.07
LAS	AUS	1090	HOU	1235	IAH	1222	MMMX	1507	SAT	1069
	via: ONM	1095	via: ONM	1238	via: ONM	1223	n/a		via: ONM	1082
	delta	0.5%	delta	0.2%	delta	0.1%	delta	0.0%	delta	1.2%
	extra minutes	0.67	extra minutes	0.40	extra minutes	0.13	extra minutes		extra minutes	1.73
DFW	LAS	1055	ONT	1188	PSP	1126	SAN	1171	SNA	1205
	n/a		via: ONM	1190	via: ONM	1129	via: SSO	1178	via: SSO	1208
	delta	0.0%	delta	0.2%	delta	0.3%	delta	0.6%	delta	0.2%
	extra minutes		extra minutes	0.27	extra minutes	0.40	extra minutes	0.93	extra minutes	0.40
IAH	LAS	1222	LAX	1379	SAN	1303	SFO	1635	SNA	1346
	via: ONM	1223	via: SSO	1382	via: SSO	1303	via: ONM	1636	via: SSO	1348
	delta	0.0%	delta	0.2%	delta	0.0%	delta	0.1%	delta	0.1%
	extra minutes	0.13	extra minutes	0.40	extra minutes	0.00	extra minutes	0.13	extra minutes	0.27

Notes: [1] In each destination airport cell, the topmost number is the great-circle optimum route length (rounded to nearest nm). The row "via" is the estimated re-route distance using a NAVAID or fix (in this case an airport). The "delta" is the percent difference between the optimum and re-routed lengths. The "extra minutes" is the added time to re-route the flight.

Legend: Airport list: AUS – Austin; DFW – Dallas; ELP - El Paso; HOU - Houston-Hobby; IAH - Houston-Bush; LAS - Las Vegas; LAX - Los Angeles; MIA – Miami; MMMX - Mexico City; MSY - New Orleans; ONM – Socorro; ONT - Ontario, CA; PHX – Phoenix; PSP - Palm Springs; SAN - San Diego; SAT - San Antonio; SFO - San Francisco; SNA - John Wayne-Orange County; SSO – San Simon

One specific example considered involves the loss of use of the J-104 route during times that the Lobos ATCAA would be active. This ATS route is used for traffic travelling in the Tuscon area to and from the northwest. For example, PDARS data showed routes from Tucson-Albuquerque 12 times per year, Tucson-Denver 192 times per year, and Tucson-Chicago (Midway) 78 times per year during the times of day when the Lobos ATCAA would potentially be scheduled. Flights to or from locations west of Tucson would typically route nearer Phoenix, and travel to the west and north of the adjacent Outlaw and Jackal MOAs (via ATS routes such as J-18 rather than passing south of those MOAs and using the J-104). Figure D3-2 shows the area between Tucson and the Socorro VORTAC. East out of Tucson, the J-104 goes to San Simon, then direct to Socorro (shown by the green line in the figure. During the times when Lobos ATCAA would be active under the proposed action, aircraft on this route would have to proceed from San Simon to Silver City, then Truth or Consequences, then to Socorro (shown by the blue line in the figure). This adds 12 nautical miles to the distance from Tucson to Socorro. Under the previous assumptions for type aircraft, altitude, and speed, this would add 1.6 minutes to this route segment. For an aircraft travelling between Tucson and Albuquerque, this is a 5% increase. For one travelling between Tucson and Denver, this is a 2% increase, and between Tucson and Midway, it is less than a 1% change. Of note, this new route (in blue) traverses the proposed Christa and Kendra ATCAAs.

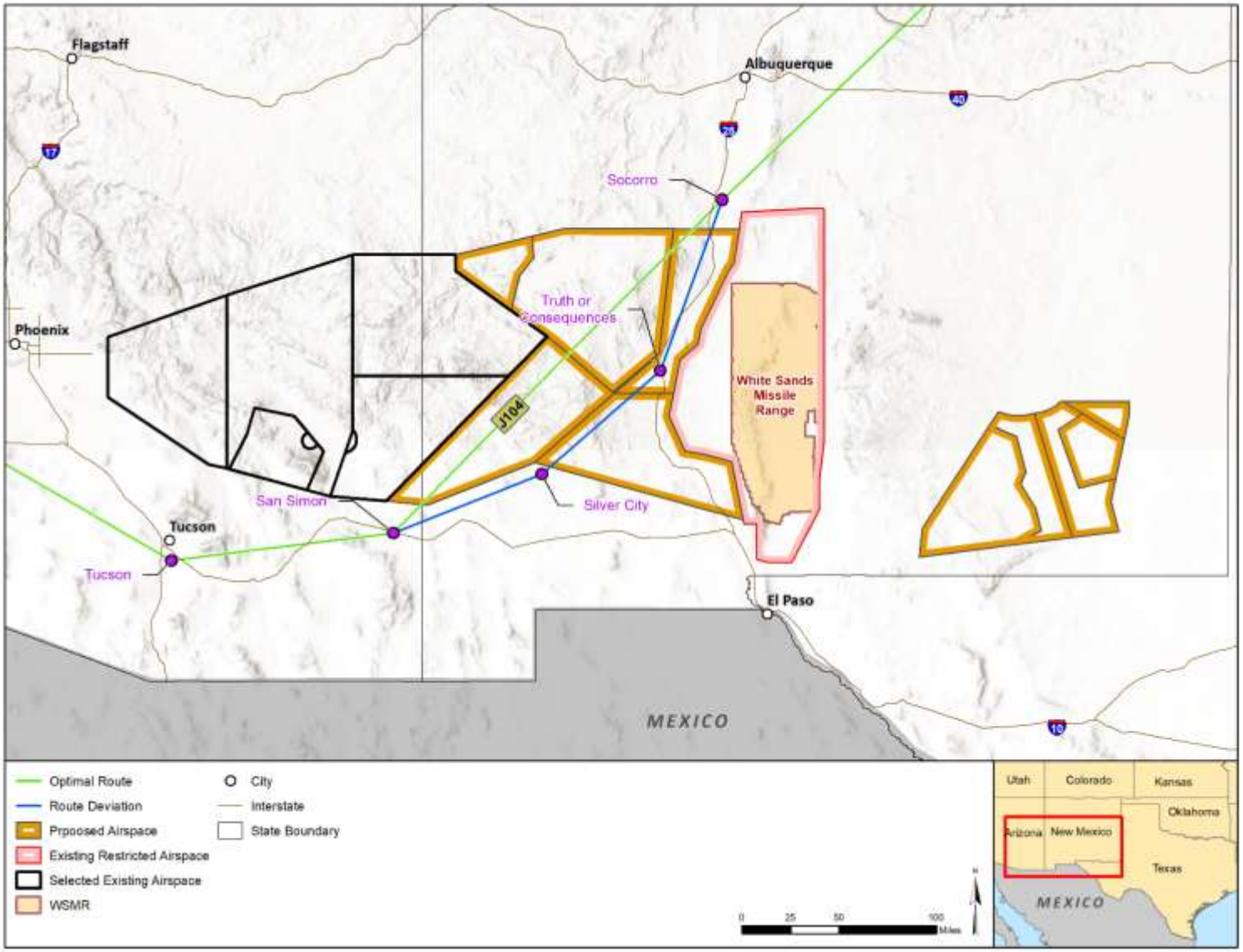

Figure D2-2. Alternative to use of J-104 in Vicinity of Socorro VORTAC

If the Lobos ATCAA was activated along with the Christa and Kendra ATCAAs at all altitudes at the same time, this civil traffic could not re-route in this manner. Since the Christa and Kendra ATCAAs are intended as "bridges" to connect the Cato and Lobos airspace with the WSMR airspace, it is evident that procedures would have to be in place (in the LOA that establishes the ATCAAs) to allow certain altitude blocks to remain clear for civil traffic. It is here assumed that such an agreement can be reached. One example possibility would be to activate the Christa and Kendra ATCAAs from FL180 to FL290 when the Lobos ATCAA is active, leaving the Class A airspace at FL300 and above for use by commercial airlines.

D2.4.2 MOA Traffic

The Lobos MOA and new portion of the Smitty and Cato MOAs occupy airspace from 500 feet AGL up to 13,500 feet MSL (Lobos Low and Smitty MOAs) and from 13,500 feet MSL up to 18,000 feet MSL (Lobos High and Cato MOAs). There would be a low military demand for the low MOA airspace and few sorties would occur in the Smitty and Lobos Low MOAs. The projected military sorties (both from Holloman AFB F-16 and other transient military use), the estimated number of hours per year and day, and percent of time military activity would occur are presented in **Table D2-13**. For Alternative 2, military activity in the Lobos Low MOA would occur only 5% of the time Monday-Friday from 7:00 a.m. until 10:00 p.m., less than one hour per day. The Smitty MOA would be active 20% of those hours, or approximately 3 hours per day.

Table D2-13. Proposed Military Usage of Lobos Low and Smitty MOAs under Alternative 2

Metric	Lobos Low MOA	Smitty MOA	Assumptions
Number of Military Sorties	770	3190	Includes Holloman F-16 plus transient military
Hours per year	193	798	Assumes 2 aircraft per period for 30 minutes in the airspace
Hours per day	0.7	3.1	260 flying days per year
% of hours affected	5%	20%	15 hours per day from 7:00 a.m. until 10:00 p.m.

For the Lobos High and Cato MOAs, the sortie counts are projected to be similar to those for the ATCAAs (See **Section D2.4.1**). **Table D2-14** shows the total anticipated military sorties, hours per year and per day the airspace would be active, and the percent of time the airspace would be active. The Lobos High and Cato MOAs would be active approximately 39% of the time Monday-Friday from 7:00 a.m. until 10:00 p.m. The proposed Lobos High and Cato MOAs would be activated and used together, so the proposed sorties apply to the total high airspace.

Table D2-14. Proposed Military Usage of Lobos High and Cato MOAs under Alternative 2

Metric		Assumptions
Number of Military Sorties	6,050	Includes Holloman F-16 plus transient military
Hours per year	1,512	Assumes 2 aircraft per period for 30 minutes in the airspace
Hours per day	5.8	260 flying days per year
% of hours affected	39%	15 hours per day from 7:00 a.m. until 10:00 p.m.

PDARS data for the proposed Lobos, Cato, and Smitty MOAs for flights during the time period (Monday-Friday from 7:00 a.m. until 10:00 p.m.) when the MOAs could be active, show about 3,000

flights annually in both the low and high blocks. **Table D2-15** shows the type of civil aircraft represented in the PDARS data.

The types of aircraft historically present in the area would largely not operate in conflict with the high MOAs (above 13,500 feet MSL) as many are unpressurized and would typically not have onboard oxygen. Therefore, the following analysis for the proposed MOAs assumes that the vast majority of the existing civil air traffic would use the low MOAs (Smitty and Lobos Low) instead of the high MOAs (Lobos High and Cato), but both are analyzed.

Table D2-15 Aircraft Types Intersecting Proposed Lobos, Cato, and Smitty MOAs under Alternative 2

Eagle	57%
200 Super King Air	3%
Cessna 182	2%
Chieftain	2%
SR-22	2%
Cessna 206	2%
Cessna 210	2%
A36 Bonanza 36	2%
Cessna 172	2%
35 Bonanza	1%
90 (A90) King Air	1%
Archer 2	1%
Cherokee Six	1%
58 Baron	1%
55 Baron	1%
Commander 200	1%
Comanche	1%
Cessna 310	1%
425 Conquest 1	1%
M-20	1%
Malibu	1%
experimental	1%
TBM-850	1%
300 (B300) Super King Air 350	1%
33 Bonanza	1%
Cessna 340	1%
Cessna 421	1%
69 other aircraft	10%

Well over two-thirds of the aircraft identified in PDARS data would operate in the low MOAs using either VFR or IFR. The VFR traffic would not be restricted from operating as they do now. For pilots

operating under VFR who wish to avoid the proposed MOA airspace, flights could be conducted along routes similar to those discussed below for IFR.

The most common airport pairings represented in the PDARS data are listed in **Table D2-16**. A large majority of them are between Grant County (SVC) and Albuquerque (ABQ). Some of these pairings are already required to account for existing MOAs (Cato/Smitty/Morenci/Reserve) on routes such as from Albuquerque to Tucson (TUS). The vast majority of traffic through this corridor is between Grant County (SVC) and Albuquerque (ABQ). The other pairings would have a similar path as the Grant County and Albuquerque flights when transiting through this area.

Table D2-16. Most Common Civil Airport Pairings in Proposed Lobos, Cato, and Smitty MOAs under Alternative 2

Origin	Destination	number per year	number per week
ABQ	SVC	669	12.9
SVC	ABQ	591	11.4
SVC	PHX	192	3.7
PHX	SVC	186	3.6
PHX	ELP	24	0.5
ABQ	TUS	18	0.3
94E	ABQ	15	0.3
TUS	ABQ	15	0.3
ELP	SDL	12	0.2

Legend: 94E - Whiskey Creek; ABQ – Albuquerque; ELP - El Paso; PHX – Phoenix; SDL – Scottsdale; SVC - Grant County; TUS - Tucson

The straight-line distance from Grant County to Albuquerque is 163 nm. This flight track would traverse the proposed Lobos Low MOA and the proposed Smitty MOA, but would require flying over terrain that is in excess of 10,000 feet MSL. To better estimate the realistic existing route distance, the flight track length was calculated from origin airport, Grant County or Whiskey Creek, and proceeding roughly east past the higher terrain of the Mimbres Mountains, then roughly proceeding north along the Rio Grande River Valley to Albuquerque. That distance is approximately 175 nm. The reason for this routing is that most of the civil aircraft operating in the area based on the PDARS dataset would be unable to operate at higher altitudes (above the mountain ranges) due to lack of oxygen and pressurization.

Under Alternative 2, an IFR aircraft that could operate above 13,000 feet MSL, proceeding from Grant County to Albuquerque, could route approximately 179 nm using the following NAVAIDS or fixes: SVC-V202-TCS-V611-ABQ-KABQ. This is a flight routing going Grant County, then Victor Airway 202 to Truth or Consequences, then Victor Airway 611 to the Albuquerque VORTAC navigational aid, then to the Albuquerque airport.

For those aircraft that cannot operate at or above 13,000 feet MSL (the overwhelming majority of the aircraft listed in **Table D2-17**), a probable IFR routing to avoid the highest terrain would be approximately 194 nm using the following NAVAIDS or fixes: SVC-WUMEX-V110-TCS-V611-ABQ-KABQ. This is a flight routing going Grant County then direct to navigational fix WUMEX, then Victor Airway 110 to Truth or Consequences, then Victor Airway 611 to the Albuquerque VORTAC navigational aid, then to the Albuquerque airport.

For aircraft arriving and departing from Grant County (SVC), the airport is located outside the proposed Lobos Low MOA. Approximately 6nm northwest of SVC, there is a small sliver of the proposed Lobos Low MOA that would go below the reduced altitude floor (700 feet AGL) of the Class E airspace associated with SVC. None of the 4 published instrument approaches, nor the published instrument departure from SVC use this airspace. Further, only one of the approaches intersects the proposed Lobos Low MOA – the RNAV(GPS) RWY 8 approach begins outside the proposed Lobos Low MOA, and goes into it, then back out of it during the approach. In the case that this Lobos Low MOA was active, IFR traffic to SVC could use the VOR A approach. If the VOR A approach was inadequate due to its higher Minimum Descent Altitude (MDA), which is 500 feet AGL vice 300 feet AGL for the RNAV(GPS) RWY 8, the USAF would not be able to use the proposed Lobos Low MOA in that vicinity, since their low altitude training in mountainous areas such as this would require clear air. Under Alternative 2, the Lobos Low MOA would be active for an average of 0.7 hours per day for 260 days of the year. When active, the VOR A is a reasonable alternative.

IFR traffic from outside the area, passing through the gap between the proposed Lobos/Cato/Smitty and the existing WSMR airspace would not be able to use Victor Airway 202 between San Simon (SSO) and Truth or Consequences (TCS) during the time the MOAs were active approximately 32% of the time (Monday-Friday from 7:00 a.m. until 10:00 p.m.). Instead, this traffic would have to route via Deming (DMN), via Victor Airway 94 and Victor Airway 110, a change from 119 to 147 nm, or a difference of 28 nm. At 150 KTAS, that re-route would take approximately 11 minutes. At 250 KTAS, the re-route would add a little under 7 minutes. However, a very small number of flights would require this re-routing. There were so few in the PDARS data that none made the list at a level of even once every 5 weeks (see **Table D2-16**). Any traffic through the area during times when the SUA is not active (approximately 68% of the time), there would be no change to routing or flight time. For aircraft operating under VFR, there would be no change required, as VFR traffic would be free to follow the same tracks they do currently.

To summarize, existing traffic in the area is mostly light aircraft, which must operate at lower altitudes. This altitude restriction prevents them from taking a straight-line route, requiring a diversion around high mountains, and then east toward the Rio Grande Valley. This routing directs most existing traffic around the proposed Lobos and reconfigured Cato/Smitty MOAs. For the IFR traffic with the capability to fly directly between airports, the longest re-routing would result in a delay of less than 7 minutes.

D2.4.3 Alternative 3 - Talon, Smitty/Cato, Lobos MOAs and Talon, Cato, Lobos, Kendra, Christa ATCAAs

Alternative 3 is a combination of Alternatives 1 and 2, with the same number of total operations spread out over the areas east (Talon MOAs/ATCAAs) and west (Lobos/Cato/Smitty MOAs, Lobos/Cato/Christa/Kendra ATCAAs) of Holloman AFB. The following sections describe the differences that result from reducing the use of all the individual airspace blocks and the reduced impacts to airspace use as compared to Alternatives 1 and 2.

D2.4.3.1 Eastern Areas

ATCAAs

Under Alternative 3, the ATCAA use in the Talon A/B ATCAAs would mirror the use of the Talon A/B ATCAAs under Alternative 1. Under Alternative 3, there would be no Talon C ATCAA. Alternative 3 would see the usage of the Talon A/B ATCAAs drop from 59% to 40% of the time (Monday-Friday from

7:00 a.m. until 10:00 p.m.) when compared to Alternative 1 (see **Table D2-1**). During that active time, the impacts to civil aviation (nearly all airliners) would be minimal. The routes dominating the PDARS data averaged an increase in distance of about a quarter of one percent, and added extra flight time of less than a half a minute. Very few of these routes would require significant navigational changes.

MOAs

Under Alternative 3, the proposed Talon High C MOA would not be established, and the use of the Talon High and Low A/B MOAs would be less than that proposed for Alternative 2. The impacts to civil aviation would be similar to those described for Alternative 1 for any aircraft affected by activation of the MOAs with the following exceptions: the Talon High C impacts shown in **Table D2-9** would not occur at all, and all the other impacts would happen less often than projected for Alternative 1. The Talon Low A/B impacts would be applicable for about 17% of the time (between Monday-Friday from 7:00 a.m. until 10:00 p.m.) under Alternative 1 and only 12% of the time under Alternative 3. The largest of these impacts would affect IFR traffic into and out of Artesia and Cavern City, which would have to be routed around the Talon Low B while active, as shown in **Section 3.3.2.1** of this Appendix. Under Alternative 3, this would happen about a third less often than it would under Alternative 1.

The Talon High A/B MOAs would be created the same as under Alternative 1. The impacts to individual civil aircraft under Alternative 3 would be similar to that described for Alternative 1, but impacts would occur less frequently. The Talon High A/B MOAs would operate 39% of the time under Alternative 3 (Monday-Friday from 7:00 a.m. until 10:00 p.m.), whereas under Alternative 1, they would be operating for 59% of the same time period. Alternative 3 is a 30% reduction from Alternative 1.

D2.4.3.2 Western Area

ATCAAs

Under Alternative 3, the proposed western ATCAAs (Lobos, Cato, Christa, and Kendra) would be active much less than under Alternative 2. The time of use would drop from 39% to 15% of the time between Monday-Friday from 7:00 a.m. until 10:00 p.m., for a 60% reduction, compared to Alternative 2. The impacts to the majority of the civil traffic (at these altitudes, nearly all airliners) would be very minimal. As described in **Section D3.4.1**, there would be less than average of 1% change in distance, and a time change of less than a minute. These small numbers reflect the fact that during the SUA operating hours, most air traffic already routes to avoid the WSMR.

MOAs

Under Alternative 3, the Lobos Low MOA would not be established, so the airspace below 13,500 feet MSL beneath the Lobos High MOA would be normal Class E/G airspace. The impacts described in **Section D3.4.2** resulting from the establishment of the Lobos Low MOA would not occur. Air traffic operating below 13,500 feet MSL in and out of Grant County and Whiskey Creek airports would be unaffected. The routing between Grant County and Albuquerque would still be potentially impacted by the activation of the Smitty MOA, with the caveats listed in **Section D3.4.2**. But whereas under Alternative 2, the Smitty MOA would be active for an average of approximately 3 hours per day, under Alternative 3, it would be reduced to just over one hour per day. Most aircraft operating between these airports would likely route to the east around the Mimbres Mountains and then north up the Rio Grande River Valley, rather than attempt to fly over the high mountainous terrain. Therefore, this alternative

would have little to no impact on this traffic. Alternative 3 would reduce the proposed Smitty MOA activity by more than half compared to Alternative 2.

Civil traffic operating between 13,500 feet and 18,000 feet MSL, in the high MOAs could be affected. IFR traffic would go around as described in **Section D3.4.2**, albeit at a reduced rate. While Alternative 2 would have the high MOAs active about 39% of the time, under Alternative 3, that figure drops to 15% of the time (Monday-Friday from 7:00 a.m. until 10:00 p.m.). The impacts to individual aircraft operating at those altitudes would be similar, but would happen much less often.

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APPENDIX E
SPECIAL STATUS SPECIES

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Special-Status Species Potentially Under Proposed Airspace						
Common Name	**Scientific Name**	**Federal Status**	**New Mexico State Status**	**Arizona State Status**	**Potentially occurs under the Proposed Talon MOA[1]**	**Potentially occurs under the Proposed Cato, Smitty and Lobos MOAs[1]**
Birds						
Abert's towhee	*Melozone aberti*	-	T	SGCN	-	X
Arizona Bell's vireo	*Vireo bellii arizonae*	-	-	SGCN	-	X
American bittern	*Botaurus lentiginosus*	-	-	SGCN	-	X
Arizona Boterri's sparrow	*Peucaea botterii arizonae*	-	-	SGCN	-	X
Arizona grasshopper sparrow	*Ammodramus savannarum ammolegus*	-	E	-	-	X
Arctic peregrine falcon	*Falco peregrinus tundrius*	-	T	-	X	X
Baird's sparrow	*Ammondramus bairdii*	-	T	-	X	X
Bald eagle	*Haliaeetus leucocephalus*	-	T	SGCN	X	X
Bell's vireo	*Vireo bellii*	-	T	-	X	X
Blue-throated hummingbird	*Lampornis clemenciae*	-	-	SGCN	-	X
Broad-billed hummingbird	*Cynanthus latirostris*	-	T	SGCN	X	X
Brown pelican	*Pelecanus occidentalis*	-	E	-	X	X
Buff-collared nightjar	*Antrostomus ridgwayi*	-	E	-	-	X
Common black hawk	*Buteogallus anthracinus*	-	T	-	X	X
Common ground dove	*Columbina passerine*	-	E	-	X	X
Costa's hummingbird	*Calypte costae*	-	T	-	-	X
Dusky-capped flycatcher	*Myiarchus tuberculifer*	-	-	SGCN	-	X
Elegant Trogon	*Trogon elegans*	-	E	SGCN	X	X
Evening grosbeak	*Coccothraustes vespertinus*	-	-	SGCN	-	X
Ferruginous hawk	*Buteo regalis*	-	-	SGCN	-	X
Gila woodpecker	*Melanerpes uropygialis*	-	T	SGCN	-	X
Golden eagle	*Aquila chrysaetos*	-	-	SGCN	-	X
Gould's wild turkey	*Melagris gallopavo Mexicana*	-	T	-	-	X
Gray vireo	*Vireo vicinior*	-	T	-	X	X
Interior Least Tern	*Sterna antillarum*	E	E	-	X	X
Lincoln's sparrow	*Melospiza lincolnii*	-	-	SGCN	-	X
Lucifer hummingbird	*Calothorax lucifer*	-	T	-	X	X
Mexican spotted owl	*Strix occidentalis lucida*	T	-	SGCN	X	X
Mountain pygmy owl	*Glaucidium gnoma gnoma*	-	-	SGCN	-	X
Neotropic cormorant	*Phalacrocorax brasilianus*	-	T	-	X	X

Special-Status Species Potentially Under Proposed Airspace						
Common Name	**Scientific Name**	**Federal Status**	**New Mexico State Status**	**Arizona State Status**	**Potentially occurs under the Proposed Talon MOA[1]**	**Potentially occurs under the Proposed Cato, Smitty and Lobos MOAs[1]**
Northern Aplomado falcon	*Falco femoralis septentrionalis*	EX/NE	E	SGCN	X	X
Northern beardless-tyrannulet	*Camptostoma imberbe*	-	E	-	X	X
Northern goshawk	*Accipiter gentilis*	-	-	SGCN	-	X
Pacific wren	*Troglodytes pacificus*	-	-	SGCN	-	X
Peregrine falcon	*Falco peregrinus*	-	T	SGCN	X	X
Piping plover	*Charadrius melodus*	T	T	-	X	X
Rivoli's hummingbird	*Eugenes fulgens*	-	-	SGCN	-	X
Savannah sparrow	*Passerculus sandwichensis*	-	-	SGCN	-	X
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	E	SGCN	X	X
Sprague's pipit	*Anthus spragueii*	-	-	SGCN	-	X
Sulfur-bellied flycatcher	*Myiodynastes luteiventris*	-	-	SGCN	-	X
Thick-billed kingbird	*Tyrannus crassirostris*	-	E	SGCN	X	X
Varied bunting	*Passerina versicolor*	-	T	-	X	X
Violet-crowned hummingbird	*Amazilia violiceps*	-	T	SGCN	-	X
Western burrowing owl	*Athene cunicularia hypugaea*	-	-	SGCN	-	-
Western grasshopper sparrow	*Ammodramus savannarum perpallidus*	-	-	SGCN	-	X
Whiskered screech-owl	*Megascops trichopsis*	-	T	-	-	X
White-eared hummingbird	*Hylocharis leucotis*	-	T	-	X	X
Wood duck	*Aix sponsa*	-	-	SGCN	-	X
Yellow-billed cuckoo	*Coccyzus americanus*	T	-	SGCN	X	X
Yellow-eyed junco	*Junco phaeonotus*	-	T	-	X	X
Amphibians and Reptiles						
Arid land ribbonsnake	*Thamnophis proximus*	-	T	-	X	-
Arizona striped whiptail	*Aspidoscelis arizonae*	-	-	SGCN	-	X
Arizona toad	*Anaxyrus microscaphus*	-	-	SGCN	-	X
Chiricahua leopard frog	*Rana chiricahuensis*	T	-	SGCN	-	X
Desert box turtle	*Terrapene ornate luteola*	-	-	SGCN	-	X
Dunes sagebrush lizard	*Sceloporus arenicolus*	-	E	-	X	-

Special-Status Species Potentially Under Proposed Airspace						
Common Name	**Scientific Name**	**Federal Status**	**New Mexico State Status**	**Arizona State Status**	**Potentially occurs under the Proposed Talon MOA[1]**	**Potentially occurs under the Proposed Cato, Smitty and Lobos MOAs[1]**
Giant spotted whiptail	*Aspidoscelis stictogramma*	-	T	SGCN	-	X
Gray-banded kingsnake	*Lampropeltis alterna*	-	E	-	X	-
Gray-checkered whiptail	*Aspidoscelis dixoni*	-	E	-	-	X
Great plains narrowmouth toad	*Gastrophryne olivacea*	-	E	-	X	-
Green rat snake	*Senticolis triaspis*	-	T	-	-	X
Lowland leopard frog	*Lithobates yavapaiensis*	-	E	SGCN	-	X
Mottled rock rattlesnake	*Crotalus lepidus lepidus*	-	T	-	X	-
Mountain skink	*Plestiodon callicephalus*	-	T	-	-	X
Narrow-headed gartersnake	*Thamnophis rufipunctatus*	T	T	SGCN	-	X
New Mexican ridge-nosed rattlesnake	*Crotalus willardi obscurus*	T	E	-	-	X
Northern Mexican gartersnake	*Thamnophis eques megalops*	T	E	SGCN	-	X
Northern leopard frog	*Lithobates pipiens*	-	-	SGCN	-	X
Plain-bellied water snake	*Nerodia erythrogaster*	-	E	-	X	-
Reticulate Gila monster	*Heolderma suspectrum suspectum*	-	E	-	-	-
Sacramento mountain salamander	*Aneides hardii*	-	T	-	X	-
Slevin's bunchgrass lizard	*Sceloporus slevini*	-	T	-	-	-
Sonoran desert toad	*Incilius alvarius*	-	T	SGCN	-	X
Sonoran desert tortoise	*Gopherus morafkai*	-	-	SGCN	-	X
Twin-spotted rattlesnake	*Crotalus pricei*	-	-	SGCN	-	X
Western river cooter	*Pseudemys gorzugi*	-	T	-	X	X
Yellow mud turtle	*Kinosternon flavescens*	-	-	SGCN	-	X
Mammals						
Antelope jackrabbit	*Lepus alleni*	-	-	SGCN	-	X
Arizona montane vole	*Microtus montanus arizonensis*	-	E	SGCN	-	X
Arizona myotis	*Myotis occultus*	-	-	SGCN	-	X
Arizona shrew	*Sorex arizonae*	-	E	-	-	X

Special-Status Species Potentially Under Proposed Airspace						
Common Name	**Scientific Name**	**Federal Status**	**New Mexico State Status**	**Arizona State Status**	**Potentially occurs under the Proposed Talon MOA[1]**	**Potentially occurs under the Proposed Cato, Smitty and Lobos MOAs[1]**
Brazilian free-tailed bat	*Tadarida brasiliensis*	-	-	SGCN	-	X
California leaf-nosed bat	*Macrotus californicus*	-	-	SGCN	-	X
Cave myotis	*Myotis velifer*	-	-	SGCN	-	X
Gray Wolf	*Canis lupus*	PEX/NE	-	-	-	X
Greater western bonneted bat	*Eumops perotis californicus*	-	-	SGCN	-	X
Jaguar	*Panthera onca*	E	-	-	-	X
Least shrew	*Cryptotis parva*	-	T	-	X	-
Lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	-	-	SGCN	-	X
Mexican long-nosed bat	*Leptonycteris nivalis*	E	E	-	-	X
Mexican wolf	*Canis lupus baileyi*	EX/NE	E	SGCN	-	X
New Mexico meadow jumping mouse	*Zapus hudsonius luteus*	E	E	SGCN	X	X
Mt Graham red squirrel	*Tamiasciurus hudsonicus grahamensis*	-	-	SGCN	-	X
Oscura mountains Colorado chipmunk	*Tamias quadrivittatus oscuraensis*	-	T	-	-	X
Pale Townsend's big-eared bat	*Corynorhinus townsendii pallescens*	-	-	SGCN	-	X
Penasco least chipmunk	*Tamias minimus atristriatus*	C	E	-	X	-
Pocket free-tailed bat	*Nyctinomops macrotis*	-	-	SGCN	-	X
Southern pocket gopher	*Thomonmys umbrinus*	-	T	-	-	X
Spotted bat	*Euderma maculatum*	-	T	-	X	X
Western red bat	*Lasiurus blossevillii*	-	-	SGCN	-	X
Western yellow bat	*Lasiurus xanthinus*	-	T	SGCN	-	X
White-bellied long-tailed vole	*Microtus longicaudus leucophaeus*	-	-	SGCN	-	X
White-sided jackrabbit	*Lepus callotis*	-	T	-	-	X
Yuma myotis	*Myotis yumanensis*	-	-	SGCN	-	X
Fish						
Apache trout	*Oncorhynchus apache*	-	-	SGCN	-	X
Beautiful shiner	*Cyprinella Formosa*	T	T	-	-	X
Bigscale logperch	*Percina macrolepida*	-	T	-	X	-
Blue sucker	*Cycleptus elongates*	-	E	-	X	-
Chihuahua chub	*Gila nigrescens*	T	E	-	-	X
Desert pupfish	*Cyprinodon macularius*	-	-	SGCN	-	X

Special-Status Species Potentially Under Proposed Airspace						
Common Name	**Scientific Name**	**Federal Status**	**New Mexico State Status**	**Arizona State Status**	**Potentially occurs under the Proposed Talon MOA[1]**	**Potentially occurs under the Proposed Cato, Smitty and Lobos MOAs[1]**
Desert sucker	*Catostomus clarkia*	-	-	SGCN	-	X
Gila chub	*Gila intermedia*	E	E	SGCN	-	X
Gila longfin dace	*Agosia chrysogaster chrysogaster*	-	-	SGCN	-	X
Gila topminnow	*Poeciliopsis occiendentalis*	E	T	SGCN	-	X
Gila trout	*Oncorhynchus gilae*	T	T	SGCN	-	X
Gray redhorse	*Moxostoma congestum*	-	E	-	X	-
Greenthroat darter	*Etheostoma lepidum*	-	T	-	X	-
Headwater chub	*Gila nigra*	PT	E	-	-	X
Loach minnow	*Tiaroga cobitis*	E	E	SGCN	-	X
Mexican tetra	*Mexican tetra*	-	T	-	X	-
Pecos bluntnose shiner	*Notropis simus pecosensis*	T	E	-	X	-
Pecos gambusia	*Gambusia nobilis*	E	E	-	X	-
Pecos pupfish	*Cyprinodon pecosensis*	-	T	-	X	-
Razorback sucker	*Xyrauchen texanus*	E	-	SGCN	-	X
Rio Grande silvery minnow	*Hybognathus amarus*	E	E	-	-	X
Roundtail chub	*Gila robusta*	PT	E	SGCN	-	X
Sonora sucker	*Catostomus insignis*	-	-	SGCN	-	X
Speckled dace	*Rhinichthys osculus*	-	-	SGCN	-	X
Spikedace	*Meda fulgida*	E	E	SGCN	-	X
Suckermouth minnow	*Phenacobius mirabilis*	-	T	-	X	-
White sands pupfish	*Cyprinodon Tularosa*	-	T	-	X	X
Woundfin	*Plagopterus argentissiumus*	EX/NE	-	-	-	X
Invertebrates						
Alamosa springsnail	*Tyronia alamosae*	E	E	-	-	X
Bylas springsnail	*Pyrgulopsis arizonae*	-	-	SGCN	-	X
California floater	*Anodonta californiensis*	-	-	SGCN	-	X
Chupadera springsnail	*Pyrgulopsis chupaderae*	E	E	-	-	X
Clark Peak talussnail	*Sonorella christenseni*	-	-	SGCN	-	X
Gila springsnail	*Pyrgulopsis gilae*	-	T	-	-	X
Gila tryonia	*Tryonia gilae*	-	-	SGCN	-	X
Hacheta grande woodlandsnail	*Ashmunella hebardi*	-	T	-	-	X
Koster's springsnail	*Juturnia kosteri*	E	E	-	X	-
Mimic talussnail	*Sonorella imitator*	-	-	SGCN	-	X
Mineral creek moutainsnail	*Oreohelix pilsryi*	-	T	-		X
New Mexico hot springsnail	*Pyrgulopsis thermalis*	-	T	-	-	X
Noel's amphipod	*Gammarus desperatus*	E	E	-	X	-

Special-Status Species Potentially Under Proposed Airspace						
Common Name	**Scientific Name**	**Federal Status**	**New Mexico State Status**	**Arizona State Status**	**Potentially occurs under the Proposed Talon MOA[1]**	**Potentially occurs under the Proposed Cato, Smitty and Lobos MOAs[1]**
Ovate vertigo snail	*Vertigo ovata*	-	T	-	X	-
Pecos assiminea snail	*Assiminea pecos*	E	E	-	X	-
Pecos springsnail	*Pyrgulopsis pecosensis*	-	T	-	X	-
Pinaleno mountainsnail	*Oreohelix grahamensis*	-	-	SGCN	-	X
Pinaleno talussnail	*Sonorella grahamensis*	-	-	SGCN	-	X
Roswell springsnail	*Pyrgulopsis roswellensis*	E	E	-	X	-
Shortneck snaggletooth snail	*Gastrocopta dalliana*	-	T	-	-	X
Socorro isopod	*Thermosphaeroma thermophiles*	E	E	-	-	X
Socorro springsnail	*Pyrgulopsis neomexicana*	E	E	-	-	X
Texas hornshell	*Popenaias popeii*	PE	E	-	X	-
Wet Canyon talussnail	*Sonorella macrophallus*	-	-	SGCN	-	X
Wrinkled marshsnail	*Stagnicola caperata*	-	E	-	X	-
Plants						
Chihuahua scurfpea	*Pediomelum pentaphyllum*	-	E	-	-	X
Crested coralroot	*Hexalectris spicata*	-	E	-	X	X
Duncan's pincushion cactus	*Escobaria duncanii*	-	E	-	-	-
Golden lady's slipper	*Cypripedium parviflorum var. pubescens*	-	E	-	-	X
Goodding's onion	*Allium gooddingii*	-	E	-	-	X
Gypsum scalebroom	*Lepidospartum burgessii*	-	E	-	X	-
Gypsum wild-buckwheat	*Eriogonum gypsophilum*	T	E	-	X	-
Hess' fleabane	*Erigeron hessii*	-	E	-	-	X
Kuenzler hedgehog cactus	*Echinocereus fendleri var. kuenzleri*	E	E	-	X	-
Lee pincushion cactus	*Coryphantha sneedii var. leei*	T	E	-	X	-
Night-blooming cereus	*Peniocereus greggii*	-	E	-	-	X
Parish's alkali grass	*Puccinellia parishii*	-	E	-	-	X
Pecos sunflower	*Helianthus paradoxus*	T	E	-	X	X
Sacramento mountains thistle	*Cirsium cinaceum*	T	E	-	X	-
Sacramento prickly poppy	*Argemone pleiacantha spp. pinnatisecta*	E	E	-	X	-
Sand prickly pear	*Opuntia arenaria*	-	E	-	-	X
Schneer's pincushion cactus	*Coryphantha scheeri var. scheeri*	-	E	-	X	X
Shining coralroot	*Hexalectris nitida*	-	E	-	X	-

Special-Status Species Potentially Under Proposed Airspace						
Common Name	**Scientific Name**	**Federal Status**	**New Mexico State Status**	**Arizona State Status**	**Potentially occurs under the Proposed Talon MOA[1]**	**Potentially occurs under the Proposed Cato, Smitty and Lobos MOAs[1]**
Slender spiderflower	*Periotma multicaulis*	-	E	-	-	X
Sneed's pincushion cactus	*Coryphantha sneedii var. sneedii*	E	E	-	X	-
Tharp's bluestar	*Amsonia tharpii*	-	E	-	X	-
Todsen's pennyroyal	*Hedeoma todsenii*	E	E	-	X	X
Villard's pinchusion cactus	*Escobaria villardii*	-	E	-	X	-
Wilcox pincushion cactus	*Mammillaria wrigthtii var. wilcoxii*	-	E	-	-	X
Wood lily	*Lilium philadelphicum*	-	E	-	X	-
Wright's marsh thistle	*Cirsium wrightii*	C	E	-	X	X
Zuni fleabane	*Erigeron rhizomatus*	T	E	-	-	X

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APPENDIX F
NOISE ANALYSIS FOR SPECIAL USE AIRSPACE OPTIMIZATION AT HOLLOMAN AIR FORCE BASE ENVIRONMENTAL IMPACT STATEMENT

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ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
ANSI	American National Standards Institute
ATCAA	Air Traffic Control Assigned Airspace
CDNL	C-weighted Day-Night Average Sound Level
dB	decibel
dBA	A-weighted decibel
DNL	Day-Night Average Sound Level
DNWG	Department of Defense Noise Working Group
DoD	Department of Defense
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
FICON	Federal Interagency Committee on Noise
FL	Flight Level
L_{dnmr}	Onset Rate Adjusted Day-Night Average Sound Level
L_{max}	Maximum Sound Level
MOA	Military Operations Area
MRNmap	Military Operating Area and Range Noise Model
MTR	military training route
MSL	mean sea level
POI	Point of Interest
SEL	sound exposure level
SUA	Special Use Airspace
U.S.	United States
WSMR	White Sands Missile Range

1.0 INTRODUCTION

1.1 BACKGROUND

The United States (U.S.) Air Force proposes to optimize the Special Use Airspace (SUA) available for current and anticipated future pilot training at Holloman Air Force Base (AFB). Much of the SUA used by pilots assigned to Holloman AFB was developed for legacy aircraft more than 30 years ago. As such, it does not have the optimum volume or attributes needed to meet the training requirements of pilots flying modern aircraft. Reconfiguring existing airspace and establishing new airspace would improve the availability of suitable training airspace for pilots stationed at Holloman AFB.

This noise study supports the *Environmental Impact Statement for Special Use Airspace Optimization at Holloman Air Force Base*. Holloman AFB is located in southern New Mexico, six miles west of the city of Alamogordo (**Figure 1.1-1**). Holloman AFB's current mission is to train F-16 pilots. F-16 pilot training requires both air-to-air and air-to-ground training, and each pilot must fly multiple sorties (a sortie is the flight of a single aircraft consisting of a takeoff, mission, and landing). Each training sortie flown is conducted to meet a specific training requirement. The particular training requirement can only be accomplished in airspace that has appropriate area, altitudes, proximity to the base, and attributes (such as ability to use defensive countermeasures or certain types of munitions). Consequently, the features of available airspace determine which training sorties can occur. Air-to-air training activities normally take place in a Military Operations Area (MOA) with an overlying Air Traffic Control Assigned Airspace (ATCAA) requested as needed to expand the MOA's altitude. Air-to-ground training activities that include the release of live ordnance are considered hazardous to non-participating aircraft and must be performed in a restricted area associated with a military training range. Some training activities require a combination of MOA and restricted areas. A range of restricted areas and MOAs in the vicinity of Holloman AFB are currently available for F-16 pilot training (**Table 1.1-1** and **Figure 1.1-2**). The available MOAs are scheduled by Holloman, Cannon, and Kirtland AFBs. The available restricted areas are associated with U.S. Army ranges scheduled by White Sands Missile Range (WSMR) and Fort Bliss.

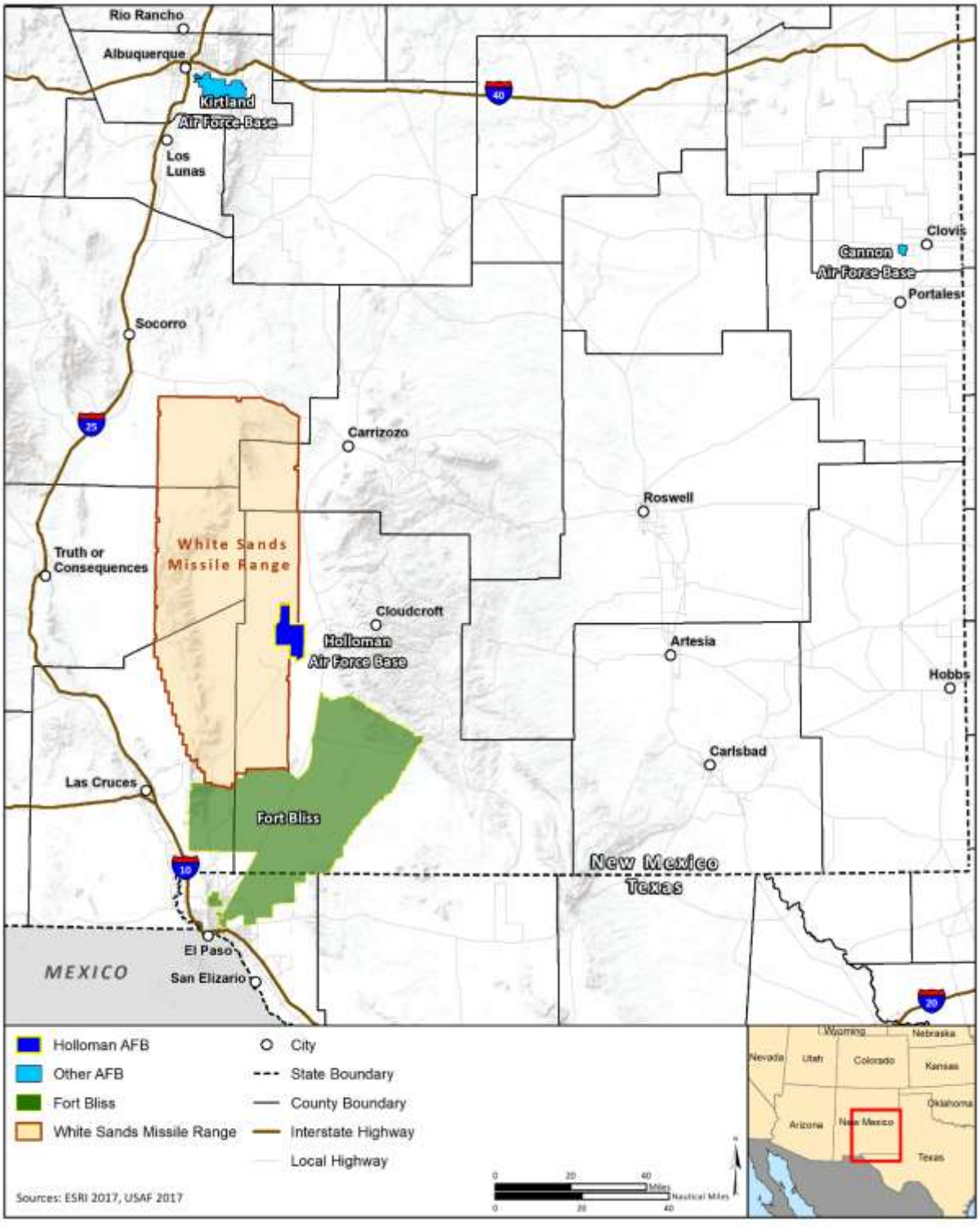

Figure 1.1-1. Location of Holloman Air Force Base

Table 1.1-1. Airspace Currently Available for F-16 Pilot Training		
Airspace	**Scheduled By**	**Annual F-16 Pilot Training Sorties[1]**
Restricted Areas		
R5107 and R5111	WSMR	4,962
R5103	Fort Bliss	611
R5107	Fort Bliss	0
MOAs (with associated ATCAAs)		
Beak	Holloman AFB	2,569
Bronco	Cannon AFB	0
Pecos	Cannon AFB	26
Valentine	Holloman AFB	0
Talon	Holloman AFB	831
Cato	Kirtland AFB	1
Smitty	Kirtland AFB	15

Notes: [1] The number of annual sorties were derived from airspace utilization data for a representative year (June 2017 to June 2018). The actual sorties vary from year to year depending on the training mission and the airspace available.
Legend: AFB=Air Force Base; ATCAA=Air Traffic Control Assigned Airspace; MOA=Military Operations Area; WSMR=White Sands Missile Range.

1.2 DOCUMENT STRUCTURE

Section 1.0 introduces this study; while Section 2.0 describes the methodology used in the analysis. Section 3.0 provides the modeling data used and the noise exposure for the baseline condition (No Action Alternative). Section 4.0 provides the modeling data used and the noise exposure for Alternative 1. Section 5.0 provides modeling data used and noise exposure for Alternative 2. Section 6.0 provides the modeling data used and noise exposure for Alternative 3. Section 7.0 summarizes the supplemental noise metrics used and the results calculated for this study.

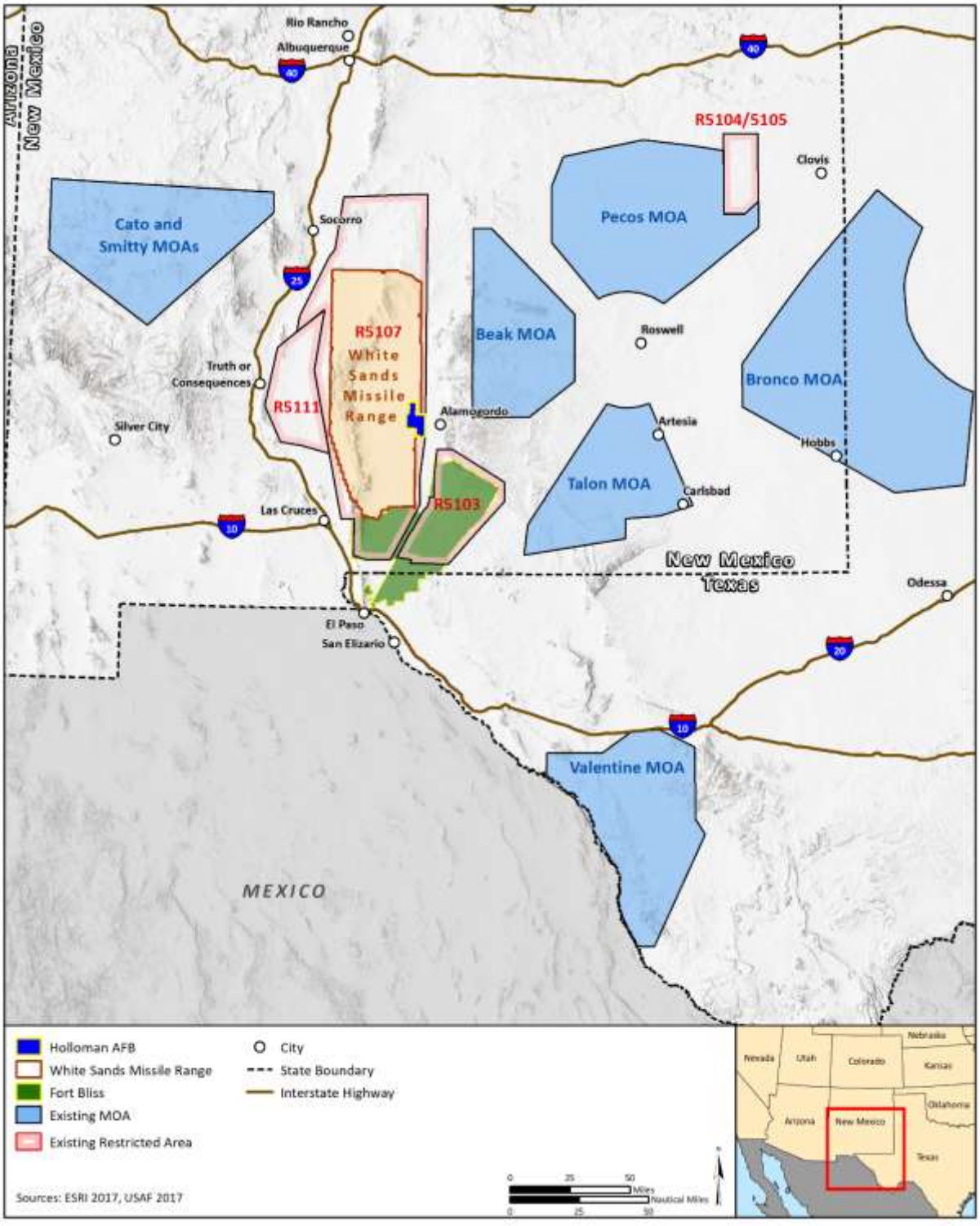

Figure 1.1-2. Special Use Airspace Available for F-16 Pilot Training

2.0 METHODOLOGY

The Department of Defense (DoD) and the Federal Interagency Committee on Noise (FICON) (1992), a member of the DoD, outline four types of metrics to describe noise exposure for environmental impact assessment:

- A measure of the greatest sound level generated by single aircraft events: Maximum Sound Level (L_{max}),
- A combination of the sound level and duration of a single aircraft event: Sound Exposure Level (SEL),
- A cumulative measure of multiple flight and engine maintenance activity: Day-Night Average Sound Level (L_{dn}, also written as DNL), and
- A cumulative measure of noise levels in military airspace: Onset-rate adjusted monthly Day-Night Average Sound Level (L_{dmnr})

Human hearing sensitivity to differing sound pitch, measured in cycles per second or hertz (Hz), is not constant. To account for this effect, sound measured for environmental analysis utilizes A-weighting, which emphasizes sound roughly within the range of typical human hearing, and de-emphasizes very low and very high frequency sounds that humans do not hear as well. All measurements in decibels (dB) presented in this study utilize A-weighting (dBA), but are presented as dB for brevity.

Assessing levels of noise potentially generated by proposed activities requires prediction of future conditions that cannot be measured until those activities are implemented. The solution to this predicament includes the use of computer software to simulate the future conditions, as detailed in the following sections.

2.1 NOISE MODELING AND PRIMARY NOISE METRICS

The DoD prescribes use of the NOISEMAP suite of computer programs (Wyle 1998; Wasmer Consulting 2006) containing the core computational programs called "NMAP," version 7.3, and "MRNMap," version 3.0 for environmental analysis of aircraft noise. For this noise study, the NOISEMAP suite of programs refers to BASEOPS as the input module and MRNMap as the noise model used to predict noise exposure in the SUA. NMPLOT is the tool used to combine the noise results produced by NOISEMAP into a combined noise exposure grid, and also assists with visualizations of combined results. As indicated in **Table 2.1-1**, the grid spacing used for calculating noise exposure for each model was 1,000 feet.

Additionally, use of the BOOMAP96 program allows computation of C-weighted Day-Night Average Sound Level (CDNL) generated by supersonic flight operations in SUA.

Table 2.1-1. Noise Modeling Parameters		
Software	**Analysis**	**Version**
MR_NMAP	Airspace Noise	3.0
BOOMAP	Sonic Boom activity in airspace (CDNL)	96
Parameter	**Description**	
Receiver Grid Spacing	1,000 ft in x and y	
Metrics	Primary: L_{dnmr}, DNL (for FAA), CDNL (for sonic booms) Secondary: SEL, L_{max} L_{eq},	
Basis	Busy Month[1] (MR_NMAP) Busy Month[1] (BOOMAP)	
Modeled Weather (Monthly Averages 2015 -2017; April selected)		
Temperature	70.3 °F	
Relative Humidity	62.0%	
Barometric Pressure	30.04 in Hg	

Source*:* Cardno 2019.

Note: [1] In this case, due to the steady nature of the training at Holloman, Busy Month is the same as Average Annual Day. We've maintained 'Busy Month' in the table to be technically correct for the metric.

Legend: ft = feet; DNL = Day-Night Average Sound Level; L_{dnmr} Onset-Rate Adjusted Monthly Day-Night Average Sound Level; SEL = Sound Exposure Level; L_{max} = maximum sound level; L_{eq} = Equivalent Sound Level; CDNL = C-weighted Day-Night Average Sound Level; AAD = Average Annual Day; °F = degrees Fahrenheit; in Hg = inches Mercury.

2.1.1 DNL and L_{dnmr}

DNL is an A-weighted cumulative noise metric that measures noise based on annual average daily aircraft operations. When DNL is calculated over a busy month of operations (as opposed to an average month), the metric is labeled L_{dnm}. When a further adjustment is made to penalize for the "surprise factor" caused by fast-moving, low altitude aircraft, the metric is called $L_{dnmr.}$ This onset-rate adjustment penalizes the noise value by up to 11dB, depending on the rapidity of the rise in noise. Use of the busy month standard is useful to the Defense Department to characterize the impact that occurs at some air bases due to the cyclic nature of training, where certain military training exercises may be very intense at some times, and non-existent at other times. The Defense Department uses L_{dnmr} for this reason and also to account for the onset rate, especially for low-altitude tactical aircraft. In the case of this analysis, the F-16 pilot training mission at Holloman AFB does not vary significantly by month, so there are no months that are significantly busier than others. The FAA uses straight DNL by standard. Because this noise study is in support of an EIS that will be considered both by the USAF and the FAA, both metrics were calculated. Note that DNL is always less than or equal to L_{dnmr}. In this study, the fact that there is steady use (meaning that on average, every month is about the same) and the scarcity of operations that result in an onset-rate adjustment caused the results to be the same, when rounded to a whole decibel. So, while DNL and L_{dnmr} are different metrics, in this case they end up providing the same numerical result for the training addressed in this noise study and EIS. For the remainder of this analysis, the reader can read the L_{dnmr} results as equal to DNL.

DNL is the U.S. Department of Defense standard for modeling the cumulative noise exposure and assessing community noise impacts. DNL has two time periods of interest: daytime and nighttime. Daytime hours are from 7:00 a.m. to 10:00 p.m. local time. Nighttime hours are from 10:00 p.m. to 7:00

a.m. local time. DNL weights operations occurring during the nighttime period by adding 10 dB to their single event sound level to account for humans being typically more annoyed by noise later at night when most people are resting. Note that "nighttime" in calculation of DNL is sometimes referred to as "environmental night" and always corresponds to the times given above. This is often different than the "night" used commonly in military aviation, which is directly related to the times of sunrise and sunset, and varies throughout the year with the seasonal changes. For the remainder of this noise study, "nighttime" means "environmental night".

2.1.2 CDNL

CDNL is similar to DNL, in that it is based on C-weighted noise, which emphasizes lower frequency sound vibrations. C-weighting better targets the lower frequencies that are "felt," instead of "heard", usually impulsive noise caused by activities like explosions. This metric averages all of the sound energy produced during the assessment period, in this case a year, while weighting any event occurring between 10:00 p.m. to 7:00 a.m. by adding 10 dB, to account for the likelihood of higher public annoyance by nighttime noise. CDNL is used to measure the effects of sonic booms that occur from aircraft flying at supersonic speeds.

2.2 SUPPLEMENTAL METRICS

While a cumulative metric such as DNL is used to predict the overall noise environment, it can also be of interest to know more about the most impactful events in noise sensitive locations. The Department of Defense Noise Working Group (DNWG) provides guidelines to supplement cumulative DNL, as described in this section (DNWG 2009). Supplemental noise metric results are discussed in Section 7.0.

2.2.1 Maximum Sound Level (L_{max})

Individual time-varying noise events have two main characteristics: (1) a sound level, which changes throughout the event; and (2) a period of time during which the event is heard. L_{max} is the maximum sound level experienced by a receptor during a noise event. Although the maximum sound level provides some measure of the intrusiveness of the event, it alone does not completely describe the total event. The period of time during which the sound is heard is also relevant.

2.2.2 Sound Exposure Level (SEL)

The Sound Exposure Level (SEL) takes all of the sound energy from a single event and compresses it as if the entire event occurred over one second. This is useful for comparing single noise events because it accounts for the maximum level of the sound in addition to the duration of the whole event. It is worth noting that SEL is always greater in value than L_{max} because it compresses all sound energy into a 1-second timeframe. For example, as a jet approaches the observer, the sound gets louder and louder, until the jet passes above the observer. At that point, the observer would experience the L_{max} (the maximum sound level), then the sound would diminish as the jet moves past the observer and off into the distance. SEL compresses all of the sound energy into a 1-second timeframe, including perhaps dozens of seconds' worth of noise occurring both before and after the loudest moment, making the value larger than the L_{max} value.

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3.0 BASELINE CONDITIONS

This section details the baseline data inputs to the model and the resultant baseline noise exposure in the SUA where F-16s based at Holloman AFB would train. In this Noise Study, the baseline conditions also represent the No Action Alternative addressed in the EIS.

3.1 SUBSONIC MODELING DATA

Table 3.1-1 summarizes total aircraft activity currently occurring in the existing Talon MOA and ATCAAs by F-16s from Hollman AFB and transient aircraft (those not stationed at Holloman AFB). The Talon MOA/ATCAA is currently only used for 831 sorties per year by Holloman AFB F-16 aircraft for training. 90 percent of operations occur during daytime hours (7 a.m. to 10 p.m.). Annual operations were modeled instead of busy month. As discussed in Section 2.1.1, Holloman AFB is a training base with a steady training tempo, without large spikes in operational activity.

Table 3.1-1. Baseline Talon Airspace Annual Sorties

Airspace	F-16 Sorties	Transient Sorties
Talon East MOA/ATCAA	344	533
Talon West MOA/ATCAA	172	267
Talon Low MOA	315	200
Totals	**831**	**1000**

Legend: ATCAA=Air Traffic Control Assigned Airspace; MOA=Military Operations Area.

Profiles for the F-16 use of SUA were developed in conjunction with operations representatives from the 54th Fighter Group at Holloman AFB. Their syllabus mission requirements for each squadron are shown in **Table 3.1-2**. It should be noted that this table includes all training missions and differs slightly from the training activities included in the EIS Table 2.2-1 which only includes the training missions that would occur within the proposed airspace; training missions that require restricted airspace or a range would not occur within the proposed airspace. For each of these missions a "profile group", and a set of altitude and power settings were assigned. The F-16 use of airspace was modeled using these data for the baseline condition and each of the proposed action alternatives, with the differences among alternatives being the number and location of proposed sorties. Profiles are built for each type of mission (by profile group), altitude block, and power setting, as illustrated in **Table 3.1-3**. Profiles are also broken down by engine type (F-16C Block 40 – 55% and Block 42 – 45%).

Table 3.1-2. F-16 Airspace Requirements									
Mission		**L x W (nm)**	**Altitude Floor[1]**	**Altitude Ceiling[1]**	**# of Sorties**	**% of Events**	**IP&Re-Fly**	**Total Sorties**	**Profile Group**
TR	Transition	20x20	10,000	30,000	180	9.38%	336	516	4
INST	Instrument	20x20	10,000	30,000	90	4.69%	168	258	4
NTR	Night Transition	20x20	10,000	30,000	45	2.34%	84	129	4
AHC	Advanced Handling Characteristics	25x25	10,000	30,000	45	2.34%	84	129	3
BFM	Basic Fighter Maneuver	30x30	5,000	30,000	360	18.75%	671	1031	3
ACM	Air Combat Maneuver	40x30	5,000	30,000	108	5.63%	201	309	3
TI	Tactical Intercept	25x40; 30x60; 30x80	15,000	40,000	183	9.53%	341	524	3
NTI	Night Tactical Intercept	55x35	5,000	40,000	69	3.59%	129	198	3
ACT	Air Combat Training	85x35	500	50,000	39	2.03%	73	112	3
LASDT	Low Altitude Step Down Training	45x35	500	30,000	69	3.59%	129	198	2
BSA[2]	Basic Surface Attack	30x30	500	25,000	156	8.13%	291	447	1
PGM[2]	Precision Guided Munitions	30x30	500	30,000	93	4.84%	173	266	1
AI[2]	Air Interdiction	30x30	500	30,000	74	3.85%	138	212	1
AI	Air Interdiction	30x30	500	30,000	19	0.99%	35	54	1
SAN[2]	Surface Attack-Night	55x35	1,000	30,000	69	3.59%	129	198	1
SAT[2]	Surface Attack Tactics	20x40; 30x60; 30x80	500	50,000	87	4.53%	162	249	1
CAS[2]	Close Air Support	30x30	500	25,000	138	7.19%	257	395	5
LFE[3]	Large Force Exercise	100x35	500	50,000	24	1.25%	45	69	3
IPUG[3,4]	Instructor Pilot Upgrade	55x35	500	40,000	24	1.25%	45	69	-
WIC[3,4]	Weapons Instructor Course	55x35	500	40,000	24	1.25%	45	69	-
Pilot Upgrd[4]	Pilot Upgrade	55x35	500	40,000	24	1.25%	45	69	-
TOTALS					**1920**	**100.00%**	**3580**	**5500[5]**	

Notes:

[1.] Altitudes shown as 500', 1,000' and 5,000' are AGL, 10,000 is MSL, all ceilings are MSL.
[2.] Events require munitions range. These would go to a restricted area, and not a MOA by itself.
[3.] In addition to range, requires combination of various airspace.
[4.] IPUG, WIC, and Pilot Upgrade sorties are assumed to require ranges in proportion to the rest of the syllabus.
[5.] Total per squadron, and covers the projected sortie production for all training, to include that in other airspace not part of this proposal (such as White Sands Missile Range). The proposal would allow Holloman AFB to support up to four squadrons.

Table 3.1-3. Altitude and Power Profiles for F-16C by Profile Group

	Profile Group																	
	1HL			1H			2			3			4			5		
Altitude block	Alt Dist	Power	Power Dist	Alt Dist	Power	Power Dist	Alt Dist	Power	Power Dist	Alt Dist	Power	Power Dist	Alt Dist	Power	Power Dist	Alt Dist	Power	Power Dist
30k-50k	10%	MAX	5%	14%	MAX	5%				15%	MAX	10%	5%	MAX	0%			
		Mil	25%		Mil	25%					Mil	85%		Mil	50%			
		85%	70%		85%	70%					85%	5%		85%	50%			
24k-30k	10%	MAX	5%	14%	MAX	5%				20%	MAX	10%	25%	MAX	0%			
		Mil	25%		Mil	25%					Mil	50%		Mil	50%			
		85%	70%		85%	70%					85%	30%		85%	50%			
18k-24k	10%	MAX	5%	14%	MAX	5%				20%	MAX	10%	30%	MAX	10%			
		Mil	25%		Mil	25%					Mil	50%		Mil	40%			
		85%	70%		85%	70%					85%	30%		85%	50%			
15k-18k	20%	MAX	5%	29%	MAX	5%				20%	MAX	25%	20%	MAX	10%			
		Mil	25%		Mil	25%					Mil	75%		Mil	40%			
		85%	70%		85%	70%					85%	0%		85%	50%			
10k-15k	20%	MAX	10%	29%	MAX	10%				15%	MAX	15%	20%	MAX	0%	25%	MAX	5%
		Mil	40%		Mil	40%					Mil	85%		Mil	50%		Mil	40%
		85%	50%		85%	50%					85%	0%		85%	50%		85%	45%
5000A-10k	10%	MAX	10%				5%	MAX	5%	5%	MAX	10%				15%	MAX	5%
		Mil	40%					Mil	35%		Mil	90%					Mil	45%
		85%	50%					85%	60%		85%	0%					85%	40%
2000a-5000a	5%	MAX	20%				20%	MAX	10%	3%	MAX	10%				20%	MAX	5%
		Mil	40%					Mil	45%		Mil	90%					Mil	60%
		85%	40%					85%	45%		85%	0%					85%	35%
500a-2000a	15%	MAX	20%				75%	MAX	10%	2%	MAX	10%				40%	MAX	5%
		Mil	40%					Mil	60%		Mil	90%					Mil	65%
		85%	40%					85%	30%		85%	0%					85%	30%
	100%			100%			100%			100%			100%			100%		

Transient sorties represent the intermittent use of the airspace by a range of aircraft not based at Holloman AFB including FA-18C, F-16, F-15 and other fighter aircraft. The modeling surrogate for these transient aircraft is the FA-18C. Twenty percent of the transient sorties utilize the Talon Low MOA, and the rest are in the Talon East and West MOAs/ATCAAs. Ten percent of their activity is during nighttime hours (10 p.m. until 7 a.m.). Transient aircraft are modeled with similar altitude requirements to those of the F-16, as depicted in **Tables 3.1-2 and 3.1-3.**

Transient aircraft use of the proposed airspace is included to ensure that the full cumulative effects are represented in the analysis. Transient aircraft are those that schedule and use the airspace, but are not based at Holloman AFB. Some squadrons operate on a temporary basis in various locations in order to take advantage of training opportunities that may be different than those at their home locations. With the expectation that optimization of the proposed airspace would probably increase the number of transient users, the Air Force estimated that the number of annual transient sorties would be as many as 1,000 per year. One of the typical users of the existing airspace associated with Holloman AFB is the Canadian Air Force (FA-18 aircraft), who participate in local training as a part of bilateral training events and other detachments. Other transient sorties by aircraft such as F-15 and F-16 would also be expected and are included in the overall 1,000 sortie number.

In addition to the regular use of training airspace, there are MTRs that cross the study area (**Figures 3.1-1 and 3.1-2**). Four different MTRs in the region have regular use. **Table 3.1-4** shows the number of annual sorties on each of the MTRs.

Table 3.1-4. Baseline Annual MTR usage in the Region

MTR	Associated Airspace	Aircraft	Annual Sorties
VR-176	Existing and proposed Cato/Smitty MOA Proposed Lobos MOA	F-16[1]	223
		C-130[2]	34
IR-192	Existing and proposed Talon MOA	F-16[1]	17
IR-194	Existing and proposed Talon MOA	F-16[1]	4
IR-195	Existing and proposed Talon MOA	F-16[1]	**6**

Notes [1.] F-16 accounts for two thirds of all jet aircraft, and is used as a surrogate for the other third, which includes A-10, AV-8, F-16, T-45, and T-38.

[2.] C-130 represents three quarters of all non-jet aircraft, and is used as a surrogate for the other quarter, that includes C-12, V-22, and T-6.

For the MTRs, the noise model calculated in both DNL and L_{dnmr} to determine whether onset-rate was significant. The results showed that these metrics were the same, due to the low numbers of sorties involved and the steady operations tempo. It is expected that MTR sorties could produce some "startle effect" for observers directly under the route, but the numbers of operations are small enough that the difference is incalculable on an annual basis (such as for DNL and $L_{dnmr)}$. The MTR noise results were added to the MOA results. While results are reported in the DoD-standard L_{dnmr}, it should be noted that in the case of this analysis, they are the same as DNL, due to the operations tempo being steady across the entire year. Therefore, these metrics are treated as equal throughout this document.

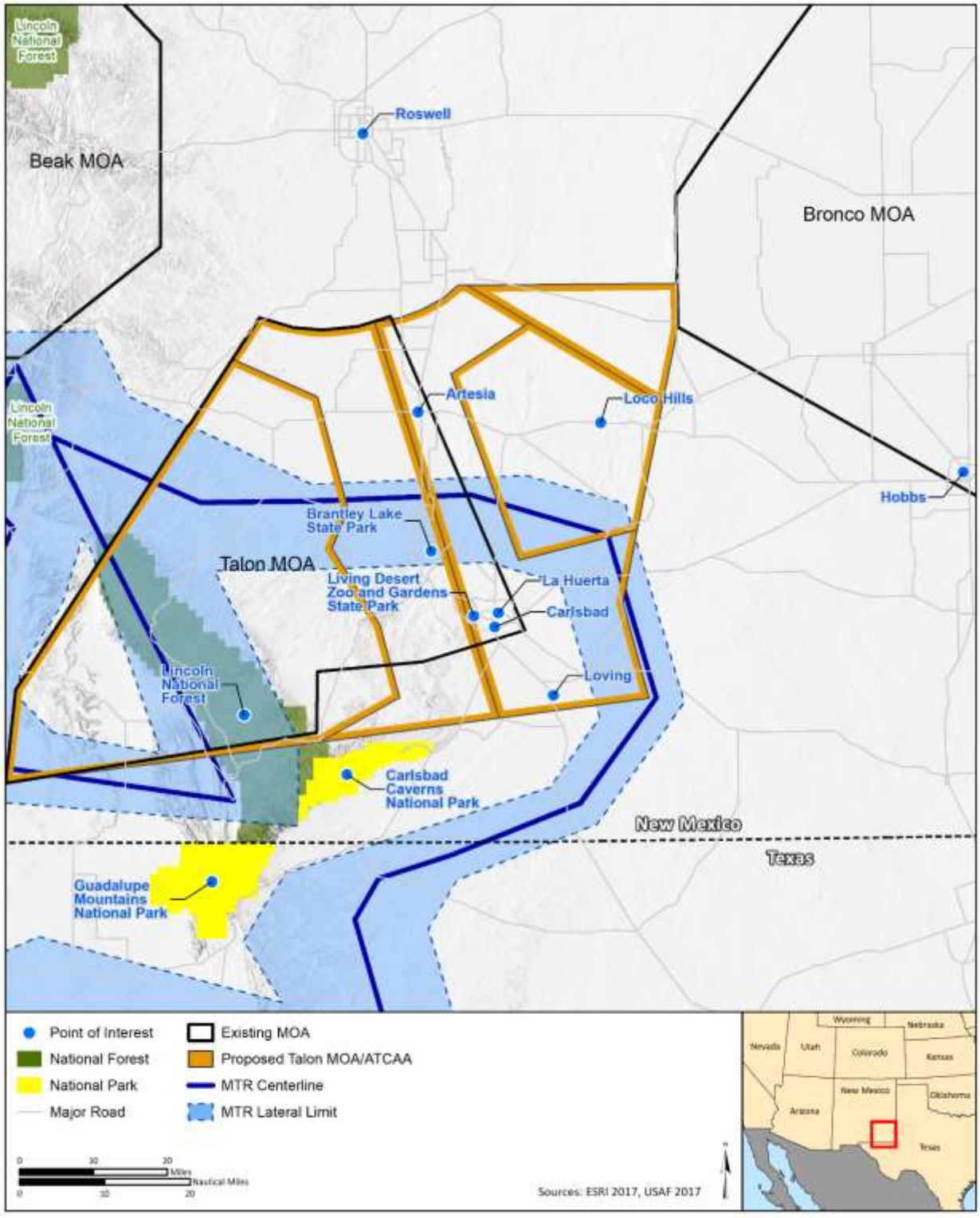

Figure 3.1-1. Points of Interest and Military Training Routes Transiting through Talon MOA

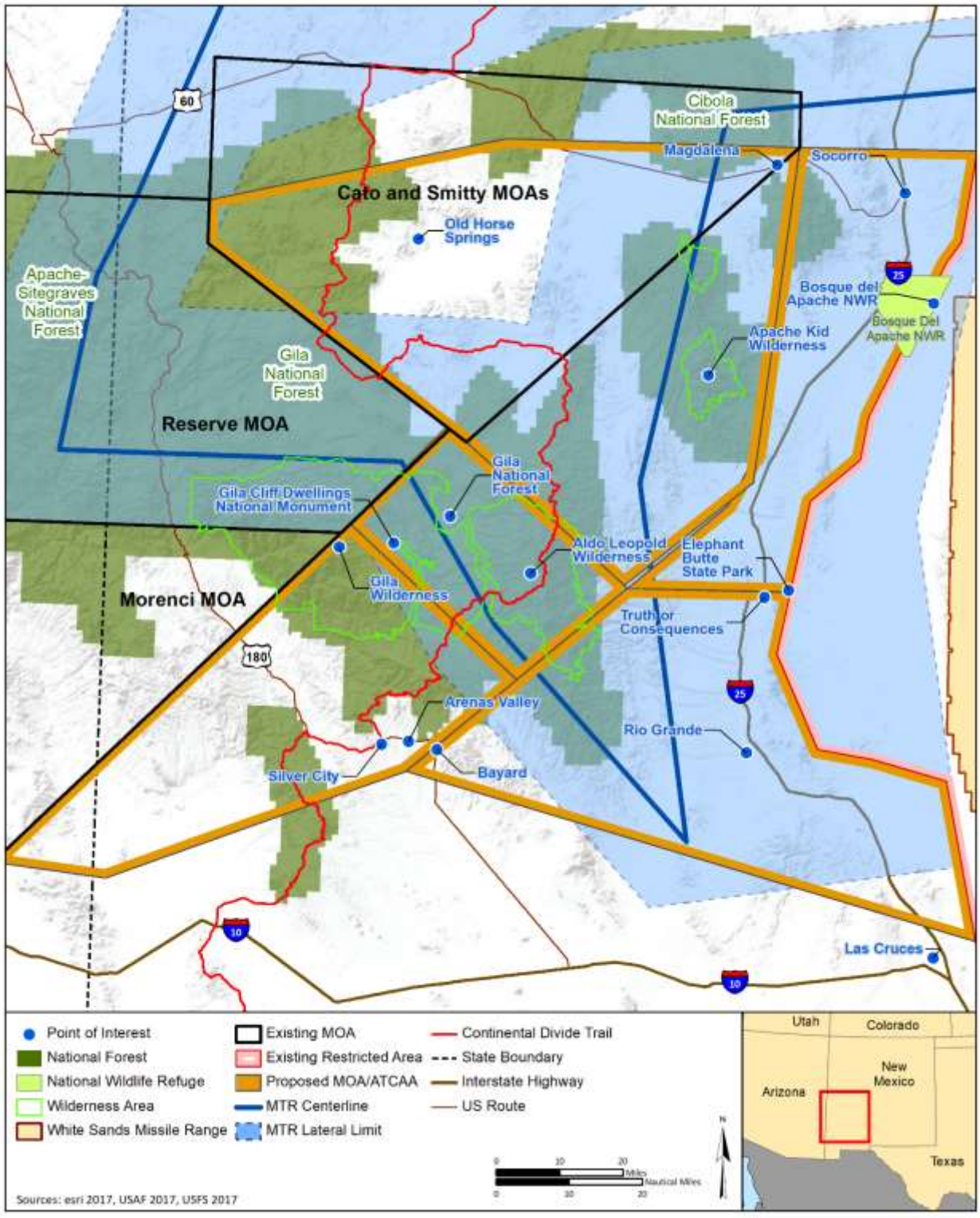

Figure 3.1-2. Points of Interest and Military Training Routes Transiting through West Airspace

3.2 SUBSONIC NOISE EXPOSURE

Table 3.2-1 shows the L_{dnmr} levels for baseline conditions within the existing Talon MOA airspace. **Figure 3.2-1** shows the existing Talon airspace used by Holloman AFB, as well at the MTRs that transit that airspace. The greatest L_{dnmr} value under the baseline conditions is 54 dB beneath the Talon Low MOA where the MTR crosses through the MOA. **Table 3.2-2** shows the calculated L_{dnmr} values for the 12 POIs identified within the vicinity of the Talon airspace. Lincoln National Forest experiences the highest L_{dnmr} values, at 53 dB, with the next highest L_{dnmr} value being 41 dB at Brantley Lake State Park and the town of La Huerta, New Mexico. Six of the 12 POIs have L_{dnmr} values of <35 dB.

There is currently no military aircraft operations within the Cato and Smitty MOAs, so there is no aircraft noise contribution from the MOA, however there is an MTR that transits the proposed Cato, Smitty, and Lobos MOAs as shown in **Figure 3.2-1.** The baseline condition in this area accounts for the aircraft activity along the MTR (**Table 3.2-2**). The noise levels computed in **Table 3.2-2** represent only the military aircraft contributions to sound levels and does not consider other sources, such as road traffic and wind. Typical ambient noise levels for 'quiet suburban residential' areas range from 40 to 45 dB while noise in rural areas is typically 40 dB or less (American National Standards Institute [ANSI] 2013).

MRNMap software does not calculate values below 35dB due to difficulty of accurately predicting very low noise levels. Because of this, noise levels attributed to aircraft that range from zero to 34 dB are reported as "< 35 dB". At 35dB noise would often be imperceptible because it would be masked by common outdoor natural sounds (such as breeze rustling foliage, birds, insects, rain), or man-made sounds (such as vehicles traveling on roads in the vicinity or distant lawnmowers). In rural areas, especially those without foliage that are far from roads, the natural quiet state can be lower than 35dB. Such quiet could be experienced by a back-country hiker far from roads on a calm day. An aircraft noise in the range of 20 to 30 dB may be perceptible in those circumstances. The majority values reported as less than 35 dB are actually very close to zero, but some would be closer to 35 dB and may be perceptible under the right circumstances when no masking noise is present. It is important to note that the model only accounts for aircraft generated noise and does not take into account any ambient, or background noise that exists.

Table 3.2-1. Baseline L_{dnmr} Beneath SUA

Existing Airspace	Baseline L_{dnmr} (dBA)
Talon East MOA/ATCAA	41
Talon West MOA/ATCAA	47
Talon Low MOA	54

Source: Cardno 2019.
Legend: dBA = A-weighted decibel; Onset-Rate Adjusted Day-Night Average Sound Level; ATCAA=Air Traffic Control Assigned Airspace; MOA=Military Operations Area.

Table 3.2-2. Baseline Noise Attributable to Aircraft Modeled for Points of Interest beneath or near Proposed Airspace

Name	L_{dnmr} (dBA)[1]
Eastern Points of Interest	
Carlsbad, New Mexico	40
Artesia, New Mexico	40
Loving, New Mexico	<35
Loco Hills, New Mexico	<35
La Huerta, New Mexico	40
Hobbs, New Mexico	<35
Roswell, New Mexico	<35
Carlsbad Caverns National Park	<35
Guadalupe Mountains National Park	<35
Lincoln National Forest	53
Living Desert Zoo and Gardens State Park	41
Brantley Lake State Park	41
Western Points of Interest[2]	
Gila Cliff Dwellings National Monument	<35
Socorro, New Mexico	<35
Truth or Consequences, New Mexico	<35
Las Cruces, New Mexico	<35
Magdalena, New Mexico	<35
Bayard, New Mexico	<35
Old Horse Springs, New Mexico	<35
Arenas Valley, New Mexico	<35
Silver City, New Mexico	<35
Gila Wilderness	<35
Elephant Butte State Park	<35
Gila National Forest	49
Aldo Leopold Wilderness	<35
Apache Kid Wilderness	45
Bosque del Apache National Wildlife Refuge	<35
Rio Grande	<35

Source: Cardno 2019.

Notes: [1] These L_{dnmr} values are equal to the calculated DNL values as explained earlier.
[2] A single point wasn't established for the Continental Divide Trail since it is a linear feature. The noise calculated at nearby POIs along the trail provide a representation of the noise attributable to military aircraft.

Legend: dB = decibel; L_{dnmr} = Onset-Rate Adjusted Monthly Day-Night Average Sound Level.

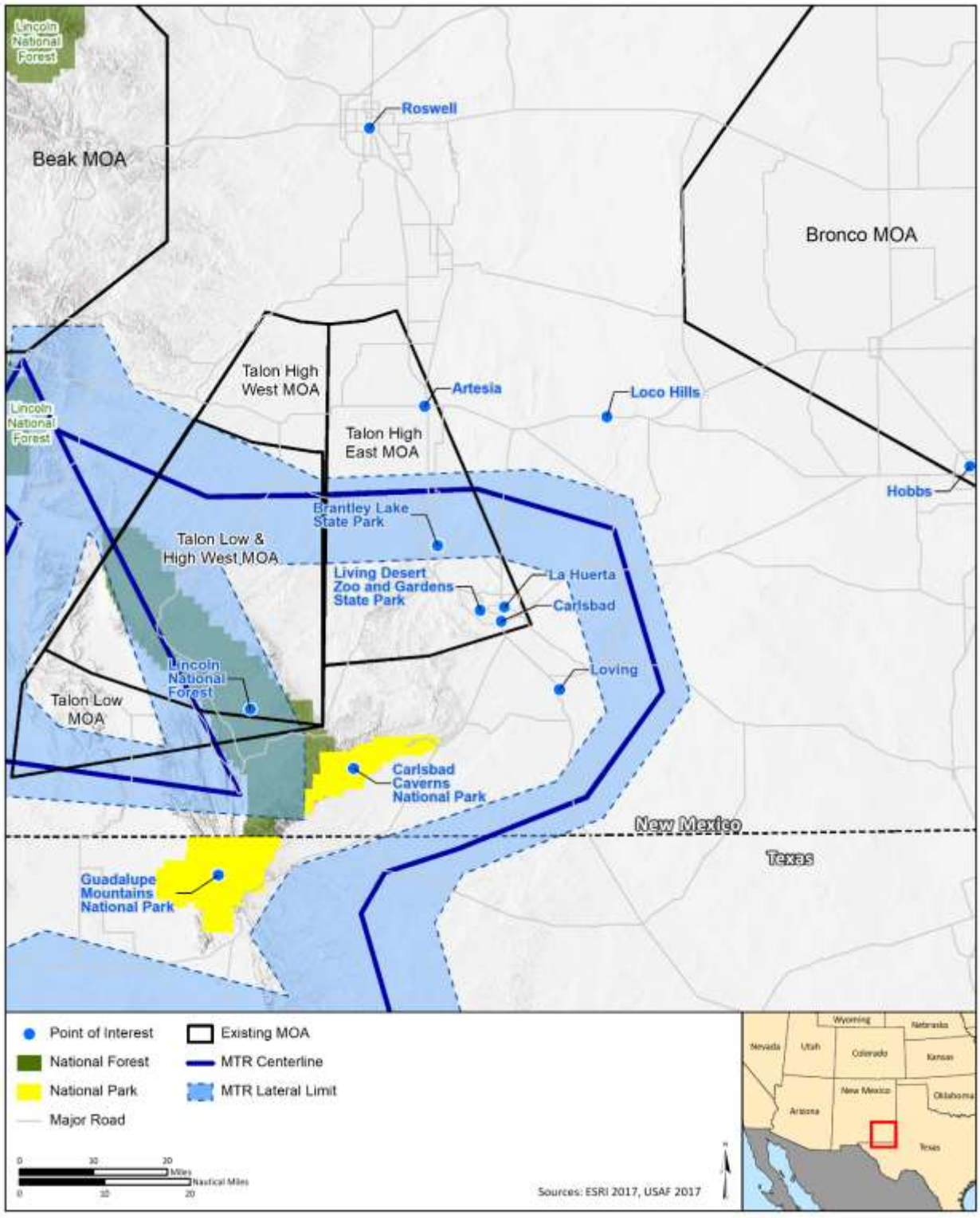

Figure 3.2-1. Existing Talon Airspace under Baseline Conditions

3.3 SUPERSONIC MODELING DATA

The majority of existing Holloman AFB-based F-16 supersonic activity occurs in the WSMR airspace and ranges, which are not part of this study. The annual supersonic sorties in the existing Talon East/West ATCAAs are shown in **Table 3.3.1**.

Table 3.3-1 Baseline Supersonic Sorties

Airspace	*F-16 Sorties*
Talon East/West ATCAA	60

Legend: ATCAA=Air Traffic Control Assigned Airspace; MOA=Military Operations Area.

3.4 SUPERSONIC NOISE EXPOSURE

Table 3.4-1 shows the calculated baseline supersonic noise values. The small number of baseline supersonic sorties result in the CDNL being less than 35dB at all of the points of interest for the Talon airspace.

Table 3.4-1. Baseline Values

Description	Baseline CDNL(dB)
Carlsbad, New Mexico[1]	<35
Artesia, New Mexico[1]	<35
Loving, New Mexico[2]	<35
Loco Hills, New Mexico[2]	<35
La Huerta, New Mexico[1]	<35
Hobbs, New Mexico[3]	<35
Roswell, New Mexico[3]	<35
Carlsbad Caverns National Park[2]	<35
Guadalupe Mountains National Park[3]	<35
Lincoln National Forest[1]	<35
Living Desert Zoo and Gardens State Park[1]	<35
Brantley Lake State Park[1]	<35

Notes: [1]Lies beneath existing and proposed Talon MOA.
[2]Lies beneath proposed Talon MOA.
[3]Does not lie beneath existing or proposed Talon MOA.

4.0 ALTERNATIVE 1 SCENARIO

This section details the modeling data and the expected noise exposure for Alternative 1, where F-16s based at Holloman AFB would use the reconfigured Talon airspace for training. The use of the Talon MOAs would increase from baseline levels to 10,000 sorties by F-16 aircraft from Holloman AFB. **Figure 4.1-1** shows the reconfigured Talon MOAs under Alternative 1. All other aircraft operations remain unchanged from those described in **Section 3.0**, *Baseline Conditions*.

4.1 SUBSONIC MODELING DATA

Table 4.1-1 summarizes total aircraft activity in the Proposed Talon MOA/ATCAAs which includes 10,000 sorties per year. Approximately 90 percent of operations would occur during environmental day (7 a.m. to 10 p.m.). Transient sorties represent the intermittent use of the airspace by a range of aircraft not based at Holloman AFB including FA-18C, F-16, F-15 and other fighter aircraft. The modeling surrogate for these transient aircraft is the FA-18C. The overall number of transient operations does not change from the baseline, however these sorties would occur within the new Talon airspace boundaries resulting in low altitude transient sorties being dispersed throughout the Talon Low A and Talon Low B MOAs. It is also assumed that ten percent of transient activity would occur during nighttime hours (10 p.m. to 7 a.m.). Transient aircraft are modeled with similar altitude profiles as those of the F-16, as depicted previously in **Tables 3.1-2 and 3.1-3.** Note that noise modeling methodology requires input of exact discrete numbers of operations. The operations listed in **Table 4.1-1** are the exact numbers of operations modeled for this analysis. In reality, the exact operations in each MOA component would vary year to year but would generally be in the range included in the model and not exceed the proposed 10,000 maximum analyzed in this study. It should also be noted that these operations numbers are rounded (to nearest ten or hundred operations) in the main body of the EIS for ease of reading.

Table 4.1-1. Alternative 1 Proposed Annual Operations

Airspace	F-16 Sorties	Transient Sorties
Talon High A MOA/ATCAA	4,025	533
Talon High B MOA/ATCAA	2,012	267
Talon High A/B/C MOA/ ATCAA	275	-
Talon Low A MOA	2,571	100
Talon Low B MOA	1,117	100
Totals	**10,000**	**1,000**

Legend: ATCAA=Air Traffic Control Assigned Airspace; MOA=Military Operations Area.

As with the baseline, the Alternative 1 model is based on annual operations instead of a busy month because Holloman is a training base that would have an even training tempo, with no large spikes in operational activity. MTR usage included in the baseline would continue to occur under Alternative 1 and is accounted for in the model (see **Table 3.1-4**).

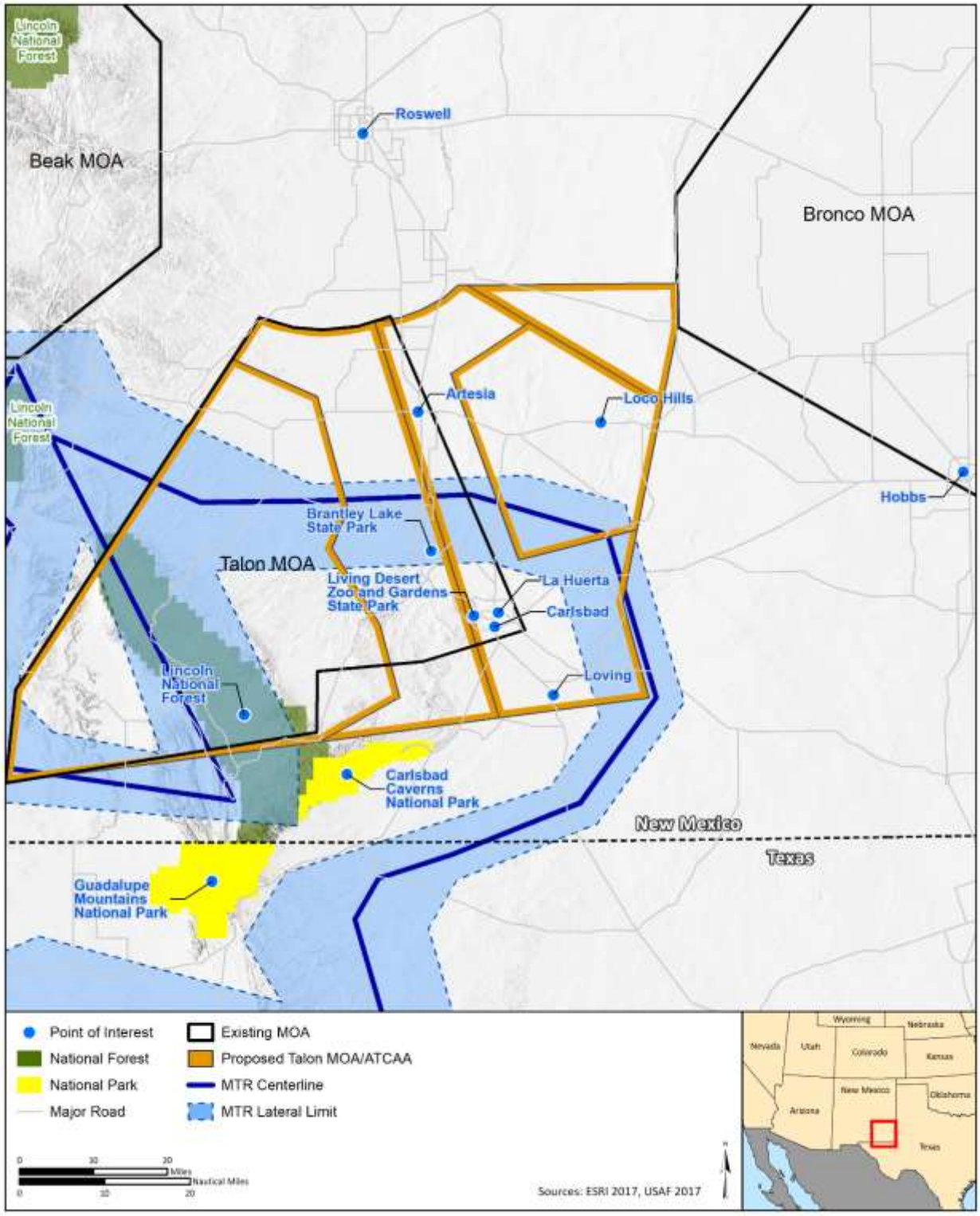

Figure 4.1-1. Proposed Talon Airspace under Alternative 1

4.2 SUBSONIC NOISE EXPOSURE

Table 4.2-1 shows the L_{dnmr} levels for baseline conditions and Alternative 1 within the existing and proposed Talon MOA/ACTAA. While a direct comparison cannot be made between the airspace, as Alternative 1 would reconfigure the size and shape of the Talon airspace, the greatest L_{dnmr} value under Alternative 1 would be 58 dB within the Talon High B/Low B MOA/ATCAA. This would represent an increase of 4 dB from the existing Talon Low MOA which has a baseline L_{dnmr} of 54 dB (see **Table 3.2-1**). However, when comparing the reconfigured areas of airspace, the greatest change in DNL occurs under the Talon High B/Low B MOA (planes would use both areas during one training event), with an increase in DNL of 15 dB. While this increase in DNL is large, all values would remain well below the 65 dB threshold used by the DoD for land use planning restrictions with regard to noise. **Table 4.2-2** shows the calculated L_{dnmr} values for the 12 POIs identified within the vicinity of proposed Talon airspace. The community of Loco Hills and the Lincoln National Forest would experience the highest L_{dnmr} values, at 56 dB. The greatest calculable increase in L_{dnmr} would occur with Lincoln National Forest, with an increase of 3 dB. For Loving and Loco Hills, there would be an increase in aircraft generated noise. However, the increase cannot be calculated because the baseline values are below what the noise model can reliably predict (values below 35 dB). Because the baseline value is unknown, a change value cannot be calculated.

The noise levels computed in **Table 4.2-2** represent only the military aircraft contributions to sound levels and does not consider other sources, such as road traffic and wind. Typical ambient noise levels for 'quiet suburban residential' areas range from 40 to 45 dB while noise in rural areas is typically 40 dB or less (ANSI 2013).

Table 4.2-1. Projected Noise Levels Attributable to Aircraft Operations in Talon MOA under Alternative 1

Proposed Airspace Unit	Baseline L_{dnmr} (dBA)	Projected L_{dnmr} (dBA)
Talon High A/Low A MOA	54	57
Talon High A MOA	47	47
Talon High B/Low B MOA	43	58
Talon High B MOA	47	47
Talon High CMOA	<35	39

Source: Cardno 2019.
Legend: MOA – Military Operations Area; dBA = A-weighted decibel; L_{dnmr} = Onset-Rate Adjusted Day-Night Average Sound Level.

Table 4.2-2. Baseline and Projected Noise Levels Attributable to Aircraft Operations at Selected Points of Interest Beneath or Near Talon MOA under Alternative 1		
Name	**Baseline L_{dnmr} (dBA)**	**Projected L_{dnmr} (dBA)**
Carlsbad, New Mexico[1]	40	42
Artesia, New Mexico[1]	40	42
Loving, New Mexico[2]	<35	42
Loco Hills, New Mexico[2]	<35	56
La Huerta, New Mexico[1]	41	42
Hobbs, New Mexico[3]	<35	<35
Roswell, New Mexico[3]	<35	<35
Carlsbad Caverns National Park[2]	<35	<35
Guadalupe Mountains National Park[3]	<35	<35
Lincoln National Forest[1]	53	56
Living Desert Zoo and Gardens State Park[1]	41	41
Brantley Lake State Park[1]	41	42

Source: Cardno 2019.
Notes: [1]Lies beneath existing and proposed Talon MOA, [2]Lies beneath proposed Talon MOA, [3]Does not lie beneath existing or proposed Talon MOA.
Legend: dB = decibel; L_{dnmr} = Onset-Rate Adjusted Monthly Day-Night Average Sound Level.

4.3 SUPERSONIC MODELING DATA

Under Alternative 1, with increased use of the reconfigured Talon ATCAAs, supersonic training would occur more frequently. **Table 4.3-1** shows the numbers of training sorties that would include supersonic flight. There would be no supersonic flight in the MOAs. As stated in **Section 4.1**, the model requires input of exact operations numbers for each airspace component; the operations numbers presented in the main body of the EIS have been rounded for ease of reading.

Table 4.3-1 Alternative 1 Supersonic Sorties	
Airspace	***Sorties***
Talon A ATCAA	403
Talon B ATCAA	201
Talon ABC ATCAAs	275
Total	**879**

Legend: ATCAA = Air Traffic Control Assigned Airspace; MOA – Military Operations Area.

4.4 SUPERSONIC NOISE EXPOSURE

With increased number of supersonic sorties in the airspace, there would be an increase in the number of sonic boom events. The standard measure of the noise levels produced by supersonic flight is CDNL, the average of all of the sound energy produced by supersonic activity. Production of sonic booms depends on many variables, and use of the CDNL metric helps to average them all out over time. A specific, single location may or may not experience boom activity, although a location inside the depicted CDNL contours would experience some infrequent, low-level booms. Under this proposal, the aircraft would be supersonic only at high altitudes, reducing the impact on the ground. **Figure 4.4-1** shows the predicted CDNL contours attributed to annual supersonic activity for Alternative 1. CDNL values gradually increase toward the center of the airspace, but do not exceed 42 CDNL.

Table 4.4-1 shows the resulting CDNL values at the POIs in the vicinity of the Talon MOA. The projected CDNL from sonic booms would have no quantifiable change at 9 of the 12 POIs. There would be minor increases at the remaining 3 POIs. Noise at this level is difficult to accurately measure and would not be perceptibly different from the baseline conditions. Of the 12 POIs in the area potentially affected by Alternative 1, none would experience a CDNL value greater than 38 dB from the proposed operations.

Table 4.4-1. Baseline and Proposed CDNL at Points of Interest

Description	Baseline CDNL(dBC)	Alternative1 CDNL(dBC)
Carlsbad, New Mexico[1]	<35	35
Artesia, New Mexico [1]	<35	38
Loving, New Mexico [2]	<35	<35
Loco Hills, New Mexico [2]	<35	<35
La Huerta, New Mexico [1]	<35	36
Hobbs, New Mexico [3]	<35	<35
Roswell, New Mexico [3]	<35	<35
Carlsbad Caverns National Park[2]	<35	<35
Guadalupe Mountains National Park[3]	<35	<35
Lincoln National Forest[1]	<35	<35
Living Desert Zoo and Gardens State Park[1]	<35	<35
Brantley Lake State Park[1]	<35	<35

Notes: [1]Lies beneath existing and proposed Talon MOA.
[2]Lies beneath proposed Talon MOA.
[3]Does not lie beneath existing or proposed Talon MOA.

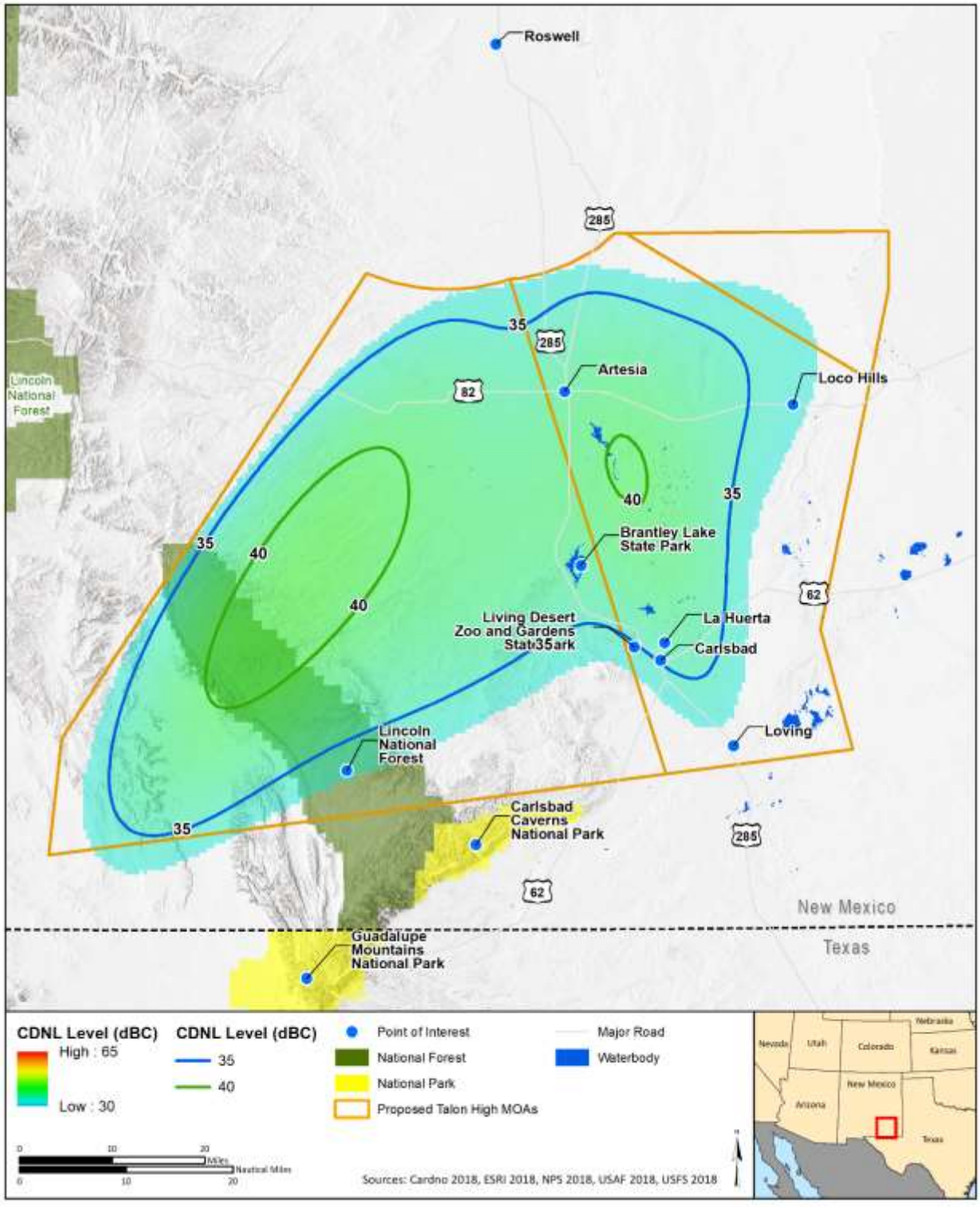

Figure 4.4-1. CDNL Contours under Alternative 1

5.0 ALTERNATIVE 2 SCENARIO

This section details the modeling data and the resultant noise exposure for the Alternative 2 scenario, in which F-16s from Holloman AFB would use new and reconfigured airspace to the west of WSMR restricted areas (consisting of a reconfigured Smitty MOA and Cato MOA/ATCAA; and new Lobos Low MOA, Lobos High MOA/ATCAA, and Christa and Kendra ATCAAs), as well as continuing to use the existing Talon MOA. The total use of all of this airspace would increase to 10,000 sorties by F-16s from Holloman AFB. Reconfigured airspace is shown in **Figure 5.1-1**.

5.1 SUBSONIC MODELING DATA

Table 5.1-1 summarizes total aircraft activity in the existing Talon MOAs/ATCAAs and the proposed Lobos and reconfigured Cato/Smitty MOAs and ATCAAs, which includes 10,000 F-16 training sorties per year. Approximately 90 percent of operations would occur during daytime hours (7 a.m. to 10 p.m.). Note that noise modeling methodology requires input of exact discrete numbers of operations. The operations listed in **Table 5.1-1** are the exact numbers of operations modeled for this analysis. In reality, the exact operations in each MOA component would vary year to year but would generally be in the range included in the model and not exceed the proposed 10,000 maximum analyzed in this study. It should also be noted that these operations numbers are rounded (to nearest ten or hundred operations) in the main body of the EIS for ease of reading.

Transient aircraft would use the reconfigured Cato/Smitty MOAs/ATCAA and the proposed Lobos Low/High MOAs/ATCAA, but not the Christa or Kendra ATCAAs. There are 300 transient sorties listed in **Table 5.1-1** using only the Lobos High MOA/ATCAA. These sorties represent F-35A aircraft from Luke AFB, which would be expected to use the Lobos High MOA/ATCAA occasionally if it were created. The remaining 1,000 transient sorties modeled in the larger area represent all the other transient use of the airspace (other military aircraft not based at Holloman AFB). The transient aircraft could use the airspace intermittently and include a variety of fighter aircraft. This analysis used a modeling surrogate of FA-18C for these transient aircraft. Ten percent of transient activity would be during nighttime hours (10 p.m. to 7 a.m.). Transient aircraft were modeled with similar altitude requirements to those of the F-16 aircraft from Holloman AFB (as depicted previously in **Tables 3.1-2 and 3.1-3**) with the exception of the transient F-35A which was modeled only in Lobos High MOA/ATCAA as discussed above.

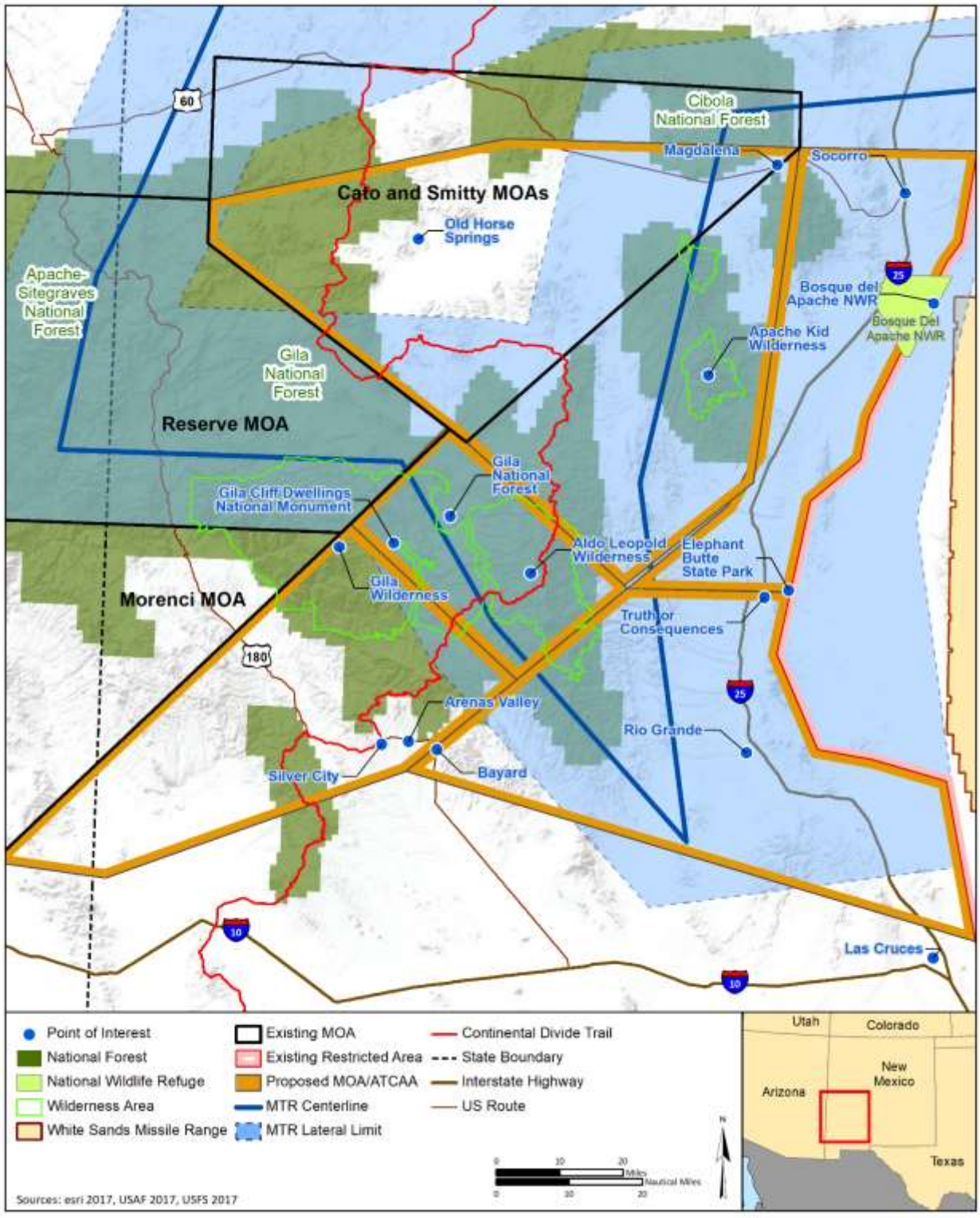

Figure 5.1-1. Reconfigured Airspace under Alternative 2

Table 5.1-1. Alternative 2 Proposed Annual Operations		
Airspace	**F-16 Sorties**	**Transient Sorties**
Existing Talon MOAs/ATCAAs	831	0
Cato and Lobos High MOAs and Cato and Christa ATCAAs	4,064	0
Smitty MOA	2,867	0
Lobos High MOA with Lobos and Kendra ATCAAs	1,522	0
Lobos Low MOA	716	0
Cato/Smitty/Lobos High/Lobos Low MOAs and ATCAAs		1,000[2]
Lobos High MOA/ATCAA		300[1]
Totals	**10,000**	**1,300**

Notes: [1] F-35A from Luke AFB, using only Lobos High MOA/ATCAA.
[2] Rest of fighter transients, including A-10, AV-8, F-16, F-15, and F-18.
Legend: MOA=Military Operations Area.

Legend: ATCAA=Air Traffic Control Assigned Airspace;

As with the baseline, the Alternative 2 model is based on annual operations instead of a busy month. This is because Holloman AFB is a training base that would have an even training tempo, with no large spikes in operational activity. MTR usage included in the baseline would continue to occur under Alternative 2 and is accounted for in the model (see **Table 3.1-4**).

5.2 SUBSONIC NOISE EXPOSURE

Table 5.2-1 shows the change in L_{dnmr} levels between the baseline and Alternative 2 conditions within each of the MOAs/ATCAAs. The highest noise exposure would be within the reconfigured Cato and Smitty MOAs with an L_{dnmr} value of 55 dB. Because of existing altitude restrictions in the Smitty MOA (that would continue under Alternative 2), the western portion of the MOA is exposed to less noise than the east. However, the greatest change in DNL does occur in the western portion of the Cato and Smitty MOAs, showing an increase of at least 13 DNL.

Table 5.2-2 shows the calculated L_{dnmr} values for the POIs identified within the proposed SUA. Under Alternative 2, the greatest exposure would be 52 dB at Gila National Forest. All values would remain well below the 65 dB threshold used by the DoD for land use planning restrictions with regard to noise. Eight of the POIs show no change.

The noise levels computed in **Tables 5.2-2 and 5.2-3** represent only the military aircraft contributions to sound levels and does not consider other sources, such as road traffic and wind. Typical ambient noise levels for 'quiet suburban residential' areas range from 40 to 45 dB while noise in rural areas is typically 40 dB or less (ANSI 2013).

Table 5.2-1. Projected Noise Levels Attributable to Aircraft Operations in Proposed SUA under Alternative 2		
Proposed Airspace Unit	**Baseline L_{dnmr} (dBA)**	**Projected L_{dnmr} (dBA)**
Cato and Smitty MOAs	47	55
Cato and Smitty MOA West[1]	<35	48
Lobos MOA	50	53
Christa ATCAA	50	50
Kendra ATCAA	50	50

Note: [1]Western corner of Cato and Smitty MOA with altitude floor of 1,600 feet AGL.
Legend: MOA = Military Operations Area; ATCAA = Air Traffic Control Assigned Airspace; DNL = Day-Night Average Sound Level; dBA = A-weighted decibel; L_{dnmr} = Onset Rate Adjusted Day-Night Average Sound Level.

Table 5.2-2. Baseline and Projected Noise Levels Attributable to Aircraft Operations in Proposed SUA at Selected Points of Interest under Alternative 2		
Name	**Baseline L_{dnmr} (dBA)**	**Projected L_{dnmr} (dBA)**
Gila Cliff Dwellings National Monument[1]	<35	49
Socorro, New Mexico[2]	<35	<35
Truth or Consequences, New Mexico [2]	<35	<35
Las Cruces, New Mexico [2]	<35	<35
Magdalena, New Mexico [3]	<35	50
Bayard, New Mexico [2]	<35	<35
Old Horse Springs, New Mexico [3]	<35	50
Arenas Valley, New Mexico [1,4]	<35	47
Silver City, New Mexico [1,4]	<35	47
Gila Wilderness Area[1]	<35	49
Elephant Butte State Park[2]	<35	<35
Gila National Forest[1]	49	52
Aldo Leopold Wilderness[1,4]	<35	49
Apache Kid Wilderness[3]	45	49
Bosque del Apache National Wildlife Refuge[2]	<35	<35
Rio Grande[2]	<35	<35

Source: Cardno 2019.
Note: [1]Lies beneath proposed Lobos MOA.
[2]Lies outside existing or proposed MOAs.
[3]Lies beneath existing and proposed MOAs.
[4]A single point wasn't established for the Continental Divide Trail since it is a linear feature. The noise calculated at nearby POIs along the trail provide a representation of the noise attributable to military aircraft. Points along or near the trail include: Arenas Valley, Silver City, and Aldo Leopold Wilderness.

5.3 SUPERSONIC MODELING DATA

Under Alternative 2, with increased use of the newly configured Cato ATCAA, and the establishment of the Lobos ATCAA, Christa ATCAA, and Kendra ATCAA, supersonic training would occur more frequently. **Table 5.3-1** shows the numbers of training sorties in Alternative 2 that would include supersonic flight. There would be no supersonic flight in the MOAs. As stated in **Section 5.1**, the model requires input of exact operations numbers for each airspace component; the operations numbers presented in the main body of the EIS have been rounded for ease of reading.

Table 5.3-1 Alternative 2 Supersonic Sorties	
Airspace	**F-16 Sorties**
Cato ATCAA & Christa ATCAA	306
Lobos ATCAA & Kendra ATCAA	131
Cato and Lobos ATCAAs & Christa ATCAA	442
Total	**879**

Legend: ATCAA=Air Traffic Control Assigned Airspace; MOA=Military Operations Area.

5.4 SUPERSONIC NOISE EXPOSURE

With increased number of supersonic sorties in the airspace, there would be an increase in the number of sonic boom events. The standard measure of noise levels produced by supersonic flight is CDNL, the average of all sound energy produced by supersonic flight. Production of sonic booms depends on many variables, and use of the CDNL metric helps to average them all out over time. A specific, single location may or may not experience boom activity, although a location inside the depicted CDNL contours would experience some infrequent, low-level booms. Under this proposal, the aircraft would be supersonic only at high altitudes, reducing the impact on the ground. **Figure 5.4-1** shows the CDNL level predicted under Alternative 2, which shows that CDNL increases gradually toward the center of the airspace, but does not exceed 42 CDNL. These low values are due to the relatively low number of supersonic operations, the altitudes proposed for these operations, and the large area of the airspace.

Table 5.4-1 presents the baseline and projected CDNL attributed to supersonic aircraft activity at the POIs associated with Alternative 2. The highest CDNL values are 40 dB and are seen at Gila National Forest, Aldo Leopold Wilderness, and Apache Kid Wilderness. The projected noise levels attributed to supersonic activity would remain unchanged at 6 of the 17 POIs. The remaining 11 POIs would have a slight increase in noise attributable supersonic flights.

Table 5.4-1. Baseline and Proposed CDNL at Points of Interest		
Description	**Baseline CDNL (dBC)**	**Alternative 2 CDNL (dBC)**
Gila Cliff Dwellings[1]	<35	39
Socorro[2]	<35	36
Truth or Consequences[2]	<35	<35
Las Cruces[2]	<35	<35
Magdalena[3]	<35	37
Bayard[2]	<35	<35
Old Horse Springs[3]	<35	38
Arenas Valley[1,4]	<35	35
Silver City[1,4]	<35	36
Gila Wilderness[1]	<35	37
Elephant Butte State Park[2]	<35	<35
Gila National Forest[1]	<35	40
Aldo Leopold Wilderness[1,4]	<35	40
Apache Kid Wilderness[3]	<35	40
Bosque del Apache National Wildlife Refuge[2]	<35	35
Rio Grande[2]	<35	<35

Source: Cardno 2019.

Note: [1]Lies beneath proposed Lobos MOA.

[2]Lies outside existing or proposed MOAs.

[3]Lies beneath existing and proposed MOAs.

[4]A single point wasn't established for the Continental Divide Trail since it is a linear feature. The noise calculated at nearby POIs along the trail provide a representation of the noise attributable to military aircraft. Points along or near the trail include: Arenas Valley, Silver City, and Aldo Leopold Wilderness.

Legend: dB = decibel; L_{dnmr} = Onset-Rate Adjusted Monthly Day-Night Average Sound Level.

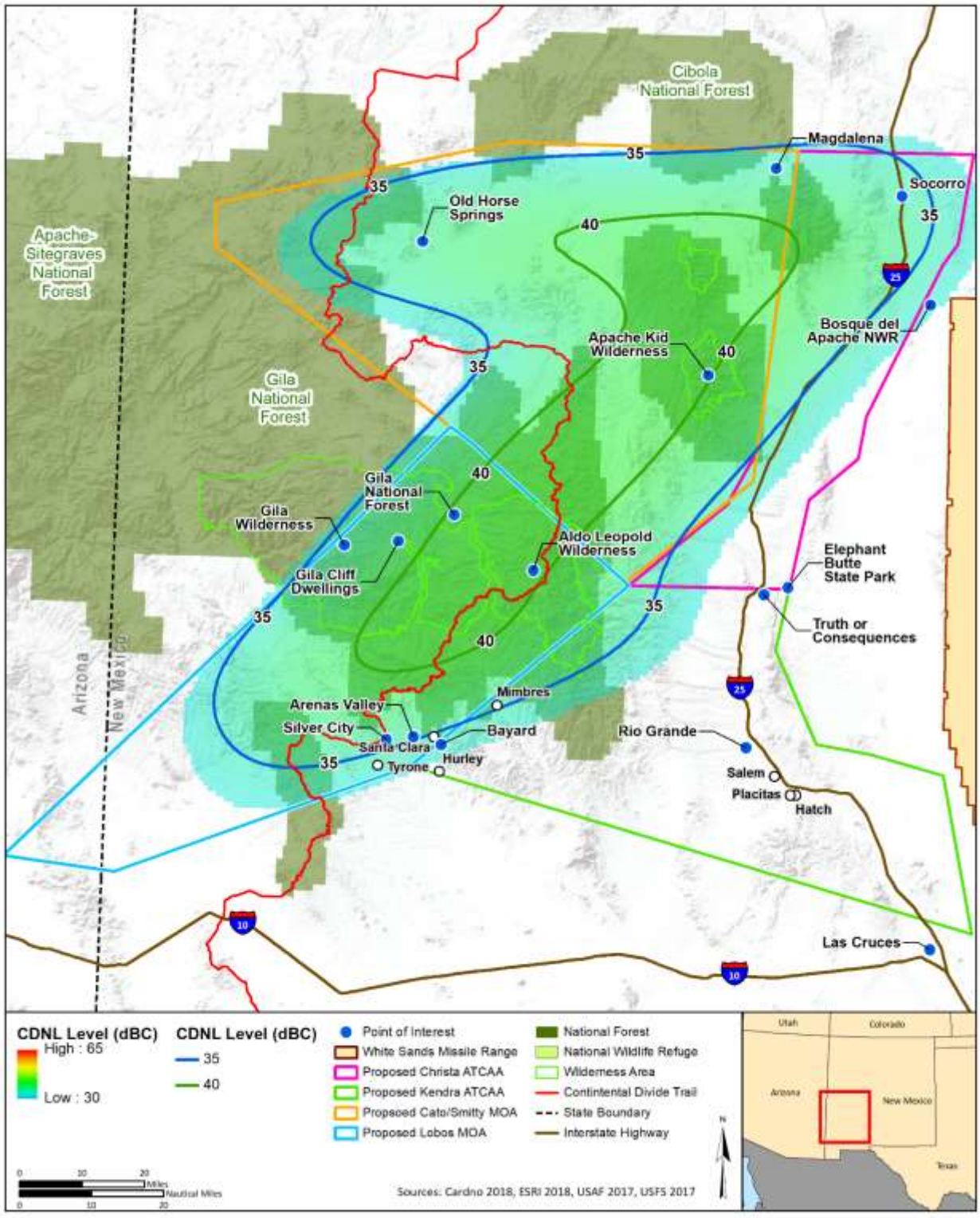

Figure 5.4-1. CDNL Contours under Alternative 2

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6.0 ALTERNATIVE 3 SCENARIO

This section details the modeling data and the resultant noise exposure for the Alternative 3 scenario, in which F-16s from Holloman AFB would use new and reconfigured airspace to the west of WSMR restricted areas (consisting of a reconfigured Smitty MOA, Cato MOA/ATCAA, Lobos High MOA/ATCAA, and Christa and Kendra ATCAAs), as well as using the reconfigured Talon MOA/ATCAA. The use of all of the SUA by F-16s from Holloman AFB would increase to 10,000 sorties. In this alternative, there is no Lobos Low MOA, nor is there a Talon High C MOA/ATCAA. **Figures 6.1-1 and 6.1-2** show the reconfigured airspace for Alternative 3.

6.1 SUBSONIC MODELING DATA

Table 6.1-1 summarizes total aircraft activity in the reconfigured Talon MOA/ATCAA and the proposed Lobos, reconfigured Cato/Smitty MOAs and ATCAAs, and proposed Christa and Kendra ATCAAs. Approximately 90 percent of operations would occur during daytime hours (7 a.m. to 10 p.m.). Note that noise modeling methodology requires input of exact discrete numbers of operations. The operations listed in **Table 6.1-1** are the exact numbers of operations modeled for this analysis. In reality, the exact operations in each MOA component would vary year to year but would generally be in the range included in the model and not exceed the proposed 10,000 maximum analyzed in this study. It should also be noted that these operations numbers are rounded (to nearest ten or hundred operations) in the main body of the EIS for ease of reading.

Transient sorties would use the reconfigured Cato/Smitty MOAs/ATCAA and the proposed Lobos High MOA/ATCAA in the western area, but not the Christa or Kendra ATCAAs. Additionally, there would be transient sorties in the reconfigured Talon MOA/ATCAAs. Just as in Alternative 2, there are 300 transient sorties by F-35A from Luke AFB listed in **Table 6.1-1** that would use only the Lobos High MOA/ATCAA/ occasionally if it were created. The remaining transient sorties modeled in the larger area represent all the other transient use of the airspace (other military aircraft not based at Holloman AFB). The transient aircraft could use the airspace intermittently and include a variety of fighter aircraft. This analysis used a modeling surrogate of FA-18C for these transient aircraft. Ten percent of transient activity would be during nighttime hours (10 p.m. to 7 a.m.). Transient aircraft were modeled with similar altitude requirements to those of the F-16 aircraft from Holloman AFB (as depicted previously in Tables 3.1-2 and 3.1-3) with the exception of the transient F-35A which was modeled only in Lobos High MOA/ATCAA as discussed above.

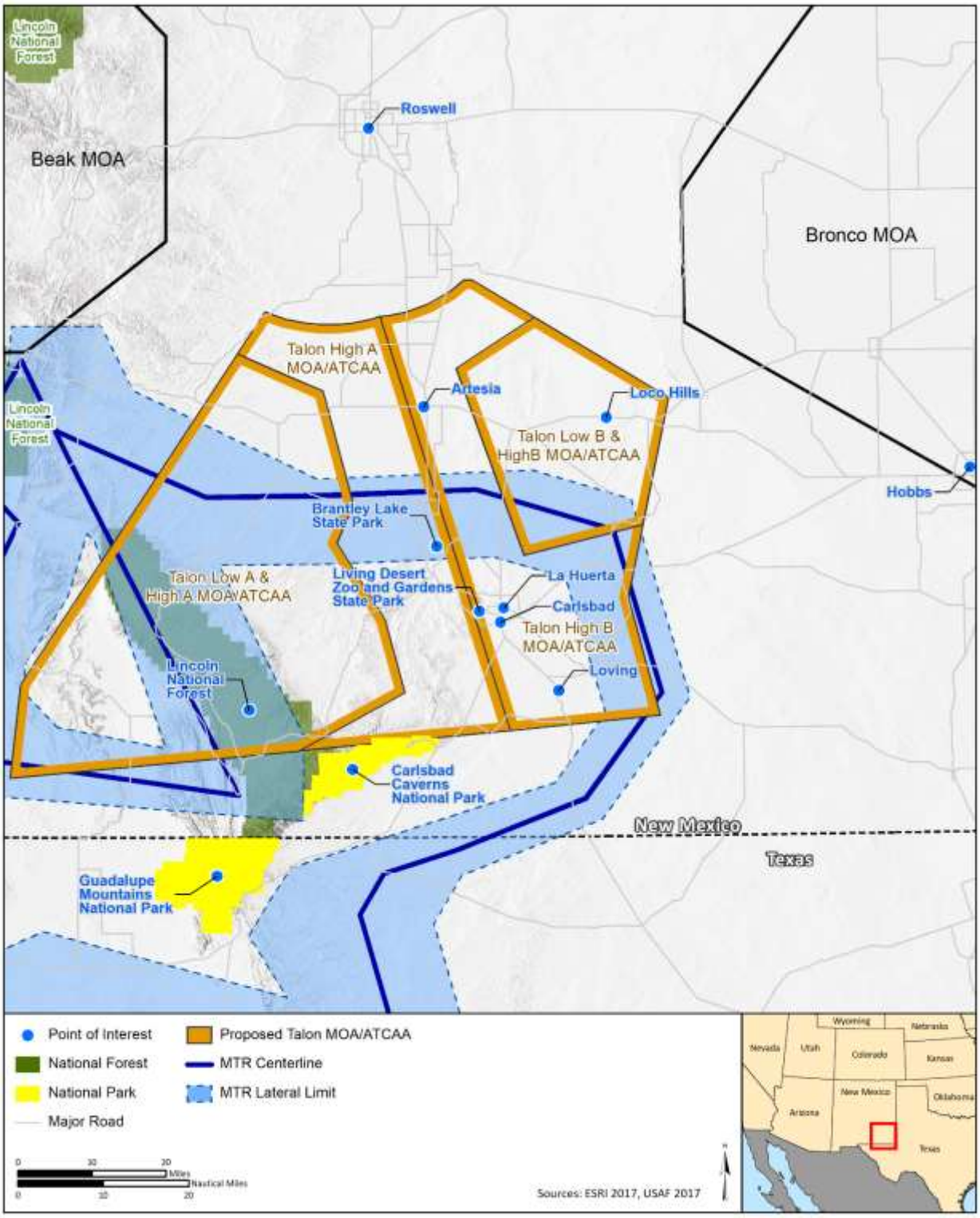

Figure 6.1-1. Proposed Eastern Airspace under Alternative 3

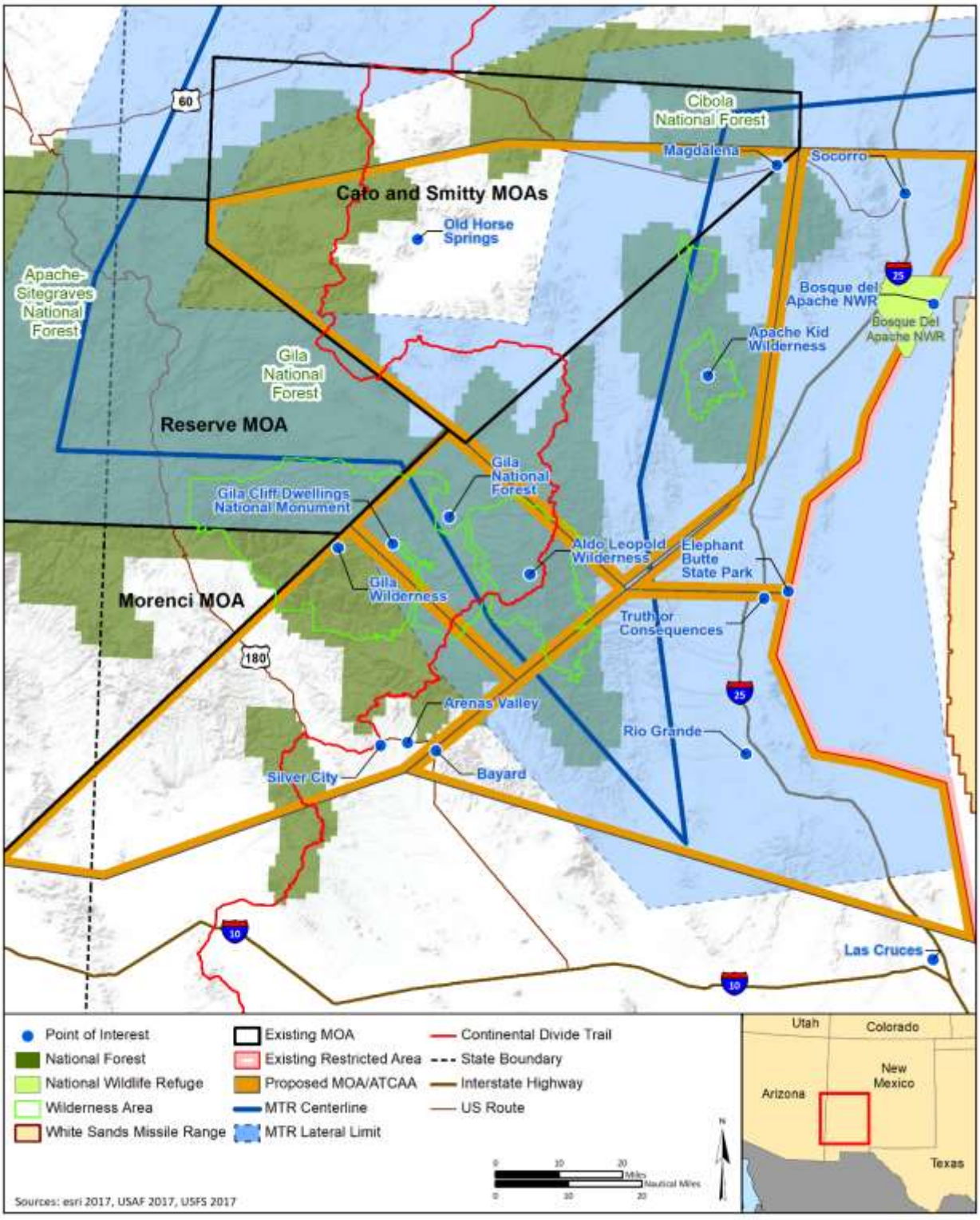

Figure 6.1-2. Proposed Western Airspace under Alternative 3

Table 6.1-1. Alternative 3 Proposed Annual Operations		
Airspace	**F-16 Sorties**	**Transient Sorties**
Talon High A MOA/ATCAA	2,818	373[2]
Talon High B MOA/ATCAA	1,409	187[2]
Talon Low A MOA	2,065	70[2]
Talon Low B MOA	516	70[2]
Cato MOA/ATCAA and Christa ATCAA	1,268	
Smitty MOA	1,106	
Lobos High MOA/ATCAA and Kendra ATCAA	543	
Lobos High MOA/ATCAA and Cato MOA/ATCAA and Christa ATCAA	275	
Cato/Smitty/Lobos High MOA and ATCAAs		300[2]
Lobos High MOA/ATCAA		300[1]
Totals	**10,000**	**1,300**

Notes: [1] F-35A from Luke AFB, using only Lobos High MOA/ATCAA.
[2] Rest of fighter transients, including A-10, AV-8, F-16, F-15, and F-18.
Legend: ATCAA-Air Traffic Control Assigned Airspace; MOA-Military Operations Area.

As with the baseline, the Alternative 3 model is based on annual operations instead of a busy month. This is because Holloman AFB is a training base that would have an even training tempo, without with no large spikes in operational activity. MTR usage included in the baseline would continue to occur under Alternative 3 and is accounted for in the model (see **Table 3.1-4**).

6.2 SUBSONIC NOISE EXPOSURE

Table 6.2-1 shows the calculated L_{dnmr} levels for the baseline and Alternative 3 within each of the MOA/ATCAAs. The highest noise exposure would be within the Talon MOAs with an L_{dnmr} value of 56 dB. The greatest change in DNL occurs within the Talon High B/Low B MOA, with a DNL change of 12 dB (43 dB to 55 dB DNL). While this change is large, the DNL value for the area is well below the 65 DNL threshold used by the DoD for land use recommendations.

The noise levels computed in **Table 6.2-1** represent only the military aircraft contributions to sound levels and do not consider other sources, such as road traffic and wind. Typical ambient noise levels for 'quiet suburban residential' areas range from 40 to 45 dB while noise in rural areas is typically 40 dB or less (ANSI 2013).

Table 6.2-1. Projected Noise Levels Attributable to Aircraft Operations in SUA under Alternative 3		
Proposed Airspace Unit	**Baseline L_{dnmr} (dBA)**	**Projected L_{dnmr} (dBA)**
Talon High A/Low A MOA	54	56
Talon High A Outside Low A MOA	47	47
Talon High B/Low B MOA	43	55
Talon High B Outside Low B MOA	47	47
Cato and Smitty MOAs	47	52
Cato and Smitty MOA West[1]	<35	43
Lobos High MOA	50	50
Kendra ATCAA	50	50
Christa ATCAA	50	50

Source: Cardno 2019.
Note: [1]Western corner of Cato and Smitty MOA with altitude floor of 1,600 feet AGL.
Legend: MOA = Military Operations Area; ATCAA = Air Traffic Control Assigned Airspace; dBA = A-weighted decibel; Ldnmr = Onset-Rate Adjusted Day-Night Average Sound Level.

Table 6.2-2 shows the calculated L_{dnmr} values for the 28 POIs identified within the vicinity of the proposed airspace. The projected L_{dnmr} at 18 of the POIs would remain unchanged under Alternative 3. Noise levels in the community of La Huerta, New Mexico and Living Desert Zoo and Gardens State Park would both decrease slightly under Alternative 3. The highest projected L_{dnmr} value occurs at Lincoln National Forest (55 dB). The greatest increase in L_{dnmr} value would occur at Loco Hills, New Mexico with a projected 53 dB.

Table 6.2-2. Baseline and Projected Noise Levels Attributable to Aircraft Operations at Selected Points of Interest under Alternative 3		
Name	**Baseline L_{dnmr} (dBA)**	**Projected L_{dnmr} (dBA)**
Eastern Points of Interest		
Carlsbad, New Mexico	40	40
Artesia, New Mexico	40	40
Loving, New Mexico	<35	40
Loco Hills, New Mexico	<35	53
La Huerta, New Mexico	41	40
Hobbs, New Mexico	<35	<35
Roswell, New Mexico	<35	<35
Carlsbad Caverns National Park	<35	<35
Guadalupe Mountains National Park	<35	<35
Lincoln National Forest	53	55
Living Desert Zoo and Gardens State Park	41	39
Brantley Lake State Park	41	41
Western Points of Interest[2]		
Gila Cliff Dwellings	<35	<35
Socorro, New Mexico	<35	<35
Truth or Consequences, New Mexico	<35	<35
Las Cruces, New Mexico	<35	<35
Magdalena, New Mexico	<35	45
Bayard, New Mexico	<35	<35
Old Horse Springs, New Mexico	<35	45
Arenas Valley, New Mexico	<35	<35
Silver City, New Mexico	<35	<35

Table 6.2-2. Baseline and Projected Noise Levels Attributable to Aircraft Operations at Selected Points of Interest under Alternative 3 (cont.)		
Name	**Baseline L_{dnmr} (dBA)**	**Projected L_{dnmr} (dBA)**
Gila Wilderness	<35	<35
Elephant Butte State Park	<35	<35
Gila National Forest	<35	<35
Aldo Leopold Wilderness	<35	<35
Apache Kid Wilderness	<35	39
Bosque del Apache National Wildlife Refuge	<35	<35
Rio Grande	<35	<35

Source: Cardno 2019.
Note: [1]Change in dB not calculated if baseline value was reported as <35, as that value is unknown.
[2]A single point wasn't established for the Continental Divide Trail since it is a linear feature. The noise calculated at nearby POIs along the trail provide a representation of the noise attributable to military aircraft. Points along or near the trail include: Arenas Valley, Silver City, and Aldo Leopold Wilderness.
Legend: dB = decibel; L_{dnmr} = Onset-Rate Adjusted Monthly Day-Night Average Sound Level.

6.3 SUPERSONIC MODELING DATA

Under Alternative 3, with increased use of the newly configured Cato ATCAA, the establishment of the Lobos, Christa, and Kendra ATCAAs in the west; and the reconfigured Talon ATCAA in the east, supersonic training would occur more frequently. **Table 6.3-1** shows the numbers of sorties in Alternative 3 that would use supersonic speeds during training flights. There would be no supersonic flight in the MOAs. As stated in **Section 6.1**, the model requires input of exact operations numbers for each airspace component; the operations numbers presented in the main body of the EIS have been rounded for ease of reading.

Table 6.3-1. Alternative 3 Supersonic Sorties	
Airspace	**F-16 Sorties**
Cato ATCAA & Christa ATCAA	127
Lobos ATCAA & Kendra ATCAA	54
Cato and Lobos ATCAAs & Christa ATCAA	275
Talon A ATCAA	282
Talon B ATCAA	141
Total	**879**

Legend: ATCAA=Air Traffic Control Assigned Airspace

6.4 SUPERSONIC NOISE EXPOSURE

Figures 6.4-1 and 6.4-2 show the CDNL level predicted under Alternative 3. Baseline CDNL values were below 35 CDNL, and therefore do not show up as contours. As can be seen, CDNL values gradually increase toward the center of the airspace, but do not exceed 39 CDNL in any of the airspace. These low values are due to the relatively low number of supersonic operations, the altitudes proposed for these operations, and the large area of the airspace.

Table 6.4-1 presents the baseline and projected CDNL attributed to supersonic aircraft activity at the POIs associated with Alternative 3. The majority of the POIs would have a projected CDNL value less than 35 dB. Four POIs would have a slight increase in noise attributable to supersonic flights, the highest

value would be 38 dB. Noise at this level is difficult to accurately measure and would not be perceptibly different from the baseline conditions.

Table 6.4-1. Baseline and Projected Supersonic Noise Levels (CDNL) at Selected Points of Interest under Alternative 3

Name	Baseline CDNL (dBC)	Projected CDNL (dBC)
Eastern Points of Interest		
Carlsbad, New Mexico	<35	<35
Artesia, New Mexico	<35	<35
Loving, New Mexico	<35	<35
Loco Hills, New Mexico	<35	<35
La Huerta, New Mexico	<35	<35
Hobbs, New Mexico	<35	<35
Roswell, New Mexico	<35	<35
Carlsbad Caverns National Park	<35	<35
Guadalupe Mountains National Park	<35	<35
Lincoln National Forest	<35	<35
Living Desert Zoo and Gardens State Park	<35	<35
Brantley Lake State Park	<35	<35
Western Points of Interest[1]		
Gila Cliff Dwellings	<35	37
Socorro, New Mexico	<35	<35
Truth or Consequences, New Mexico	<35	<35
Las Cruces, New Mexico	<35	<35
Magdalena, New Mexico	<35	<35
Bayard, New Mexico	<35	<35
Old Horse Springs, New Mexico	<35	<35
Arenas Valley, New Mexico	<35	<35
Silver City, New Mexico	<35	<35
Gila Wilderness	<35	<35
Elephant Butte State Park	<35	<35
Gila National Forest	<35	38
Aldo Leopold Wilderness	<35	37
Apache Kid Wilderness	<35	37
Bosque del Apache National Wildlife Refuge	<35	<35
Rio Grande	<35	<35

Source: Cardno 2019.

Note: [1]A single point wasn't established for the Continental Divide Trail since it is a linear feature. The noise calculated at nearby POIs along the trail provide a representation of the noise attributable to military aircraft. Points along or near the trail include: Arenas Valley, Silver City, and Aldo Leopold Wilderness.

Legend: dB = decibel; CDNL = C-weighted Day-Night Average Sound Level.

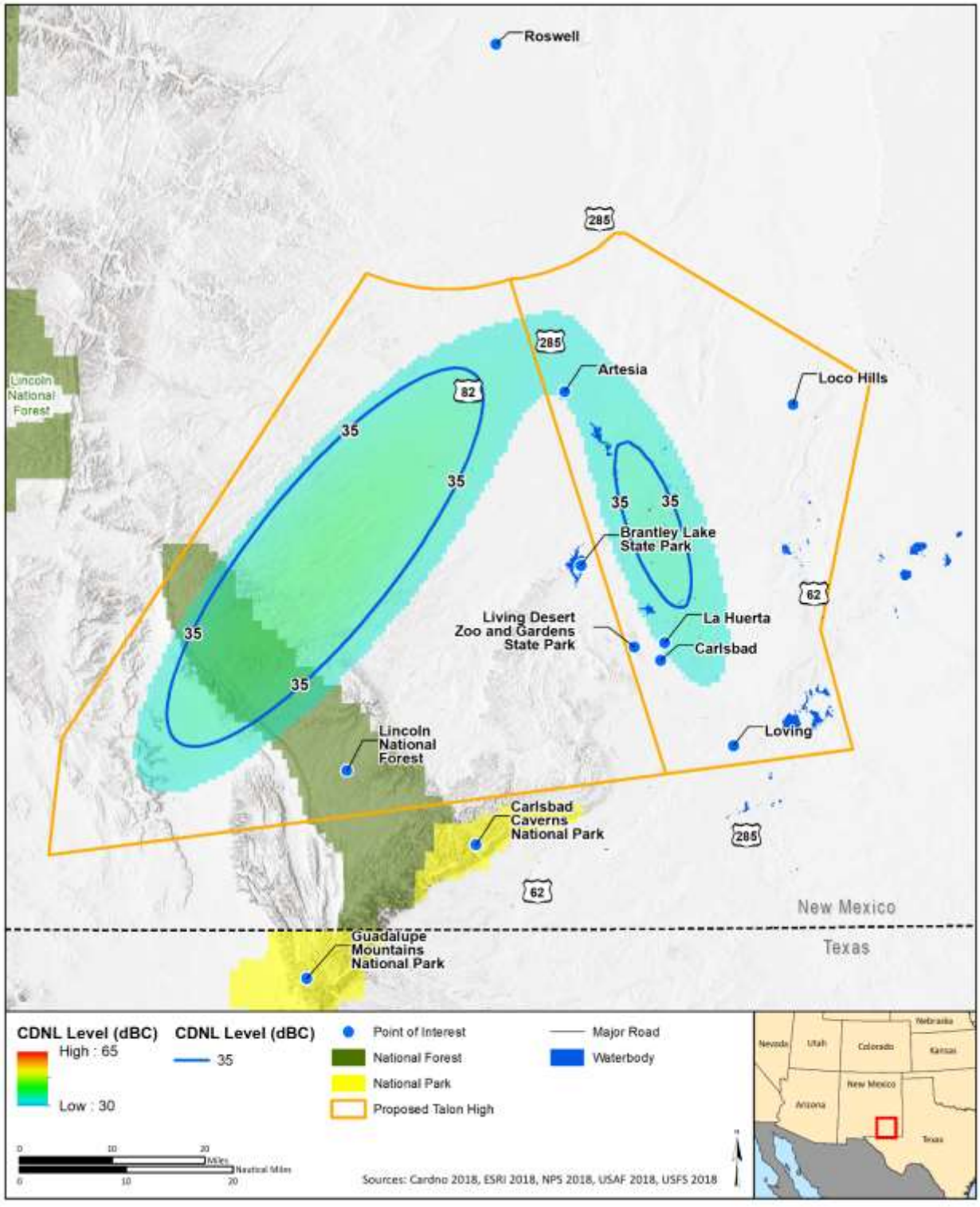

Figure 6.4-1. CDNL Contours under Alterantive 3

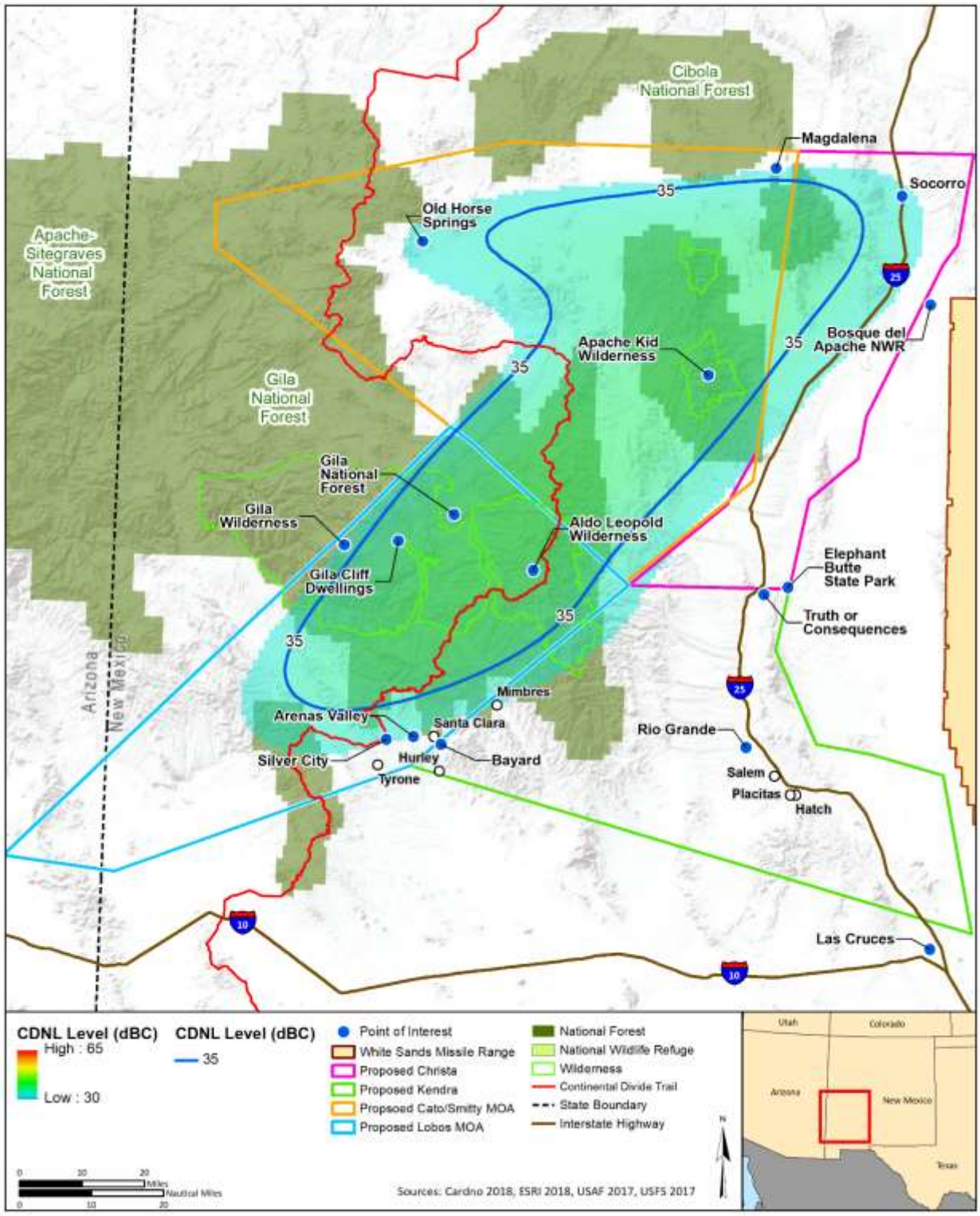

Figure 6.4-2. CDNL Contours under Alternative 3

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7.0 SUPPLEMENTAL METRICS RESULTS

Sections 3.0, 4.0, 5.0 and 6.0 of this report provide estimates of noise modeled for baseline conditions as well as the three alternatives scenarios being considered. Noise levels in these sections were provided in L_{dnmr}, a cumulative metric that provides a measure of exposure to noise over a long period of time. Cumulative metrics do not provide information on the "loudness" of an aircraft flying in the vicinity of an observer. To characterize the sound environment that exists when an aircraft flies over a particular point on the ground, a number of overflight scenarios were modeled.

The noise metrics used to characterize the loudness of an overflight include L_{max} and SEL (see **Section 2.2,** *Supplemental Metrics*, for a description). Calculating these metrics requires consideration of a variety of aircraft power settings, airspeeds, and flight altitudes. Power settings can employ full power (known as military or "mil" thrust) or use of engine afterburner, the loudest power setting. Use of the afterburner in training is limited because of the fuel consumption and is generally only used in the higher altitudes (above 30,000 feet or FL300).

Another factor that drastically affects the loudness of an overflight is the distance between the aircraft and the observer. As the distance between an overflight and the observer increases the noise level decreases. To illustrate this effect, a number of scenarios at three altitudes were developed to quantify the noise levels at various lateral offsets from the overflight:

- *Scenario 1*: An overflight at 500 feet above ground level (AGL), the lowest proposed altitude. Both power settings were included (mil thrust and afterburner); however, use of an afterburner at this altitude would be rare. It should be noted that no overflights at this altitude would occur over populated places in accordance with Federal Aviation Administration (FAA) minimum safe altitudes (14 CFR 91.119) or over designated wilderness areas or National Parks (FAA Aeronautical Information Manual, paragraph 7-4-6). Under the Proposed Action, aircraft operations between 500 feet AGL and 2,000 feet AGL represent less than 10 percent of the proposed training. Therefore, observers are not expected to experience this scenario routinely but it represents the "loudest" scenario.
- *Scenario 2*: An overflight at 2,000 feet AGL. Both power settings were included (mil thrust and afterburner). The FAA requests that pilots not fly over wilderness areas and National Parks less than 2,000 feet AGL (FAA Aeronautical Information Manual, paragraph 7-4-6); therefore, this scenario would not occur over wilderness areas or National Parks beneath the airspace. As stated above, operations between 500 feet AGL and 2,000 feet AGL represent a small percentage of the proposed training.
- *Scenario 3*: An overflight at 10,000 feet AGL. Both power settings were included (mil thrust and afterburner). The majority of the proposed overflights (approximately 80 percent) would be at or above this altitude.

The L_{max} and SEL calculations for these scenarios are provided in **Table 7.1-1.** A graphical representation of the results for the 500 feet overflight (scenario 1) and the 10,000 feet overflight (scenario 3) are provided in **Figures 7.1-1 and 7.1-2**.

Figure 7.1-1 provides a graphical depiction of the L_{max} data for an overflight at 500 feet AGL. The thickness of the orange band on each graph shows the variety of values possible from the differences in power settings. The top edge represents the F-16 using an afterburner and the bottom edge represents the

F-16 at mil thrust power. Afterburner use at this altitude would be rare. The L_{max} (which is the peak noise level) occurs for about 1/8 of a second. To provide a frame of reference, three lines are shown to illustrate the average noise level for common noise sources: a lawnmower, a vacuum cleaner 10 feet away, and a garbage disposal. As illustrated, the peak noise level (L_{max}) from an F-16 flying at 500 feet altitude would typically be louder than the noise of a lawnmower to an observer within a half mile (if the aircraft is using an afterburner) or within a mile of the overflight (if the aircraft is using military power). An observer over 2 miles from the overflight would experience noise levels below the common noise sources (lawnmower, vacuum cleaner, and garbage disposal).

Figure 7.1-2 provides a graphical depiction of the L_{max} data for an overflight at 10,000 feet. The peak noise level (L_{max}) for an observer within a mile of an overflight at this altitude would be similar to the noise level produced by a vacuum cleaner or garbage disposal.

Table 7.1-1. L_{max} and SEL Values for F-16 Overflights at Different Power Settings, Altitudes and Lateral Offsets[1]

Offset (feet lateral distance)	Scenario 1: Scenario 1:Aircraft Altitude - 500 feet AGL				Scenario 2: Aircraft Altitude - 2,000 feet AGL				Scenario 3: Aircraft Altitude - 10,000 feet AGL			
	L_{max}		SEL		L_{max}		SEL		L_{max}		SEL	
	Mil thrust	Afterburner	Mil thrust	Afterburner	Mil thrust	Afterburner	Mil thrust	Afterburner	Mil thrust	Afterburner	Mil thrust	Afterburner
0	108 - 111	117 - 121	118-121	110 - 113	92 - 95	102 - 105	98 - 101	106 - 109	70 - 73	80 - 84	79 - 82	87 - 91
1,000	99 - 102	108 - 111	111-114	104 - 106	91 - 94	100 - 104	97 - 100	105 - 108	70 - 73	80 - 84	79 - 81	87 - 90
5,000	79 - 82	89 - 92	95-99	88 - 90	80 - 82	89 - 92	88 - 91	96 - 99	69 - 71	79 - 82	78 - 80	86 - 89
10,000	66 - 69	76 - 79	85-88	76 - 79	70 - 72	80 - 83	80 - 82	88 - 91	65 - 67	75 - 79	74 - 77	83 - 86
20,000	45 - 47	56 - 59	66-69	57 - 59	57 - 59	67 - 71	69 - 71	77 - 81	57 - 59	67 - 71	67 - 69	76 - 79
30,000	36 - 38	47 - 51	58-62	48 - 51	48 - 50	59 - 62	60 - 62	69 - 73	49 - 51	60 - 64	60 - 62	69 - 73

Note: [1] A range of values is provided for each metric since the F-16 variant flown out of Holloman AFB has two different engine types. The speed used for these models was 450 knots.

Legend: AGL = above ground level; L_{max}=maximum sound level; SEL=Sound Exposure Level.

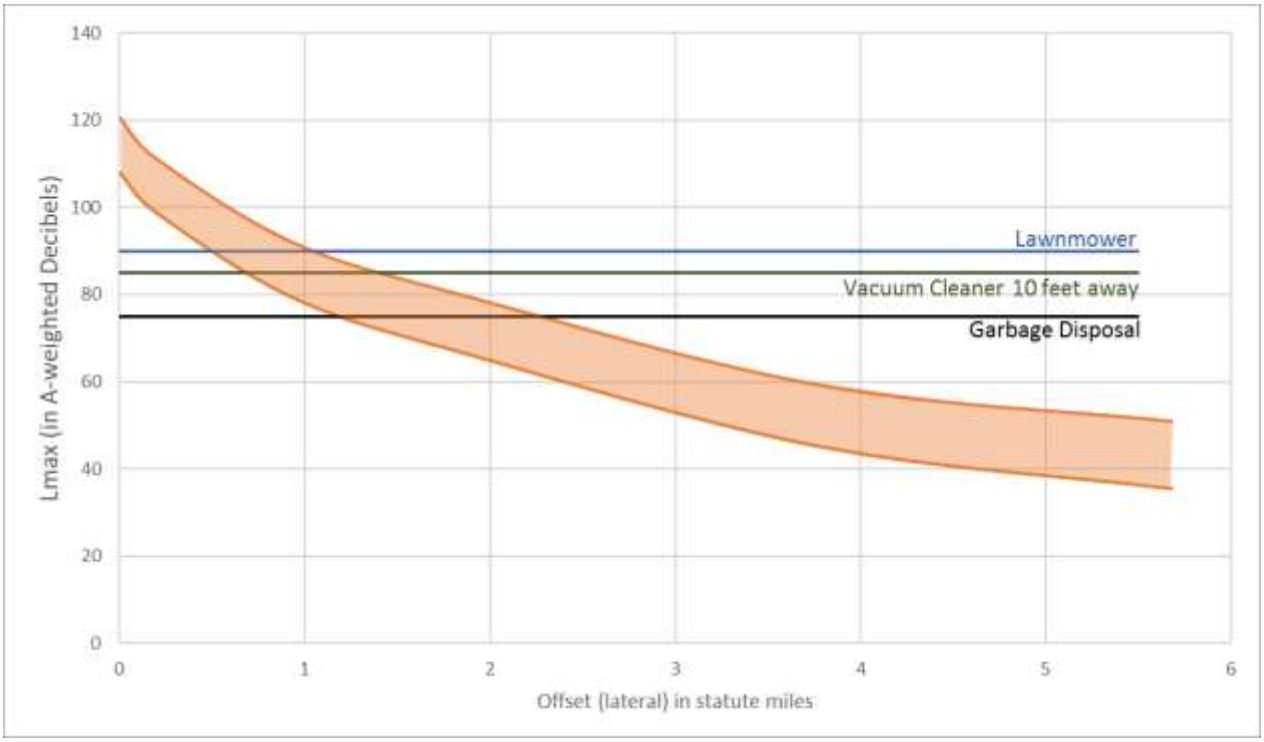

Figure 7.1-1. L_{max} for F-16 Overflight at 500 feet

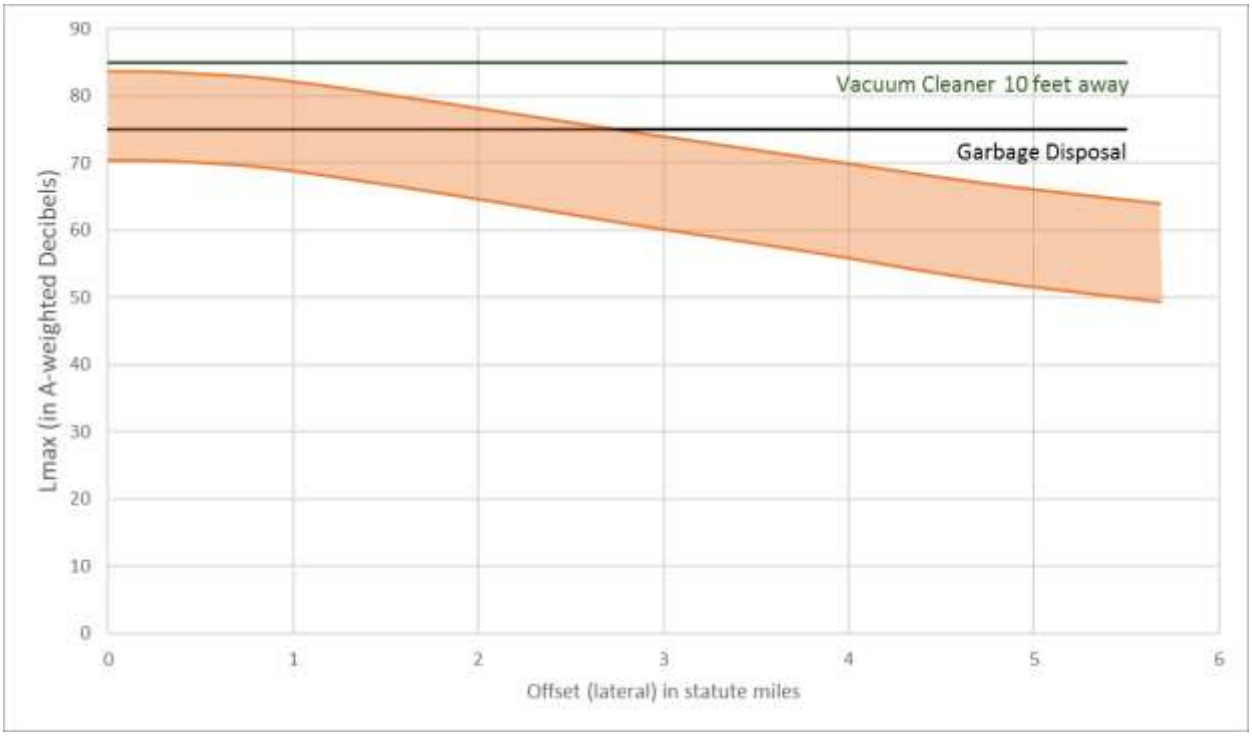

Figure 7.1-2. L_{max} for F-16 Overflight at 10,000 feet

8.0 REFERENCES

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APPENDIX G
AIR QUALITY

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Background AQ Data

Baseline:			**Alt 1:**			**Alt 2:**			**Alt 3:**		
Airsapce	Sorties	Minutes	Airsapce	Sorties	Minutes	Airsapce	Sorties	Minutes	Airsapce	Sorties	Minutes
Talon Low	315	12,606				Talon Low	315	12,606			
			Talon Low A	2,571	102,840				Talon Low A	2,065	82,600
			Talon Low B	1,117	44,680				Talon Low B	516	20,640
						Smitty Low	2,867	86,005	Smitty Low	1,106	33,180
						Lobos Low	716	21,487			

	Sorties	Total Minutes	Total Hrs	GE-100/ PW-220	Sorties	Total Minut	Total Hrs	GE-100/ PW-220	Sorties	Total Minu	Total Hrs	GE-100/ PW-220	Sorties	Total Minute	Total Hrs	GE-100/ PW-220
F-16C	831	33,240	554	305	10,000	400,000	6,667	3,667	10,000	308,310	5,139	2,826	10,000	368,080	6,135	3,374
				249				3,000				2,312				2,761
F/A-18C	1,000	60,000	1,000		1,000	60,000	1,000		1,300	78,000	1,300		1,300	78,000	1,300	
			1,554				**7,667**				**6,439**				**7,435**	

Percent of time at power setting:

MAX	12%
MIL	74%
85%	14%

Engine model split for F016C

Aircraft:		
	56	55%
	45	45%

Block 40 with GE-100 Engine
Block 42 with PW-220 Engine

Below 3kft AGL (Minutes/year)	**3,513**	**42,280**	**32,588**	**38,906**
Baseline	**F-16** **GE-100**	**Alt 1** **F-16** **GE-100**	**Alt 2** **F-16** **GE-100**	**Alt 3** **F-16** **GE-100**
	1,948 minutes below 3K	23,442 minutes below 3K	18,069 minutes below 3K	21,572 minutes below 3K
	228 minutes below 3K in A/B mode	**2,748 minutes below 3K in A/B mode**	**2,118 minutes below 3K in A/B mode**	**2,529 minutes below 3K in A/B mode**
	1,720 minutes below 3K in MIL	**20,694 minutes below 3K in MIL**	**15,951 minutes below 3K in MIL**	**19,043 minutes below 3K in MIL**
	F-16 **PW-220**	**F-16** **PW-220**	**F-16** **PW-220**	**F-16** **PW-220**
	1,565 minutes below 3K	18,838 minutes below 3K	14,520 minutes below 3K	17,334 minutes below 3K
	184 minutes below 3K in A/B mode	**2,208 minutes below 3K in A/B mode**	**1,702 minutes below 3K in A/B mode**	**2,032 minutes below 3K in A/B mode**
	1,382 minutes below 3K in MIL	**16,629 minutes below 3K in MIL**	**12,817 minutes below 3K in MIL**	**15,302 minutes below 3K in MIL**
	F-18C (transients)	**F-18C (transients)**	**F-18C (transients)**	**F-18C (transients)**
	1,333 minutes below 3K	1,333 minutes below 3K	1,000 minutes below 3K	1,233 minutes below 3K
	156 **minutes below 3K in A/B mode**	156 **minutes below 3K in A/B mode**	117 **minutes below 3K in A/B mode**	145 **minutes below 3K in A/B mode**
	1,177 **minutes below 3K in MIL**	1,177 **minutes below 3K in MIL**	883 **minutes below 3K in MIL**	1,088 **minutes below 3K in MIL**
Total Hours	**81**	**727**	**560**	**669**

Holloman AFB MOA Air Calculations

Table 1. Current Ops and Alternatives 1,2, and 3 - Flares

Type	Study Area Category	DODEC ID	# flares	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2
							Emission Factor (lb/item)			
Flare - baseline	CM flare	L410	5,000	0.0004	0.0013	0.00013	0.0000079	0.0062	0.0062	0.011
Alternative 1, 2 or 3	CM flare	L410	15,360	0.0004	0.0013	0.00013	0.0000079	0.0062	0.0062	0.011

			Total Tons Annually				
	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Flare - baseline	0.001	0.003	0.000	0.000	0.016	0.016	0.028
Alternative 1, 2 or 3	0.003	0.010	0.001	0.000	0.048	0.048	0.084
Net Change	0.002	0.007	0.001	0.000	0.032	0.032	0.057

Table 2. Baseline and Alternatives 1, 2 and 3 Total Emissions with Net Change

Type	VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2
	Emissions T/Yr						
Current Operations	0.43	6.03	13.16	0.61	0.77	0.59	1,554
Alternative 1 Operations	4.23	47.22	112.61	5.00	4.77	3.96	12,650
Net Change	**3.81**	**41.19**	**99.45**	**4.40**	**4.00**	**3.37**	**11,096**
Alternative 2 Operations	3.26	36.35	86.71	3.85	3.68	3.05	9,740
Net Change	**2.84**	**30.32**	**73.55**	**3.25**	**2.91**	**2.47**	**8,186**
Alternative 3 Operations	3.90	43.48	103.64	4.61	4.39	3.65	11,644
Net Change	**3.47**	**37.45**	**90.48**	**4.00**	**3.63**	**3.06**	**10,090**

Table 3. Baseline and Alternatives 1, 2 and 3 Total GHG Emissions with Net Change

Type	Flight hrs	Fuel/ engine lb/hr	lb/1000 lb fuel CO_2	T/yr CO_2
Current Operations				
F100-PW-220				
A/B	30	41682	3214.59	2,002
MIL	219	9679	3214.59	3,409
F110-GE-100				
A/B	37	18,088	3214.59	1,064
MIL	268	11,358	3214.59	4,900
F404-GE-400				
A/B	120	15,851	3214.59	6,115

	MIL	880	7,739	3214.59	21,892
Current Operations Totals		**1,554**			**39,381**
Alternative 1 Operations					
F100-PW-220					
	A/B	360	41682	3214.59	24,118
	MIL	2640	9679	3214.59	41,071
F110-GE-100					
	A/B	440	18,088	3214.59	12,793
	MIL	3227	11,358	3214.59	58,910
F404-GE-400					
	A/B	120	15,851	3214.59	6,115
	MIL	880	7,739	3214.59	21,892
Alternative 1 Totals		**7,667**			**164,899**
Net Change		**6,113**			**125,518**
Alternative 2 Operations					
F100-PW-220					
	A/B	277	41682	3214.59	18,587
	MIL	2035	9679	3214.59	31,652
F110-GE-100					
	A/B	339	18,088	3214.59	9,859
	MIL	2487	11,358	3214.59	45,400
F404-GE-400					
	A/B	156	15,851	3214.59	7,949
	MIL	1144	7,739	3214.59	28,460
Alternative 2 Totals		**6,438**			**141,907**
Net Change		**4,884**			**102,525**
Alternative 3 Operations					
F100-PW-220					
	A/B	331	41682	3214.59	22,197
	MIL	2430	9679	3214.59	37,799
F110-GE-100					
	A/B	405	18,088	3214.59	11,771
	MIL	2969	11,358	3214.59	54,203
F404-GE-400					

A/B	156	15,851	3214.59	7,949
MIL	1144	7,739	3214.59	28,460
Alternative 3 Totals	**7,435**			**162,379**
Net Change	**5,881**			**122,997**

404 grams of CO2 per mile
0.89 lb of CO2 per mile

Table 4. Comparison of GHG Emissions to Additional Vehicles

	CO2e Tons/yr		
Alternative 1 Net Change	125,518	282,041,990	miles
		24,525	additional cars driving 11,500 miles per year
Alternative 2 Net Change	102,525	230,377,033	miles
		20,033	additional cars driving 11,500 miles per year
Alternative 3 Net Change	122,997	276,378,275	miles
		24,033	additional cars driving 11,500 miles per year

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: HOLLOMAN AFB
State: New Mexico
County(s): Otero; Chaves; Eddy
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Special Use Airspace Optimization at Holloman Air Force Base

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2019

- Action Purpose and Need:

The action is the proposed optimization of special use Airspace (SUA) to support the training of F-16 pilots stationed at Holloman Air Force Base. The SUA in this region was created over 30 years ago and does not have the necessary volume or capabilities to support the training needs for pilots of modern aircraft.

- Action Description:

Under the Proposed Action, the Air Force would modify the dimensions and altitudes of training airspace in the vicinity of Holloman AFB. The proposed airspace modifications would result in appropriately sized and configured training airspace needed to conduct IQT activities. The modified airspace would improve airspace availability and scheduling flexibility for training activities.

Under Alternative 1, the Talon MOA would be reconfigured and expanded. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Under Alternative 2, the Cato and Smitty MOAs would be reconfigured and expanded, and Lobos MOA would be established. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Alternative 3 would be a combination of Alternatives 1 and 2 with the following differences. The proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative 1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL. SUA no longer needed by the Air Force would be returned to the National Airspace System including the lower portion of the existing Talon Low MOA (300 to 500 feet AGL), the northern portion of the existing Cato and Smitty MOAs, Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA.

- Point of Contact

Name: Lesley Hamilton
Title: Sr Associate
Organization: Cardno
Email:
Phone Number:

- Activity List:

	Activity Type	Activity Title
2.	Aircraft	F-16 (F100-PW-220) aircraft cruising below 3000 feet AGL in airspace
3.	Aircraft	F-16 (F110-GE-100) aircraft cruising below 3000 feet AGL in airspace
4.	Aircraft	F-18 (F404-GE-400) aircraft cruising below 3000 feet AGL in airspace

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Current Operations

- Activity Location
County: Otero; Chaves; Eddy
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: F-16 (F100-PW-220) aircraft cruising below 3000 feet AGL in Talon MOA airspace

- Activity Description:
F-16 (F100-PW-220) aircraft cruising below 3000 feet AGL in Talon MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2019

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.297317
CO	0.862174
PM 10	0.221754

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.200233
CO_2e	5,411

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.297317
CO	0.862174
PM 10	0.221754

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.200233
CO_2e	5,411

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-16C
Engine Model: F100-PW-220
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Original Aircraft Name:
Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1084.00	7.94	1.07	4.61	35.30	2.06	1.85	3234
Approach	3837.00	5.12	1.07	12.53	1.92	2.63	2.37	3234
Intermediate	5770.00	2.89	1.07	22.18	0.86	2.06	1.85	3234
Military	9679.00	1.79	1.07	29.32	0.86	1.33	1.20	3234
After Burn	41682.00	1.53	1.07	8.37	11.99	1.15	1.04	3234

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins): 0
Takeoff [Military] (mins): 138.2
Takeoff [After Burn] (mins): 18.4
Climb Out [Intermediate] (mins): 0
Approach [Approach] (mins): 0
Taxi/Idle In [Idle] (mins): 0

- Trim Test

Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0
AfterBurn (mins): 0

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Current Operations

- Activity Location
County: Catron; Eddy; Otero
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: F-16 (F110-GE-100) aircraft cruising below 3000 feet AGL in Talon MOA airspace

- Activity Description:
F-16 (F110-GE-100) aircraft cruising below 3000 feet AGL in Talon MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2019

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.047539
CO	2.866950
PM 10	0.137725

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.102311
CO_2e	5,964

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.047539
CO	2.866950
PM 10	0.137725

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.102311
CO_2e	5,964

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-16C
Engine Model: F110-GE-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1111.00	0.22	1.07	3.77	24.11	2.60	1.12	3234
Approach	5080.00	0.03	1.07	9.78	5.77	1.37	0.91	3234
Intermediate	7332.00	0.05	1.07	16.92	3.47	0.58	0.41	3234
Military	11358.00	0.04	1.07	29.00	3.38	0.14	0.00	3234
After Burn	18088.00	1.21	1.07	14.26	67.41	3.35	2.98	3234

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins): 0
Takeoff [Military] (mins): 172

Takeoff [After Burn] (mins): 22.8
Climb Out [Intermediate] (mins): 0
Approach [Approach] (mins): 0
Taxi/Idle In [Idle] (mins): 0

- Trim Test

Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0
AfterBurn (mins): 0

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Current Operations

- Activity Location
County: Catron; Eddy; Otero
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: F-18 (F404-GE-400) aircraft cruising below 3000 feet AGL in Talon MOA airspace

- Activity Description:
F-18 (F404-GE-400) aircraft cruising below 3000 feet AGL in Talon MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2019

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.079280
CO	2.298090
PM 10	0.392004

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.267200
CO_2e	28,007

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.079280
CO	2.298090
PM 10	0.392004

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.267200
CO_2e	28,007

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F/A-18C
Engine Model: F404-GE-400
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	685.00	3.39	1.07	1.70	110.18	4.47	3.10	3234
Approach	3111.00	0.04	1.07	7.86	2.02	1.46	0.87	3234
Intermediate	6464.00	0.07	1.07	17.03	1.54	1.57	0.90	3234
Military	7739.00	0.02	1.07	25.83	1.48	1.61	0.89	3234
After Burn	15851.00	1.85	1.07	5.43	50.31	3.57	3.21	3234

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins): 0
Takeoff [Military] (mins): 117.7
Takeoff [After Burn] (mins): 15.6
Climb Out [Intermediate] (mins): 0
Approach [Approach] (mins): 0
Taxi/Idle In [Idle] (mins): 0

- Trim Test

Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0
AfterBurn (mins): 0

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

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 of current operations.

a. Action Location:

Base: HOLLOMAN AFB
State: New Mexico
County(s): Otero; Chaves; Eddy
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Special Use Airspace Optimization at Holloman Air Force Base

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2019

e. Action Description:

Under the Proposed Action, the Air Force would modify the dimensions and altitudes of training airspace in the vicinity of Holloman AFB. The proposed airspace modifications would result in appropriately sized and configured training airspace needed to conduct IQT activities. The modified airspace would improve airspace availability and scheduling flexibility for training activities.

Under Alternative 1, the Talon MOA would be reconfigured and expanded. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Under Alternative 2, the Cato and Smitty MOAs would be reconfigured and expanded, and Lobos MOA would be established. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Alternative 3 would be a combination of Alternatives 1 and 2 with the following differences. The proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative 1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL. SUA no longer needed by the Air Force would be returned to the National Airspace System including the lower portion of the existing Talon Low MOA (300 to 500 feet AGL), the northern portion of the existing Cato and Smitty MOAs, Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA.

f. Point of Contact:

Name: Lesley Hamilton
Title: Sr Associate
Organization: Cardno
Email:
Phone Number:

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: HOLLOMAN AFB
State: New Mexico
County(s): Chaves; Eddy; Otero
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Special Use Airspace Optimization at Holloman Air Force Base

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2022

- Action Purpose and Need:

The action is the proposed optimization of Special Use Airspace (SUA) to support the training of F-16 pilots stationed at Holloman Air Force Base. The SUA in this region was created over 30 years ago and does not have the necessary volume or capabilities to support the training needs for pilots of modern aircraft.

- Action Description:

Under the Proposed Action, the Air Force would modify the dimensions and altitudes of training airspace in the vicinity of Holloman AFB. The proposed airspace modifications would result in appropriately sized and configured training airspace needed to conduct IQT activities. The modified airspace would improve airspace availability and scheduling flexibility for training activities.

Under Alternative 1, the Talon MOA would be reconfigured and expanded. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Under Alternative 2, the Cato and Smitty MOAs would be reconfigured and expanded, and Lobos MOA would be established. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Alternative 3 would be a combination of Alternatives 1 and 2, the proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative 1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL as opposed to the 500 feet AGL proposed under Alternative 2. SUA no longer needed by the Air Force would be returned to the National Airspace System including the lower portion of the existing Talon Low MOA (300 to 500 feet AGL), the northern portion of the existing Cato and Smitty MOAs, Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA.

- Point of Contact

Name: Lesley Hamilton
Title: Sr Associate
Organization: Cardno
Email:
Phone Number:

- Activity List:

	Activity Type	Activity Title
2.	Aircraft	Aircraft cruising below 3000 feet AGL in Talon MOA airspace
3.	Aircraft	Aircraft cruising below 3000 feet AGL in airspace
4.	Aircraft	Aircraft cruising below 3000 feet AGL in Talon MOA airspace

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Chaves; Eddy; Otero
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Aircraft cruising below 3000 feet AGL in Talon Low MOA airspace

- Activity Description:
F-16 (F100-PW-220) cruising below 3000 feet AGL in Talon Low MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2022

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	3.576765
CO	10.368002
PM 10	2.666530

Pollutant	Emissions Per Year (TONs)
PM 2.5	2.407333
CO_2e	*65,189

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	3.576765
CO	10.368002
PM 10	2.666530

Pollutant	Emissions Per Year (TONs)
PM 2.5	2.407333
CO_2e	*65,189

*includes entire flight duration

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-16C
Engine Model: F100-PW-220
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1084.00	7.94	1.07	4.61	35.30	2.06	1.85	3234
Approach	3837.00	5.12	1.07	12.53	1.92	2.63	2.37	3234
Intermediate	5770.00	2.89	1.07	22.18	0.86	2.06	1.85	3234
Military	9679.00	1.79	1.07	29.32	0.86	1.33	1.20	3234
After Burn	41682.00	1.53	1.07	8.37	11.99	1.15	1.04	3234

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out [Idle] (mins): 0
Takeoff [Military] (mins): 1662.9
Takeoff [After Burn] (mins): 220.8
Climb Out [Intermediate] (mins): 0
Approach [Approach] (mins): 0
Taxi/Idle In [Idle] (mins): 0

- Trim Test
Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0
AfterBurn (mins): 0

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
1	1	No	T-62T-40-8	

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
T-62T-40-8	272.6	0.493	0.289	1.216	3.759	0.131	0.037	910.8

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Chaves; Eddy; Otero
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Aircraft cruising below 3000 feet AGL in Talon Low MOA airspace

- Activity Description:
F-16 (F110-GE-100) cruising below 3000 feet AGL in Talon Low MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2022

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.572843
CO	34.542609
PM 10	1.659464

Pollutant	Emissions Per Year (TONs)
PM 2.5	1.233119
CO_2e	*71,703

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.572843
CO	34.542609
PM 10	1.659464

Pollutant	Emissions Per Year (TONs)
PM 2.5	1.233119
CO_2e	*71,703

*includes entire flight duration

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-16C
Engine Model: F110-GE-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1111.00	0.22	1.07	3.77	24.11	2.60	1.12	3234
Approach	5080.00	0.03	1.07	9.78	5.77	1.37	0.91	3234
Intermediate	7332.00	0.05	1.07	16.92	3.47	0.58	0.41	3234
Military	11358.00	0.04	1.07	29.00	3.38	0.14	0.00	3234
After Burn	18088.00	1.21	1.07	14.26	67.41	3.35	2.98	3234

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins):	0
Takeoff [Military] (mins):	2069.4
Takeoff [After Burn] (mins):	274.8
Climb Out [Intermediate] (mins):	0
Approach [Approach] (mins):	0
Taxi/Idle In [Idle] (mins):	0

- Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Chaves; Eddy; Otero
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Aircraft cruising below 3000 feet AGL in Talon Low MOA airspace

- Activity Description:
F-18 (F404-GE-400) cruising below 3000 feet AGL in Talon Low MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2022

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.079280
CO	2.298090
PM 10	0.392004

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.267200
CO_2e	*28,007

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.079280
CO	2.298090
PM 10	0.392004

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.267200
CO_2e	*28,007

*includes entire flight duration

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F/A-18C
Engine Model: F404-GE-400
Primary Function: Combat

Aircraft has After burn: Yes
Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	685.00	3.39	1.07	1.70	110.18	4.47	3.10	3234
Approach	3111.00	0.04	1.07	7.86	2.02	1.46	0.87	3234
Intermediate	6464.00	0.07	1.07	17.03	1.54	1.57	0.90	3234
Military	7739.00	0.02	1.07	25.83	1.48	1.61	0.89	3234
After Burn	15851.00	1.85	1.07	5.43	50.31	3.57	3.21	3234

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out [Idle] (mins): 0
Takeoff [Military] (mins): 117.7
Takeoff [After Burn] (mins): 15.6
Climb Out [Intermediate] (mins): 0
Approach [Approach] (mins): 0
Taxi/Idle In [Idle] (mins): 0

- Trim Test
Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0
AfterBurn (mins): 0

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)

$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

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

Total combined direct and indirect emissions associated with the current operations were estimated through ACAM on a calendar-year basis.

Analysis Summary:

2019

Pollutant	Action Emissions (ton/yr)
NOT IN A REGULATORY AREA	
VOC	0.424
NOx	13.160
CO	6.027
SOx	0.605
PM 10	0.751
PM 2.5	0.570
Pb	0.000
NH3	0.000
CO2e	*39,381

*entire flight duration

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: HOLLOMAN AFB
State: New Mexico
County(s): Chaves; Eddy; Otero
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Special Use Airspace Optimization at Holloman Air Force Base

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2022

e. Action Description:

Under the Proposed Action, the Air Force would modify the dimensions and altitudes of training airspace in the vicinity of Holloman AFB. The proposed airspace modifications would result in appropriately sized and configured training airspace needed to conduct IQT activities. The modified airspace would improve airspace availability and scheduling flexibility for training activities.

Under Alternative 1, the Talon MOA would be reconfigured and expanded. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Under Alternative 2, the Cato and Smitty MOAs would be reconfigured and expanded, and Lobos MOA would be established. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Alternative 3 would be a combination of Alternatives 1 and 2, the proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative 1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL as opposed to the 500 feet AGL proposed under Alternative 2. SUA no longer needed by the Air Force would be returned to the National Airspace System including the lower portion of the existing Talon Low MOA (300 to 500 feet AGL), the northern portion of the existing Cato and Smitty MOAs, Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA.

f. Point of Contact:

Name: Lesley Hamilton
Title: Sr Associate
Organization: Cardno
Email:
Phone Number:

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

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

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 PSD thresholds 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.

An Air Quality Indicator value of 250 tons/yr is used based on EPA's PSD threshold. Therefore, the worst-case year emissions were compared against the Air Quality Indicator and are summarized below.

Analysis Summary:

2022 - (Steady State)

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	4.229	250	No
NOx	112.605	250	No
CO	47.209	250	No
SOx	5.003	250	No
PM 10	4.718	250	No
PM 2.5	3.908	250	No
CO2e	*164,899	NA	NA

*entire flight duration

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

Lesley Hamilton

Lesley Hamilton, Sr Associate

8/20/19

DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: HOLLOMAN AFB
State: New Mexico and Arizona
County(s): Catron; Hidalgo; Otero; Sierra; Socorro, NM and Graham, AZ
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Special Use Airspace Optimization at Holloman Air Force Base

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2022

- Action Purpose and Need:

The action is the proposed optimization of Special Use Airspace (SUA) to support the training of F-16 pilots stationed at Holloman Air Force Base. The SUA in this region was created over 30 years ago and does not have the necessary volume or capabilities to support the training needs for pilots of modern aircraft.

- Action Description:

Under the Proposed Action, the Air Force would modify the dimensions and altitudes of training airspace in the vicinity of Holloman AFB. The proposed airspace modifications would result in appropriately sized and configured training airspace needed to conduct IQT activities. The modified airspace would improve airspace availability and scheduling flexibility for training activities.

Under Alternative 1, the Talon MOA would be reconfigured and expanded. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Under Alternative 2, the Cato and Smitty MOAs would be reconfigured and expanded, and Lobos MOA would be established. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Alternative 3 would be a combination of Alternatives 1 and 2, the proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative 1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL as opposed to the 500 feet AGL proposed under Alternative 2. SUA no longer needed by the Air Force would be returned to the National Airspace System including the lower portion of the existing Talon Low MOA (300 to 500 feet AGL), the northern portion of the existing Cato and Smitty MOAs, Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA.

- Point of Contact

Name: Lesley Hamilton
Title: Sr Associate
Organization: Cardno
Email:
Phone Number:

- Activity List:

	Activity Type	Activity Title
2.	Aircraft	Aircraft cruising below 3000 feet AGL in Smitty Low and Lobos Low MOA airspace
3.	Aircraft	Aircraft cruising below 3000 feet AGL in Smitty Low and Lobos Low MOA airspace
4.	Aircraft	Aircraft cruising below 3000 feet AGL in Smitty Low and Lobos Low MOA airspace

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Catron; Hidalgo; Otero; Sierra; Socorro, NM and Graham, AZ
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Aircraft cruising below 3000 feet AGL in Smitty Low and Lobos Low MOA airspace

- Activity Description:
F-16 (F100-PW-220) cruising below 3000 feet AGL in Smitty Low and Lobos Low MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2022

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	2.757483
CO	7.996226
PM 10	2.055472

Pollutant	Emissions Per Year (TONs)
PM 2.5	1.855580
CO_2e	*50,239

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	2.757483
CO	7.996226
PM 10	2.055472

Pollutant	Emissions Per Year (TONs)
PM 2.5	1.855580
CO_2e	*50,239

*includes entire flight duration

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-16C
Engine Model: F100-PW-220
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1084.00	7.94	1.07	4.61	35.30	2.06	1.85	3234
Approach	3837.00	5.12	1.07	12.53	1.92	2.63	2.37	3234
Intermediate	5770.00	2.89	1.07	22.18	0.86	2.06	1.85	3234
Military	9679.00	1.79	1.07	29.32	0.86	1.33	1.20	3234
After Burn	41682.00	1.53	1.07	8.37	11.99	1.15	1.04	3234

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out [Idle] (mins): 0
Takeoff [Military] (mins): 1281.7
Takeoff [After Burn] (mins): 170.2
Climb Out [Intermediate] (mins): 0
Approach [Approach] (mins): 0
Taxi/Idle In [Idle] (mins): 0

- Trim Test
Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0
AfterBurn (mins): 0

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
1	1	No	T-62T-40-8	

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
T-62T-40-8	272.6	0.493	0.289	1.216	3.759	0.131	0.037	910.8

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Catron; Hidalgo; Otero; Sierra; Socorro, NM and Graham, AZ
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Aircraft cruising below 3000 feet AGL in Smitty Low and Lobos Low MOA airspace

- Activity Description:
F-16 (F110-GE-100) cruising below 3000 feet AGL in Smitty Low and Lobos Low MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2022

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.441519
CO	26.623854
PM 10	1.279036

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.950417
CO_2e	*55,259

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.441519
CO	26.623854
PM 10	1.279036

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.950417
CO_2e	*55,259

*includes entire flight duration

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-16C
Engine Model: F110-GE-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1111.00	0.22	1.07	3.77	24.11	2.60	1.12	3234
Approach	5080.00	0.03	1.07	9.78	5.77	1.37	0.91	3234
Intermediate	7332.00	0.05	1.07	16.92	3.47	0.58	0.41	3234
Military	11358.00	0.04	1.07	29.00	3.38	0.14	0.00	3234
After Burn	18088.00	1.21	1.07	14.26	67.41	3.35	2.98	3234

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins):	0
Takeoff [Military] (mins):	1595.1
Takeoff [After Burn] (mins):	211.8
Climb Out [Intermediate] (mins):	0
Approach [Approach] (mins):	0
Taxi/Idle In [Idle] (mins):	0

- Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Catron; Hidalgo; Otero; Sierra; Socorro, NM and Graham, AZ
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Aircraft cruising below 3000 feet AGL in Smitty Low and Lobos Low MOA airspace

- Activity Description:
F-18 (F404-GE-400) cruising below 3000 feet AGL in Smitty Low and Lobos Low MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2022

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.059460
CO	1.723615
PM 10	0.294055

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.200429
CO_2e	*36,409

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.059460
CO	1.723615
PM 10	0.294055

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.200429
CO_2e	*36,409

*includes entire flight duration

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F/A-18C
Engine Model: F404-GE-400
Primary Function: Combat
Aircraft has After burn: Yes

Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	685.00	3.39	1.07	1.70	110.18	4.47	3.10	3234
Approach	3111.00	0.04	1.07	7.86	2.02	1.46	0.87	3234
Intermediate	6464.00	0.07	1.07	17.03	1.54	1.57	0.90	3234
Military	7739.00	0.02	1.07	25.83	1.48	1.61	0.89	3234
After Burn	15851.00	1.85	1.07	5.43	50.31	3.57	3.21	3234

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out [Idle] (mins): 0
Takeoff [Military] (mins): 88.3
Takeoff [After Burn] (mins): 11.7
Climb Out [Intermediate] (mins): 0
Approach [Approach] (mins): 0
Taxi/Idle In [Idle] (mins): 0

- Trim Test
Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0
AfterBurn (mins): 0

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: HOLLOMAN AFB
State: New Mexico and Arizona
County(s): Grant County, NM and Greenlee County, AZ
Regulatory Area(s): Grant Co, NM and Greenlee Co, AZ

- Action Title: Special Use Airspace Optimization at Holloman Air Force Base

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2022

- Action Purpose and Need:

The action is the proposed optimization of Special Use Airspace (SUA) to support the training of F-16 pilots stationed at Holloman Air Force Base. The SUA in this region was created over 30 years ago and does not have the necessary volume or capabilities to support the training needs for pilots of modern aircraft.

- Action Description:

Under the Proposed Action, the Air Force would modify the dimensions and altitudes of training airspace in the vicinity of Holloman AFB. The proposed airspace modifications would result in appropriately sized and configured training airspace needed to conduct IQT activities. The modified airspace would improve airspace availability and scheduling flexibility for training activities.

Under Alternative 1, the Talon MOA would be reconfigured and expanded. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Under Alternative 2, the Cato and Smitty MOAs would be reconfigured and expanded, and Lobos MOA would be established. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Alternative 3 would be a combination of Alternatives 1 and 2, the proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative 1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL as opposed to the 500 feet AGL proposed under Alternative 2. SUA no longer needed by the Air Force would be returned to the National Airspace System including the lower portion of the existing Talon Low MOA (300 to 500 feet AGL), the northern portion of the existing Cato and Smitty MOAs, Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA.

- Point of Contact

Name: Lesley Hamilton
Title: Sr Associate
Organization: Cardno
Email:
Phone Number:

- Activity List:

	Activity Type	Activity Title
2.	Aircraft	Aircraft cruising below 3000 feet AGL in Lobos Low MOA airspace
3.	Aircraft	Aircraft cruising below 3000 feet AGL in Lobos Low MOA airspace
4.	Aircraft	Aircraft cruising below 3000 feet AGL in Lobos Low MOA airspace

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Grant County, NM and Greenlee County, AZ
Regulatory Area(s): Grant Co, NM and Greenlee Co, AZ

- Activity Title: Aircraft cruising below 3000 feet AGL in Lobos Low MOA airspace

- Activity Description:
F-16 (F100-PW-220) cruising below 3000 feet AGL in Lobos Low MOA

- Activity Start Date
Start Month: 1
Start Year: 2022

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	2.757483
CO	7.996226
PM 10	2.055472

Pollutant	Emissions Per Year (TONs)
PM 2.5	1.855580
CO_2e	*50,239

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	2.757483
CO	7.996226
PM 10	2.055472

Pollutant	Emissions Per Year (TONs)
PM 2.5	1.855580
CO_2e	*50,239

*includes entire flight duration

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-16C
Engine Model: F100-PW-220
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1084.00	7.94	1.07	4.61	35.30	2.06	1.85	3234
Approach	3837.00	5.12	1.07	12.53	1.92	2.63	2.37	3234
Intermediate	5770.00	2.89	1.07	22.18	0.86	2.06	1.85	3234
Military	9679.00	1.79	1.07	29.32	0.86	1.33	1.20	3234
After Burn	41682.00	1.53	1.07	8.37	11.99	1.15	1.04	3234

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out [Idle] (mins): 0
Takeoff [Military] (mins): 1281.7
Takeoff [After Burn] (mins): 170.2
Climb Out [Intermediate] (mins): 0
Approach [Approach] (mins): 0
Taxi/Idle In [Idle] (mins): 0

- Trim Test
Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0
AfterBurn (mins): 0

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)

$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Grant County, NM and Greenlee County, AZ
Regulatory Area(s): Grant Co, NM and Greenlee Co, AZ

- Activity Title: Aircraft cruising below 3000 feet AGL in airspace

- Activity Description:
F-16 (F110-GE-100) cruising below 3000 feet AGL in Lobos Low MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2022

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

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.441519
CO	26.623854
PM 10	1.279036

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.950417
CO_2e	*55,259

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.441519
CO	26.623854
PM 10	1.279036

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.950417
CO_2e	*55,259

*includes entire flight duration

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-16C
Engine Model: F110-GE-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1111.00	0.22	1.07	3.77	24.11	2.60	1.12	3234
Approach	5080.00	0.03	1.07	9.78	5.77	1.37	0.91	3234
Intermediate	7332.00	0.05	1.07	16.92	3.47	0.58	0.41	3234
Military	11358.00	0.04	1.07	29.00	3.38	0.14	0.00	3234
After Burn	18088.00	1.21	1.07	14.26	67.41	3.35	2.98	3234

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins):	0
Takeoff [Military] (mins):	1595.1
Takeoff [After Burn] (mins):	211.8
Climb Out [Intermediate] (mins):	0
Approach [Approach] (mins):	0
Taxi/Idle In [Idle] (mins):	0

- Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Grant County, NM and Greenlee County, AZ
Regulatory Area(s): Grant Co, NM and Greenlee Co, AZ

- Activity Title: Aircraft cruising below 3000 feet AGL in Lobos Low MOA airspace

- Activity Description:
F-18 (F404-GE-400) cruising below 3000 feet AGL in Lobos Low MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2022

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.059460
CO	1.723615
PM 10	0.294055

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.200429
CO_2e	*36,409

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.059460
CO	1.723615
PM 10	0.294055

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.200429
CO_2e	*36,409

*includes entire flight duration

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F/A-18C
Engine Model: F404-GE-400
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 2

- Aircraft & Engine Surrogate

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	685.00	3.39	1.07	1.70	110.18	4.47	3.10	3234
Approach	3111.00	0.04	1.07	7.86	2.02	1.46	0.87	3234
Intermediate	6464.00	0.07	1.07	17.03	1.54	1.57	0.90	3234
Military	7739.00	0.02	1.07	25.83	1.48	1.61	0.89	3234
After Burn	15851.00	1.85	1.07	5.43	50.31	3.57	3.21	3234

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out [Idle] (mins): 0
Takeoff [Military] (mins): 88.3
Takeoff [After Burn] (mins): 11.7
Climb Out [Intermediate] (mins): 0
Approach [Approach] (mins): 0
Taxi/Idle In [Idle] (mins): 0

- Trim Test
Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0
AfterBurn (mins): 0

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

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

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: HOLLOMAN AFB
State: New Mexico, Arizona
County(s): Grant, NM and Greenlee, AZ
Regulatory Area(s): Grant Co, NM and Greenlee Co, AZ

b. Action Title: Special Use Airspace Optimization at Holloman Air Force Base

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2022

e. Action Description:

Under the Proposed Action, the Air Force would modify the dimensions and altitudes of training airspace in the vicinity of Holloman AFB. The proposed airspace modifications would result in appropriately sized and configured training airspace needed to conduct IQT activities. The modified airspace would improve airspace availability and scheduling flexibility for training activities.

Under Alternative 1, the Talon MOA would be reconfigured and expanded. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Under Alternative 2, the Cato and Smitty MOAs would be reconfigured and expanded, and Lobos MOA would be established. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Alternative 3 would be a combination of Alternatives 1 and 2, the proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative 1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL as opposed to the 500 feet AGL proposed under Alternative 2. SUA no longer needed by the Air Force would be returned to the National Airspace System including the lower portion of the existing Talon Low MOA (300 to 500 feet AGL), the northern portion of the existing Cato and Smitty MOAs, Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA.

f. Point of Contact:

Name: Lesley Hamilton
Title: Sr Associate
Organization: Cardno
Email:
Phone Number:

2. Analysis: 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. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: _____ applicable
__X__ not applicable

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

Conformity Analysis Summary:

2022 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY		Air Quality Indicator	
		Threshold (ton/yr)	Exceedance (Yes or No)	Threshold (ton/yr)	Exceedance (Yes or No)
Grant Co, NM and Greenlee, AZ					
VOC	3.258			250	No
NOx	86.711			250	No
CO	36.344			250	No
SOx	3.852	100	No	NA	NA
PM 10	3.629			250	No
PM 2.5	3.006			250	No
CO2e	*141,907			NA	NA

*entire flight duration

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Lesley Hamilton

Lesley Hamilton, Sr Associate

8/19/19

DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: HOLLOMAN AFB
State: New Mexico
County(s): Catron; Chaves; Eddy; Otero; Sierra; Socorro
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Special Use Airspace Optimization at Holloman Air Force Base

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2022

- Action Purpose and Need:

The action is the proposed optimization of Special Use Airspace (SUA) to support the training of F-16 pilots stationed at Holloman Air Force Base. The SUA in this region was created over 30 years ago and does not have the necessary volume or capabilities to support the training needs for pilots of modern aircraft.

- Action Description:

Under the Proposed Action, the Air Force would modify the dimensions and altitudes of training airspace in the vicinity of Holloman AFB. The proposed airspace modifications would result in appropriately sized and configured training airspace needed to conduct IQT activities. The modified airspace would improve airspace availability and scheduling flexibility for training activities.

Under Alternative 1, the Talon MOA would be reconfigured and expanded. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Under Alternative 2, the Cato and Smitty MOAs would be reconfigured and expanded, and Lobos MOA would be established. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Alternative 3 would be a combination of Alternatives 1 and 2, the proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative 1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL as opposed to the 500 feet AGL proposed under Alternative 2. SUA no longer needed by the Air Force would be returned to the National Airspace System including the lower portion of the existing Talon Low MOA (300 to 500 feet AGL), the northern portion of the existing Cato and Smitty MOAs, Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA.

- Point of Contact

Name: Lesley Hamilton
Title: Sr Associate
Organization: Cardno
Email:
Phone Number:

- Activity List:

	Activity Type	Activity Title
2.	Aircraft	Aircraft cruising below 3000 feet AGL in Talon Low and Smitty Low MOA airspace
3.	Aircraft	Aircraft cruising below 3000 feet AGL in Talon Low and Smitty Low MOA airspace
4.	Aircraft	Aircraft cruising below 3000 feet AGL in Talon Low and Smitty Low MOA airspace

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Catron; Chaves; Eddy; Otero; Sierra; Socorro
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Aircraft cruising below 3000 feet AGL in Talon Low and Smitty Low MOA airspace

- Activity Description:
F-16 (F100-PW-220) cruising below 3000 feet AGL in Talon Low and Smitty Low MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2022

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	3.291640
CO	9.542961
PM 10	2.453871

Pollutant	Emissions Per Year (TONs)
PM 2.5	2.215314
CO_2e	*59,995

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	3.291640
CO	9.542961
PM 10	2.453871

Pollutant	Emissions Per Year (TONs)
PM 2.5	2.215314
CO_2e	*59,995

*includes entire flight duration

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-16C
Engine Model: F100-PW-220
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1084.00	7.94	1.07	4.61	35.30	2.06	1.85	3234
Approach	3837.00	5.12	1.07	12.53	1.92	2.63	2.37	3234
Intermediate	5770.00	2.89	1.07	22.18	0.86	2.06	1.85	3234
Military	9679.00	1.79	1.07	29.32	0.86	1.33	1.20	3234
After Burn	41682.00	1.53	1.07	8.37	11.99	1.15	1.04	3234

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out [Idle] (mins): 0
Takeoff [Military] (mins): 1530.2
Takeoff [After Burn] (mins): 203.2
Climb Out [Intermediate] (mins): 0
Approach [Approach] (mins): 0
Taxi/Idle In [Idle] (mins): 0

- Trim Test
Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0
AfterBurn (mins): 0

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

2.4 Auxiliary Power Unit (APU)

2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
1	1	No	T-62T-40-8	

2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
T-62T-40-8	272.6	0.493	0.289	1.216	3.759	0.131	0.037	910.8

2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Catron; Chaves; Eddy; Otero; Sierra; Socorro
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Aircraft cruising below 3000 feet AGL in Talon Low and Smitty Low MOA airspace

- Activity Description:
F-16 (F110-GE-100) cruising below 3000 feet AGL in Talon Low and Smitty Low MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2022

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.527185
CO	31.789182
PM 10	1.527191

Pollutant	Emissions Per Year (TONs)
PM 2.5	1.134846
CO_2e	*65,974

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.527185
CO	31.789182
PM 10	1.527191

Pollutant	Emissions Per Year (TONs)
PM 2.5	1.134846
CO_2e	*65,974

*includes entire flight duration

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-16C
Engine Model: F110-GE-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1111.00	0.22	1.07	3.77	24.11	2.60	1.12	3234
Approach	5080.00	0.03	1.07	9.78	5.77	1.37	0.91	3234
Intermediate	7332.00	0.05	1.07	16.92	3.47	0.58	0.41	3234
Military	11358.00	0.04	1.07	29.00	3.38	0.14	0.00	3234
After Burn	18088.00	1.21	1.07	14.26	67.41	3.35	2.98	3234

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins):	0
Takeoff [Military] (mins):	1904.3
Takeoff [After Burn] (mins):	252.9
Climb Out [Intermediate] (mins):	0
Approach [Approach] (mins):	0
Taxi/Idle In [Idle] (mins):	0

- Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

3.4 Auxiliary Power Unit (APU)

3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

4. Aircraft

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Catron; Chaves; Eddy; Otero; Sierra; Socorro
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Aircraft cruising below 3000 feet AGL in Talon Low and Smitty Low MOA airspace

- Activity Description:
F-18 (F404-GE-400) cruising below 3000 feet AGL in Talon Low and Smitty Low MOA airspace

- Activity Start Date
Start Month: 1
Start Year: 2022

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.073674
CO	2.134898
PM 10	0.363113

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.247670
CO_2e	*36,409

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.073674
CO	2.134898
PM 10	0.363113

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.247670
CO_2e	*36,409

*includes entire flight duration

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F/A-18C
Engine Model: F404-GE-400
Primary Function: Combat
Aircraft has After burn: Yes

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

4.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	685.00	3.39	1.07	1.70	110.18	4.47	3.10	3234
Approach	3111.00	0.04	1.07	7.86	2.02	1.46	0.87	3234
Intermediate	6464.00	0.07	1.07	17.03	1.54	1.57	0.90	3234
Military	7739.00	0.02	1.07	25.83	1.48	1.61	0.89	3234
After Burn	15851.00	1.85	1.07	5.43	50.31	3.57	3.21	3234

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft: 10
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft: 0
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out [Idle] (mins): 0
Takeoff [Military] (mins): 108.8
Takeoff [After Burn] (mins): 14.5
Climb Out [Intermediate] (mins): 0
Approach [Approach] (mins): 0
Taxi/Idle In [Idle] (mins): 0

- Trim Test
Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0
AfterBurn (mins): 0

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
LTO: Number of Landing and Take-off Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
TGO: Number of Touch-and-Go Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: No

- Auxiliary Power Unit (APU)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

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: HOLLOMAN AFB
State: New Mexico
County(s): Catron; Chaves; Eddy; Otero; Sierra; Socorro
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Special Use Airspace Optimization at Holloman Air Force Base

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2022

e. Action Description:

Under the Proposed Action, the Air Force would modify the dimensions and altitudes of training airspace in the vicinity of Holloman AFB. The proposed airspace modifications would result in appropriately sized and configured training airspace needed to conduct IQT activities. The modified airspace would improve airspace availability and scheduling flexibility for training activities.

Under Alternative 1, the Talon MOA would be reconfigured and expanded. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Under Alternative 2, the Cato and Smitty MOAs would be reconfigured and expanded, and Lobos MOA would be established. Training operations, to include the use of defensive countermeasures, would occur throughout the proposed airspace.

Alternative 3 would be a combination of Alternatives 1 and 2, the proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative 1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL as opposed to the 500 feet AGL proposed under Alternative 2. SUA no longer needed by the Air Force would be returned to the National Airspace System including the lower portion of the existing Talon Low MOA (300 to 500 feet AGL), the northern portion of the existing Cato and Smitty MOAs, Valentine MOA, Bronco 1 MOA, and Bronco 2 MOA.

f. Point of Contact:

Name: Lesley Hamilton
Title: Sr Associate
Organization: Cardno
Email:
Phone Number:

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

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

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 PSD thresholds 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.

An Air Quality Indicator value of 250 tons/yr is used based on EPA's PSD threshold. Therefore, the worst-case year emissions were compared against the Air Quality Indicator and are summarized below.

Analysis Summary:

2022 - (Steady State)

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	3.892	250	No
NOx	103.640	250	No
CO	43.467	250	No
SOx	4.605	250	No
PM 10	4.344	250	No
PM 2.5	3.598	250	No
CO2e	*162,379	NA	NA

*entire flight duration

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

Lesley Hamilton

Lesley Hamilton, Sr Associate

8/21/19

DATE

APPENDIX H
USFWS CONSULTATION CORRESPONDENCE

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

Colonel Houston R. Cantwell
Commander, 49th Wing
490 First Street
Holloman AFB NM 88330-8277

United States Fish and Wildlife Service
Attn: Dr. George Dennis
New Mexico Ecological Services Field Office
2105 Osuna Road NE
Albuquerque NM 87113

Dear Dr Dennis

The United States Air Force (Air Force) is preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental impacts associated with the proposed optimization of the special use airspace available for current and anticipated future pilot training at Holloman Air Force Base (AFB), New Mexico. Under the Proposed Action, existing special use airspace would be reconfigured and expanded or new special use airspace would be established to ensure the availability of training airspace today and into the future. The training airspace used by aircraft assigned to Holloman AFB today was developed for legacy aircraft. This airspace does not have the optimum volume, proximity, availability or attributes needed to support the Holloman AFB training mission. The purpose of the Proposed Action is to ensure consistent availability of adequately sized and configured training airspace needed to conduct multiple, simultaneous training missions. The Proposed Action would increase training efficiencies and provide more scheduling flexibility.

The proposed airspace modifications would include reconfiguring and expanding existing airspace or creating new airspace within parts of the following counties: Graham and Greenlee, Arizona; and Chaves, Catron, Eddy, Grant, Hidalgo, Otero, Sierra, and Socorro, New Mexico (see attachment). The Proposed Action would include aircraft operations from 500 feet above ground level (AGL) up to Flight Level (FL) 500 (50,000 feet above mean sea level [MSL]). The Proposed Action includes supersonic flight above FL300 (30,000 feet above MSL) as well as the use of chaff throughout the designated airspace and flares above 2,000 feet AGL.

The environmental analysis for the Proposed Action is being conducted by the Air Force Civil Engineer Center in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act (NEPA) of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs* and Section 7 of the Endangered Species Act; we solicit your comments concerning the Proposed Action. The Air Force published a Notice of Intent to prepare an EIS in the Federal Register on August 24, 2017, initiating the public involvement process.

Open-house style public meetings will be held at the locations, dates, and times listed below. The purpose of the meetings is to provide information about the proposal and solicit comments on the scope of environmental issues to be addressed in the EIS. No formal presentation will be given. Please attend at your convenience.

Tuesday September 12, 2017	Wednesday, September 13, 2017	Thursday, September 14, 2017
6:00 PM to 8:00 PM	6:00 PM to 8:00 PM	6:00 PM to 8:00 PM
Carlsbad Public Library	Truth or Consequences Civic Center	Hilton Garden Inn
101 S. Halagueno Street	Ralph Edwards Auditorium	2550 S. Don Roser Dr.
Carlsbad, NM 88220	400 W. 4th Avenue	Las Cruces, NM 88001
	Truth or Consequences, NM 87901	

We request your participation and solicit your comments on the Proposed Action. Though comments will be accepted throughout the EIS process, please provide your comments no later than September 25, 2017 to ensure consideration in the Draft EIS. Comments may be submitted at any of the public meetings; on the project website, www.HollomanAFBAirspaceEIS.com; or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA 23666.

My points of contact for this project are Mr. Ramon Acevedo-Cruz, (575) 572-6670, ramon.acevedocruz.3@us.af.mil and Ms. Dana Banwart, (757) 594-1465, dana.banwart@cardno-gs.com. Please feel free to contact either of them directly for additional information or with any questions you may have. Thank you for your assistance in this matter.

HOUSTON R. CANTWELL
Colonel, USAF
Commander, 49th Wing

1 Attachment
Project Area Map

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arizona Ecological Services Field Office
9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517
Phone: (602) 242-0210 Fax: (602) 242-2513
http://www.fws.gov/southwest/es/arizona/
http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

In Reply Refer To: October 01, 2018
Consultation Code: 02EAAZ00-2019-SLI-0001
Event Code: 02EAAZ00-2019-E-00002
Project Name: Special Use Airspace Optimization EIS for Holloman AFB

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The Fish and Wildlife Service (Service) is providing this list under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). The list you have generated identifies threatened, endangered, proposed, and candidate species, and designated and proposed critical habitat, that may occur within one or more delineated United States Geological Survey 7.5 minute quadrangles with which your project polygon intersects. Each quadrangle covers, at minimum, 49 square miles. In some cases, a species does not currently occur within a quadrangle but occurs nearby and could be affected by a project. Please refer to the species information links found at:
http://www.fws.gov/southwest/es/arizona/Docs_Species.htm
http://www.fws.gov/southwest/es/arizona/Documents/MiscDocs/AZSpeciesReference.pdf .

The purpose of the Act is to provide a means whereby threatened and endangered species and the habitats upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of Federal trust resources and to consult with us if their projects may affect federally listed species and/or designated critical habitat. A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, we recommend preparing a biological evaluation similar to a Biological Assessment to determine whether the project may

affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If the Federal action agency determines that listed species or critical habitat may be affected by a federally funded, permitted or authorized activity, the agency must consult with us pursuant to 50 CFR 402. Note that a "may affect" determination includes effects that may not be adverse and that may be beneficial, insignificant, or discountable. You should request consultation with us even if only one individual or habitat segment may be affected. The effects analysis should include the entire action area, which often extends well outside the project boundary or "footprint." For example, projects that involve streams and river systems should consider downstream effects. If the Federal action agency determines that the action may jeopardize a proposed species or adversely modify proposed critical habitat, the agency must enter into a section 7 conference. The agency may choose to confer with us on an action that may affect proposed species or critical habitat.
Candidate species are those for which there is sufficient information to support a proposal for listing. Although candidate species have no legal protection under the Act, we recommend considering them in the planning process in the event they become proposed or listed prior to project completion. More information on the regulations (50 CFR 402) and procedures for section 7 consultation, including the role of permit or license applicants, can be found in our Endangered Species Consultation Handbook at:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

We also advise you to consider species protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668 et seq.). The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when authorized by the Service. The Eagle Act prohibits anyone, without a permit, from taking (including disturbing) eagles, and their parts, nests, or eggs. Currently 1026 species of birds are protected by the MBTA, including species such as the western burrowing owl (Athene cunicularia hypugea). Protected western burrowing owls are often found in urban areas and may use their nest/burrows year-round; destruction of the burrow may result in the unpermitted take of the owl or their eggs.

If a bald eagle (or golden eagle) nest occurs in or near the proposed project area, you should evaluate your project to determine whether it is likely to disturb or harm eagles. The National Bald Eagle Management Guidelines provide recommendations to minimize potential project impacts to bald eagles:
https://www.fws.gov/migratorybirds/pdf/management/
nationalbaldeaglenanagementguidelines.pdf
https://www.fws.gov/birds/management/managed-species/eagle-management.php.

The Division of Migratory Birds (505/248-7882) administers and issues permits under the MBTA and Eagle Act, while our office can provide guidance and Technical Assistance. For more information regarding the MBTA, BGEPA, and permitting processes, please visit the following: https://www.fws.gov/birds/policies-and-regulations/incidental-take.php. Guidance for minimizing impacts to migratory birds for communication tower projects (e.g. cellular, digital

television, radio, and emergency broadcast) can be found at: https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php.

Activities that involve streams (including intermittent streams) and/or wetlands are regulated by the U.S. Army Corps of Engineers (Corps). We recommend that you contact the Corps to determine their interest in proposed projects in these areas. For activities within a National Wildlife Refuge, we recommend that you contact refuge staff for specific information about refuge resources.
If your action is on tribal land or has implications for off-reservation tribal interests, we encourage you to contact the tribe(s) and the Bureau of Indian Affairs (BIA) to discuss potential tribal concerns, and to invite any affected tribe and the BIA to participate in the section 7 consultation. In keeping with our tribal trust responsibility, we will notify tribes that may be affected by proposed actions when section 7 consultation is initiated.

We also recommend you seek additional information and coordinate your project with the Arizona Game and Fish Department. Information on known species detections, special status species, and Arizona species of greatest conservation need, such as the western burrowing owl and the Sonoran desert tortoise (Gopherus morafkai) can be found by using their Online Environmental Review Tool, administered through the Heritage Data Management System and Project Evaluation Program https://www.azgfd.com/Wildlife/HeritageFund/.

For additional communications regarding this project, please refer to the consultation Tracking Number in the header of this letter. We appreciate your concern for threatened and endangered species. If we may be of further assistance, please contact our following offices for projects in these areas:

Northern Arizona: Flagstaff Office 928/556-2001
Central Arizona: Phoenix office 602/242-0210
Southern Arizona: Tucson Office 520/670-6144

Sincerely,
/s/ Steven L. Spangle Field Supervisor

Attachment

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arizona Ecological Services Field Office
9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517
(602) 242-0210

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

New Mexico Ecological Services Field Office
2105 Osuna Road Ne
Albuquerque, NM 87113-1001
(505) 346-2525

Project Summary

Consultation Code: 02EAAZ00-2019-SLI-0001

Event Code: 02EAAZ00-2019-E-00002

Project Name: Special Use Airspace Optimization EIS for Holloman AFB

Project Type: MILITARY OPERATIONS / MANEUVERS

Project Description: Proposed Action includes expanding existing special use airspace and creating new airspace to support military jet training activities out of Holloman AFB. There are 3 alternatives being considered:
Alternative 1 includes expanding the existing Talon Military Operations Area (MOA) (on the eastern side of NM). The expanded MOA would have a floor of 500 feet AGL and a ceiling of 18,000 feet MSL. The MOA would support the use of chaff and flares and supersonic flights. Approximately 10,000 sorties are proposed in the expanded MOA.
Alternative 2 includes expanding the existing Cato/Smitty MOA and creating a new MOA (named Lobos) (on the western side of NM). These MOAs would have a floor of 500 feet AGL and a ceiling of 18,000 feet MSL. The MOAs would support the use of chaff and flares and supersonic flights. Approximately 10,000 sorties are proposed in the expanded MOAs.
Alternative 3 would be a combination of Alternatives 1 and 2. Under this alternative, the 10,000 proposed sorties would be split between the western airspace and the eastern airspace.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/32.603055499999655N104.49983880949674W

Counties: Graham, AZ | Greenlee, AZ | Catron, NM | Chaves, NM | Eddy, NM | Grant, NM | Hidalgo, NM | Lea, NM | Otero, NM | Sierra, NM | Socorro, NM

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Gray Wolf *Canis lupus* Population: Mexican gray wolf, EXPN population No critical habitat has been designated for this species.	Proposed Experimental Population, Non-Essential

Birds

NAME	STATUS
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Northern Mexican Gartersnake *Thamnophis eques megalops* There is **proposed** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7655	Threatened

Fishes

NAME	STATUS
Loach Minnow *Tiaroga cobitis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6922	Endangered
Razorback Sucker *Xyrauchen texanus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/530	Endangered
Spikedace *Meda fulgida* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6493	Endangered
Woundfin *Plagopterus argentissimus* Population: Gila R. drainage, AZ, NM No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/49	Experimental Population, Non-Essential

Critical habitats

There are 4 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Narrow-headed Gartersnake *Thamnophis rufipunctatus* https://ecos.fws.gov/ecp/species/2204#crithab	Proposed
Northern Mexican Gartersnake *Thamnophis eques megalops* https://ecos.fws.gov/ecp/species/7655#crithab	Proposed
Razorback Sucker *Xyrauchen texanus* https://ecos.fws.gov/ecp/species/530#crithab	Final
Southwestern Willow Flycatcher *Empidonax traillii extimus* https://ecos.fws.gov/ecp/species/6749#crithab	Final

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
2105 Osuna Road Ne
Albuquerque, NM 87113-1001
Phone: (505) 346-2525 Fax: (505) 346-2542
http://www.fws.gov/southwest/es/NewMexico/
http://www.fws.gov/southwest/es/ES_Lists_Main2.html

In Reply Refer To: October 01, 2018
Consultation Code: 02ENNM00-2019-SLI-0001
Event Code: 02ENNM00-2019-E-00002
Project Name: Special Use Airspace Optimization EIS for Holloman AFB

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

Thank you for your recent request for information on federally listed species and important wildlife habitats that may occur in your project area. The U.S. Fish and Wildlife Service (Service) has responsibility for certain species of New Mexico wildlife under the Endangered Species Act (ESA) of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act (MBTA) as amended (16 USC 701-715), and the Bald and Golden Eagle Protection Act (BGEPA) as amended (16 USC 668-668c). We are providing the following guidance to assist you in determining which federally imperiled species may or may not occur within your project area and to recommend some conservation measures that can be included in your project design.

FEDERALLY-LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

Attached is a list of endangered, threatened, and proposed species that may occur in your project area. Your project area may not necessarily include all or any of these species. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service, to make "no effect" determinations. If you determine that your proposed action will have "no effect" on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

If you determine that your proposed action may affect federally-listed species, consultation with the Service will be necessary. Through the consultation process, we will analyze information contained in a biological assessment that you provide. If your proposed action is associated with Federal funding or permitting, consultation will occur with the Federal agency under section 7(a)(2) of the ESA. Otherwise, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA (also known as a habitat conservation plan) is necessary to harm or harass federally listed threatened or endangered fish or wildlife species. In either case, there is no mechanism for authorizing incidental take "after-the-fact." For more information regarding formal consultation and HCPs, please see the Service's Consultation Handbook and Habitat Conservation Plans at www.fws.gov/endangered/esa-library/index.html#consultations.

The scope of federally listed species compliance not only includes direct effects, but also any interrelated or interdependent project activities (e.g., equipment staging areas, offsite borrow material areas, or utility relocations) and any indirect or cumulative effects that may occur in the action area. The action area includes all areas to be affected, not merely the immediate area involved in the action. Large projects may have effects outside the immediate area to species not listed here that should be addressed. If your action area has suitable habitat for any of the attached species, we recommend that species-specific surveys be conducted during the flowering season for plants and at the appropriate time for wildlife to evaluate any possible project-related impacts.

Candidate Species and Other Sensitive Species

A list of candidate and other sensitive species in your area is also attached. Candidate species and other sensitive species are species that have no legal protection under the ESA, although we recommend that candidate and other sensitive species be included in your surveys and considered for planning purposes. The Service monitors the status of these species. If significant declines occur, these species could potentially be listed. Therefore, actions that may contribute to their decline should be avoided.

Lists of sensitive species including State-listed endangered and threatened species are compiled by New Mexico state agencies. These lists, along with species information, can be found at the following websites:

Biota Information System of New Mexico (BISON-M): www.bison-m.org

New Mexico State Forestry. The New Mexico Endangered Plant Program: www.emnrd.state.nm.us/SFD/ForestMgt/Endangered.html

New Mexico Rare Plant Technical Council, New Mexico Rare Plants: nmrareplants.unm.edu

Natural Heritage New Mexico, online species database: nhnm.unm.edu

WETLANDS AND FLOODPLAINS

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their natural and beneficial values. These habitats should be conserved through avoidance, or mitigated to ensure that there would be no net loss of wetlands function and value.

We encourage you to use the National Wetland Inventory (NWI) maps in conjunction with ground-truthing to identify wetlands occurring in your project area. The Service's NWI program website, www.fws.gov/wetlands/Data/Mapper.html integrates digital map data with other resource information. We also recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands.

MIGRATORY BIRDS

The MBTA prohibits the taking of migratory birds, nests, and eggs, except as permitted by the Service's Migratory Bird Office. To minimize the likelihood of adverse impacts to migratory birds, we recommend construction activities occur outside the general bird nesting season from March through August, or that areas proposed for construction during the nesting season be surveyed, and when occupied, avoided until the young have fledged.

We recommend review of Birds of Conservation Concern at website www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html to fully evaluate the effects to the birds at your site. This list identifies birds that are potentially threatened by disturbance and construction.

BALD AND GOLDEN EAGLES

The bald eagle (*Haliaeetus leucocephalus*) was delisted under the ESA on August 9, 2007. Both the bald eagle and golden eagle (*Aquila chrysaetos*) are still protected under the MBTA and BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, by making it unlawful to "disturb" eagles. Under the BGEPA, the Service may issue limited permits to incidentally "take" eagles (e.g., injury, interfering with normal breeding, feeding, or sheltering behavior nest abandonment). For information on bald and golden eagle management guidelines, we recommend you review information provided at www.fws.gov/midwest/eagle/guidelines/bgepa.html.

On our web site www.fws.gov/southwest/es/NewMexico/SBC_intro.cfm, we have included conservation measures that can minimize impacts to federally listed and other sensitive species. These include measures for communication towers, power line safety for raptors, road and highway improvements, spring developments and livestock watering facilities, wastewater facilities, and trenching operations.

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

Thank you for your concern for endangered and threatened species and New Mexico's wildlife habitats. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. For further consultation on your proposed activity, please call 505-346-2525 or email nmesfo@fws.gov and reference your Service Consultation Tracking Number.

Attachment(s):

- Official Species List
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New Mexico Ecological Services Field Office
2105 Osuna Road Ne
Albuquerque, NM 87113-1001
(505) 346-2525

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Arizona Ecological Services Field Office
9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517
(602) 242-0210

Project Summary

Consultation Code: 02ENNM00-2019-SLI-0001

Event Code: 02ENNM00-2019-E-00002

Project Name: Special Use Airspace Optimization EIS for Holloman AFB

Project Type: MILITARY OPERATIONS / MANEUVERS

Project Description: Proposed Action includes expanding existing special use airspace and creating new airspace to support military jet training activities out of Holloman AFB. There are 3 alternatives being considered:
Alternative 1 includes expanding the existing Talon Military Operations Area (MOA) (on the eastern side of NM). The expanded MOA would have a floor of 500 feet AGL and a ceiling of 18,000 feet MSL. The MOA would support the use of chaff and flares and supersonic flights. Approximately 10,000 sorties are proposed in the expanded MOA.
Alternative 2 includes expanding the existing Cato/Smitty MOA and creating a new MOA (named Lobos) (on the western side of NM). These MOAs would have a floor of 500 feet AGL and a ceiling of 18,000 feet MSL. The MOAs would support the use of chaff and flares and supersonic flights. Approximately 10,000 sorties are proposed in the expanded MOAs.
Alternative 3 would be a combination of Alternatives 1 and 2. Under this alternative, the 10,000 proposed sorties would be split between the western airspace and the eastern airspace.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/32.603055499999655N104.49983880949674W

Counties: Graham, AZ | Greenlee, AZ | Catron, NM | Chaves, NM | Eddy, NM | Grant, NM | Hidalgo, NM | Lea, NM | Otero, NM | Sierra, NM | Socorro, NM

Endangered Species Act Species

There is a total of 44 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Jaguar *Panthera onca* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3944	Endangered
Mexican Long-nosed Bat *Leptonycteris nivalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8203	Endangered
Mexican Wolf *Canis lupus baileyi* Population: U.S.A. (portions of AZ and NM)see 17.84(k) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3916	Experimental Population, Non-Essential
New Mexico Meadow Jumping Mouse *Zapus hudsonius luteus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7965	Endangered
Penasco Least Chipmunk *Tamias minimus atristriatus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5126	Candidate

Birds

NAME	STATUS
Least Tern *Sterna antillarum* Population: interior pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8505	Endangered
Mexican Spotted Owl *Strix occidentalis lucida* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8196	Threatened
Northern Aplomado Falcon *Falco femoralis septentrionalis* Population: U.S.A (AZ, NM) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1923	Experimental Population, Non-Essential
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Narrow-headed Gartersnake *Thamnophis rufipunctatus* There is **proposed** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2204	Threatened
New Mexican Ridge-nosed Rattlesnake *Crotalus willardi obscurus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3657	Threatened
Northern Mexican Gartersnake *Thamnophis eques megalops* There is **proposed** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7655	Threatened

Amphibians

NAME	STATUS
Chiricahua Leopard Frog *Rana chiricahuensis*	Threatened

There is **final** critical habitat for this species. Your location overlaps the critical habitat.

Species profile: https://ecos.fws.gov/ecp/species/1516

Fishes

NAME	STATUS
Beautiful Shiner *Cyprinella formosa* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7874	Threatened
Chihuahua Chub *Gila nigrescens* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7156	Threatened
Gila Chub *Gila intermedia* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/51	Endangered
Gila Topminnow (incl. Yaqui) *Poeciliopsis occidentalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1116	Endangered
Gila Trout *Oncorhynchus gilae* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/781	Threatened
Loach Minnow *Tiaroga cobitis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6922	Endangered
Pecos Bluntnose Shiner *Notropis simus pecosensis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4362	Threatened
Pecos Gambusia *Gambusia nobilis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/460	Endangered
Rio Grande Silvery Minnow *Hybognathus amarus* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1391	Endangered
Spikedace *Meda fulgida* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6493	Endangered

Clams

NAME	STATUS
Texas Hornshell *Popenaias popeii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/919	Endangered

Snails

NAME	STATUS
Alamosa Springsnail *Tryonia alamosae* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4371	Endangered
Chupadera Springsnail *Pyrgulopsis chupaderae* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6644	Endangered
Koster's Springsnail *Juturnia kosteri* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3126	Endangered
Pecos Assiminea Snail *Assiminea pecos* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4519	Endangered
Roswell Springsnail *Pyrgulopsis roswellensis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/923	Endangered
Socorro Springsnail *Pyrgulopsis neomexicana* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2806	Endangered

Crustaceans

NAME	STATUS
Noel's Amphipod *Gammarus desperatus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8042	Endangered
Socorro Isopod *Thermosphaeroma thermophilus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2470	Endangered

Flowering Plants

NAME	STATUS
Gypsum Wild-buckwheat *Eriogonum gypsophilum* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7770	Threatened
Kuenzler Hedgehog Cactus *Echinocereus fendleri var. kuenzleri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2859	Threatened
Lee Pincushion Cactus *Coryphantha sneedii var. leei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2504	Threatened
Pecos (=puzzle, =paradox) Sunflower *Helianthus paradoxus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7211	Threatened
Sacramento Mountains Thistle *Cirsium vinaceum* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7486	Threatened
Sacramento Prickly Poppy *Argemone pleiacantha ssp. pinnatisecta* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3332	Endangered
Sneed Pincushion Cactus *Coryphantha sneedii var. sneedii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4706	Endangered
Todsen's Pennyroyal *Hedeoma todsenii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1081	Endangered
Wright's Marsh Thistle *Cirsium wrightii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8963	Candidate
Zuni Fleabane *Erigeron rhizomatus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5700	Threatened

Critical habitats

There are 11 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Chiricahua Leopard Frog *Rana chiricahuensis* https://ecos.fws.gov/ecp/species/1516#crithab	Final
Gila Chub *Gila intermedia* https://ecos.fws.gov/ecp/species/51#crithab	Final
Gypsum Wild-buckwheat *Eriogonum gypsophilum* https://ecos.fws.gov/ecp/species/7770#crithab	Final
Loach Minnow *Tiaroga cobitis* https://ecos.fws.gov/ecp/species/6922#crithab	Final
Mexican Spotted Owl *Strix occidentalis lucida* https://ecos.fws.gov/ecp/species/8196#crithab	Final
Narrow-headed Gartersnake *Thamnophis rufipunctatus* https://ecos.fws.gov/ecp/species/2204#crithab	Proposed
Northern Mexican Gartersnake *Thamnophis eques megalops* https://ecos.fws.gov/ecp/species/7655#crithab	Proposed
Pecos Bluntnose Shiner *Notropis simus pecosensis* https://ecos.fws.gov/ecp/species/4362#crithab	Final
Southwestern Willow Flycatcher *Empidonax traillii extimus* https://ecos.fws.gov/ecp/species/6749#crithab	Final
Spikedace *Meda fulgida* https://ecos.fws.gov/ecp/species/6493#crithab	Final
Yellow-billed Cuckoo *Coccyzus americanus* https://ecos.fws.gov/ecp/species/3911#crithab	Proposed

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Arizona Woodpecker *Picoides arizonae* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 10 to Jun 30
Baird's Sparrow *Ammodramus bairdii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5113	Breeds elsewhere

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Bendire's Thrasher *Toxostoma bendirei* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9435	Breeds Mar 15 to Jul 31
Black Throated Sparrow *Amphispiza bilineata* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 15 to Sep 5
Black-chinned Sparrow *Spizella atrogularis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9447	Breeds Apr 15 to Jul 31
Black-throated Gray Warbler *Dendroica nigrescens* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jul 20
Blue-throated Hummingbird *Lampornis clemenciae* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Feb 15 to Oct 10
Brewer's Sparrow *Spizella breweri* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9291	Breeds May 15 to Aug 10
Burrowing Owl *Athene cunicularia* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9737	Breeds Mar 15 to Aug 31
Cassin's Sparrow *Aimophila cassinii* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9512	Breeds Aug 1 to Oct 10
Chestnut-collared Longspur *Calcarius ornatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 10

NAME	BREEDING SEASON
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Dec 31
Common Black-hawk *Buteogallus anthracinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 1 to Sep 20
Elf Owl *Micrathene whitneyi* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9085	Breeds May 1 to Jul 15
Golden Eagle *Aquila chrysaetos* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Grace's Warbler *Dendroica graciae* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 20 to Jul 20
Grasshopper Sparrow *Ammodramus savannarum ammolegus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Jun 1 to Aug 20
Gray Vireo *Vireo vicinior* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8680	Breeds May 10 to Aug 20
Hudsonian Godwit *Limosa haemastica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Lark Bunting *Calamospiza melanocorys* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 10 to Aug 15
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere

NAME	BREEDING SEASON
Lewis's Woodpecker *Melanerpes lewis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408	Breeds Apr 20 to Sep 30
Long-billed Curlew *Numenius americanus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5511	Breeds Apr 1 to Jul 31
Long-eared Owl *asio otus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds Mar 1 to Jul 15
Marbled Godwit *Limosa fedoa* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Mccown's Longspur *Calcarius mccownii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9292	Breeds May 1 to Aug 15
Mexican Whip-poor-will *Antrostomus arizonae* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Olive-sided Flycatcher *Contopus cooperi* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Phainopepla *phainopepla nitens* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/1372	Breeds Mar 1 to Aug 20
Pinyon Jay *Gymnorhinus cyanocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9420	Breeds Feb 15 to Jul 15
Red-faced Warbler *Cardellina rubrifrons* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 10 to Jul 15

NAME	BREEDING SEASON
Rufous Hummingbird *selasphorus rufus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds elsewhere
Rufous-winged Sparrow *Aimophila carpalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 15 to Sep 30
Semipalmated Sandpiper *Calidris pusilla* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Sprague's Pipit *Anthus spragueii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8964	Breeds elsewhere
Varied Bunting *Passerina versicolor* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 25 to Sep 30
Virginia's Warbler *Vermivora virginiae* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9441	Breeds May 1 to Jul 31
Whimbrel *Numenius phaeopus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9483	Breeds elsewhere
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
Willow Flycatcher *Empidonax traillii* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/3482	Breeds May 20 to Aug 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the

FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

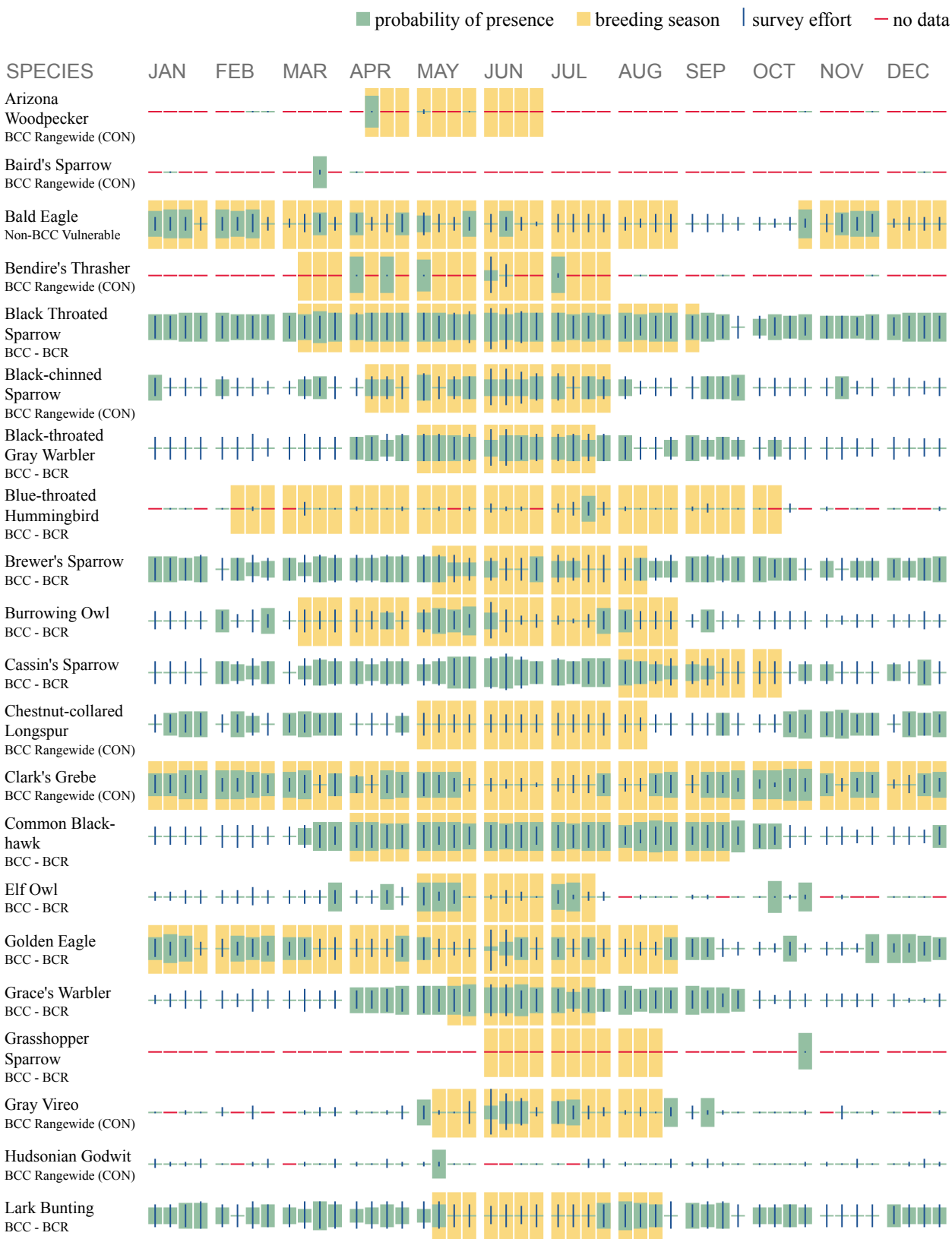
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.


probability of presence
breeding season
survey effort
no data
SPECIES
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Arizona Woodpecker
BCC Rangewide (CON)
Baird's Sparrow
BCC Rangewide (CON)
Bald Eagle
Non-BCC Vulnerable
Bendire's Thrasher
BCC Rangewide (CON)
Black Throated Sparrow
BCC - BCR
Black-chinned Sparrow
BCC Rangewide (CON)
Black-throated Gray Warbler
BCC - BCR
Blue-throated Hummingbird
BCC - BCR
Brewer's Sparrow
BCC - BCR
Burrowing Owl
BCC - BCR
Cassin's Sparrow
BCC - BCR
Chestnut-collared Longspur
BCC Rangewide (CON)
Clark's Grebe
BCC Rangewide (CON)
Common Black-hawk
BCC - BCR
Elf Owl
BCC - BCR
Golden Eagle
BCC - BCR
Grace's Warbler
BCC - BCR
Grasshopper Sparrow
BCC - BCR
Gray Vireo
BCC Rangewide (CON)
Hudsonian Godwit
BCC Rangewide (CON)
Lark Bunting
BCC - BCR

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php

- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.
Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and

how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

OCT 18 2019

Colonel Joseph L. Campo
Commander, 49th Wing
490 First Street, Ste 1700
Holloman AFB NM 88330-8277

United States Fish and Wildlife Service
Attn: Jeff Humphrey
Arizona Ecological Services Field Office
9828 North 31st Avenue, #C3
Phoenix AZ 85051

SUBJECT: Request for Endangered Species Act Consultation for the Holloman Air Force Base Proposed Special Use Airspace Optimization Draft Environmental Impact Statement (Consultation Code: 02EAAZ00-2019-SLI-0001); prior consultations #02ENNM00-2012-I-0065; #2-22-96-F-334; and #2-22-98-I-124

Dear Mr. Humphrey

The United States Air Force (Air Force) has prepared a Draft Environmental Impact Statement (EIS) that evaluates the potential environmental impacts associated with the proposed optimization of special use airspace available for pilot training at Holloman Air Force Base (AFB), New Mexico. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs* and Section 7 of the Endangered Species Act, we are requesting to move forward on consultation and solicit your comments on the findings in the Draft EIS.

The Draft EIS analyzes proposed airspace modifications that would include expanding existing airspace or creating new airspace within parts of the following counties: Graham and Greenlee, Arizona; and Catron, Chaves, Eddy, Grant, Hidalgo, Otero, Sierra, Lea, and Socorro, New Mexico. The Proposed Action would include aircraft operations from 500 feet above ground level (AGL) up to flight level (FL) 510 (50,000 feet above mean sea level [MSL]), supersonic flight above FL300 (30,000 feet above MSL), and the use of chaff and flares. Three action alternatives and the No Action Alternative have been analyzed in the Draft EIS.

Alternative-1 would expand the existing Talon Military Operations Area (MOA) to the south and east. The proposed Talon MOA would be divided into low and high MOAs offering a combined training airspace with a floor of 500 feet AGL (raised from the existing 300 feet AGL) and a ceiling up to 18,000 feet MSL. The existing Talon Air Traffic Control Assigned Airspace (ATCAA) would also be expanded with the same lateral dimensions as the proposed Talon MOA. The ATCAA would be assigned above the MOA expanding the usable airspace to FL510 (51,000 feet above MSL) when requested from the Federal Aviation Administration and available. The proposed Talon MOA/ATCAA would continue to be scheduled for use between 7:00 a.m. to 10:00 p.m., Monday through Friday, with some operations conducted after dark. Up to 10,000 training sorties would be conducted annually in the proposed

airspace along with the use of chaff and flares (15,360 each annually). Supersonic flights would account for approximately 10 percent of the training sorties (1,000 sorties annually) and would only occur above FL300 (30,000 feet above MSL).

Alternative-2 would reconfigure and expand the existing Cato and Smitty MOAs and the associated ATCAA to the southeast. The floor of these combined MOAs would remain 500 feet AGL and the ceiling would be up to 18,000 feet MSL. The overlying ATCAA would extend the training airspace to FL510 (51,000 feet above MSL). Alternative-2 also includes the creation of a new MOA, the Lobos MOA to the south of the proposed Cato and Smitty MOAs. The proposed Lobos MOA would have a floor of 500 feet AGL and a ceiling up to 18,000 feet MSL. The proposed Lobos MOA would also have an ATCAA above the MOA to extend the training airspace to FL510 (51,000 feet above MSL). Two additional ATCAAs (Christa and Kendra) would be established to the east of the proposed Cato, Smitty, and Lobos MOAs/ATCAAs to provide direct access to and from White Sands Missile Range. The ATCAAs would have a floor of 18,000 feet MSL and a ceiling of FL510. The proposed MOAs/ATCAAs would be scheduled for use between 7:00 a.m. to 10:00 p.m., Monday through Friday, with some operations conducted after dark. Up to 9,100 training sorties would be conducted annually in the proposed airspace along with use of chaff and flares (15,360 each annually). Supersonic flights would account for approximately 10 percent of the training sorties (910 sorties annually) and would only occur above FL300 (30,000 feet above MSL).

Alternative-3 would be a combination of Alternatives-1 and -2 with the following differences. The proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative-1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL as opposed to the 500 feet AGL proposed under Alternative-2. The proposed aircraft training would be distributed throughout all of the proposed airspace and up to 6,800 annual sorties would occur in the proposed Talon MOA/ATCAA. Moreover, up to 3,200 annual sorties would occur in the proposed Cato, Smitty, and Lobos MOA/ATCAAs, as well as the Christa and Kendra ATCAAs. Chaff and flare usage would be approximately 10,752 each annually in the Talon MOA/ATCAA and 4,608 each annually in Cato, Smitty, and Lobos MOAs/ATCAAs.

Official Species Lists for the species protected under the Endangered Species Act of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act as amended (16 USC 701-715), and the Bald and Golden Eagle Protection Act as amended (16 USC 668-668c) that may be located beneath the proposed airspace areas were requested and received through the Information, Planning, and Consultation (IPAC) System on 1 October 2018. These lists were considered during the preparation of the Draft EIS. Additionally, we are preparing a Biological Assessment/Biological Evaluation and request initiation of informal consultation with your office. Based on prior consultations (#02ENNM00-2012-I-0065; 7 June 2012, #2-22-96-F-334; May 8, 1998, and #2-22-98-I-124; 12 April 2000) and our Draft EIS, we anticipate it may affect, but not likely to adversely affect determination for certain endangered species and will ask for your concurrence in the Biological Assessment/Biological Evaluation we will be submitting.

Public hearings will be held at the dates and locations listed below. All meetings will be held from 5:30 PM to 8:30 PM. The meetings will start with an open house from 5:30 PM to 6:00 PM, at which time Air Force representatives will be available to answer questions about the proposal. A formal hearing will begin at 6:00 PM with a brief presentation by the Air Force on the Proposed Action and alternatives and the findings provided in the Draft EIS. The same information will be presented at each meeting, please attend one of the meetings at your convenience.

Public Hearing Locations	
Date	**Location**
Monday, November 18	Hilton Garden Inn, Hobbs, 4620 Lovington Highway Hobbs, NM 88240
Tuesday, November 19	Roswell Convention and Civic Center, 912 N. Main Street, Roswell, NM 88201
Wednesday, November 20	Artesia Public Library, 205 West Quay Avenue, Artesia, NM 88210
Thursday, November 21	New Mexico State University, Gymnasium (Room 103), 1500 University Drive, Carlsbad, NM 88220
Monday, December 2	Macey Center, 801 Leroy Place, Socorro, NM 87801
Tuesday, December 3	Commission Chambers, 405 W. Third Street, Truth or Consequences, NM 87901
Wednesday, December 4	Grant County Chamber of Commerce, 3031 Highway 180 East, Silver City, NM 88061
Thursday, December 5	Ramada by Wyndham Las Cruces Hotel and Conference Center, 201 East Avenue, Las Cruces, NM 88005

We request your participation and solicit your comments on the findings in the Draft EIS. Comments may be submitted at any of the public meetings, on the project website, www.HollomanAFBAirspaceEIS.com, or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA 23666. In order to ensure consideration in the Final EIS, comments are requested no later than **16 December 2019**.

My point of contact for this project is Ramon Acevedo-Cruz, Natural Resources Program Manager, (575) 572-3931, ramon.acevedocruz.3@us.af.mil. Please feel free to contact him directly for additional information or with any questions you may have.

Thank you for your assistance in this matter.

Sincerely

JOSEPH L. CAMPO, Colonel, USAF
Commander

Attachment:
Draft EIS (CD)

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

OCT 18 2019

Colonel Joseph L. Campo
Commander, 49th Wing
490 First Street, Ste 1700
Holloman AFB NM 88330-8277

United States Fish and Wildlife Service
Attn: Dr. George Dennis
New Mexico Ecological Services Field Office
2105 Osuna Road NE
Albuquerque NM 87113

SUBJECT: Request for Endangered Species Act Consultation for the Holloman Air Force Base Proposed Special Use Airspace Optimization Draft Environmental Impact Statement (Consultation Code: 02ENNM00-2019-SLI-0001); Prior Consultations #02ENNM00-2012-I-0065; #2-22-96-F-334; and #2-22-98-I-124

Dear Dr. Dennis

The United States Air Force (Air Force) has prepared a Draft Environmental Impact Statement (EIS) that evaluates the potential environmental impacts associated with the proposed optimization of special use airspace available for pilot training at Holloman Air Force Base (AFB), New Mexico. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs* and Section 7 of the Endangered Species Act, we are requesting to move forward on consultation and solicit your comments on the findings in the Draft EIS.

The Draft EIS analyzes proposed airspace modifications that would include expanding existing airspace or creating new airspace within parts of the following counties: Graham and Greenlee, Arizona; and Catron, Chaves, Eddy, Grant, Hidalgo, Otero, Sierra, Lea, and Socorro, New Mexico. The Proposed Action would include aircraft operations from 500 feet above ground level (AGL) up to flight level (FL) 510 (50,000 feet above mean sea level [MSL]), supersonic flight above FL300 (30,000 feet above MSL), and the use of chaff and flares. Three action alternatives and the No Action Alternative have been analyzed in the Draft EIS.

Alternative-1 would expand the existing Talon Military Operations Area (MOA) to the south and east. The proposed Talon MOA would be divided into low and high MOAs offering a combined training airspace with a floor of 500 feet AGL (raised from the existing 300 feet AGL) and a ceiling up to 18,000 feet MSL. The existing Talon Air Traffic Control Assigned Airspace (ATCAA) would also be expanded with the same lateral dimensions as the proposed Talon MOA. The ATCAA would be assigned above the MOA expanding the usable airspace to FL510 (51,000 feet above MSL) when requested from the Federal Aviation Administration and available. The proposed Talon MOA/ATCAA would continue to be scheduled for use between 7:00 AM to 10:00 PM Monday through Friday, with some operations conducted after dark. Up to 10,000 training sorties would be conducted annually in the proposed airspace along with the use of chaff and flares (15,360 each annually). Supersonic flights would account

for approximately 10 percent of the training sorties (1,000 sorties annually) and would only occur above FL300 (30,000 feet above MSL).

Alternative-2 would reconfigure and expand the existing Cato and Smitty MOAs and the associated ATCAA to the southeast. The floor of these combined MOAs would remain 500 feet AGL and the ceiling would be up to 18,000 feet MSL. The overlying ATCAA would extend the training airspace to FL510 (51,000 feet above MSL). Alternative-2 also includes the creation of a new MOA, the Lobos MOA to the south of the proposed Cato and Smitty MOAs. The proposed Lobos MOA would have a floor of 500 feet AGL and a ceiling up to 18,000 feet MSL. The proposed Lobos MOA would also have an ATCAA above the MOA to extend the training airspace to FL510 (51,000 feet above MSL). Two additional ATCAAs (Christa and Kendra) would be established to the east of the proposed Cato, Smitty, and Lobos MOAs/ATCAAs to provide direct access to and from White Sands Missile Range. The ATCAAs would have a floor of 18,000 feet MSL and a ceiling of FL510. The proposed MOAs/ATCAAs would be scheduled for use between 7:00 a.m. to 10:00 p.m., Monday through Friday, with some operations conducted after dark. Up to 9,100 training sorties would be conducted annually in the proposed airspace along with use of chaff and flares (15,360 each annually). Supersonic flights would account for approximately 10 percent of the training sorties (910 sorties annually) and would only occur above FL300 (30,000 feet above MSL).

Alternative-3 would be a combination of Alternatives-1 and -2 with the following differences. The proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative-1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL as opposed to the 500 feet AGL proposed under Alternative-2. The proposed aircraft training would be distributed throughout all of the proposed airspace and up to 6,800 annual sorties would occur in the proposed Talon MOA/ATCAA. Moreover, up to 3,200 annual sorties would occur in the proposed Cato, Smitty, and Lobos MOAs/ATCAAs, as well as the Christa and Kendra ATCAAs. Chaff and flare usage would be approximately 10,752 each annually in the Talon MOA/ATCAA and 4,608 each annually in Cato, Smitty, and Lobos MOAs/ATCAAs.

Official Species Lists for the species protected under the Endangered Species Act of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act as amended (16 USC 701-715), and the Bald and Golden Eagle Protection Act as amended (16 USC 668-668c) that may be located beneath the proposed airspace areas were requested and received through the Information, Planning, and Consultation (IPAC) System on 1 October 2018. These lists were considered during the preparation of the Draft EIS. Additionally, we are preparing a Biological Assessment/Biological Evaluation and request initiation of informal consultation with your office. Based on prior consultations (#02ENNM00-2012-I-0065; 7 June 2012, #2-22-96-F-334; May 8, 1998, and #2-22-98-I-124; 12 April 2000) and our Draft EIS, we anticipate it may affect, but not likely to adversely affect determination for certain endangered species and will ask for your concurrence in the Biological Assessment/Biological Evaluation we will be submitting.

Public hearings will be held at the dates and locations listed below. All meetings will be held from 5:30 PM to 8:30 PM. The meetings will start with an open house from 5:30 PM to 6:00 PM, at which time Air Force representatives will be available to answer questions about the proposal. A formal hearing will begin at 6:00 PM with a brief presentation by the Air Force on the Proposed Action and alternatives and the findings provided in the Draft EIS. The same information will be presented at each meeting, please attend one of the meetings at your convenience.

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Wednesday, December 4	Grant County Chamber of Commerce, 3031 Highway 180 East, Silver City, NM 88061
Thursday, December 5	Ramada by Wyndham Las Cruces Hotel and Conference Center, 201 East Avenue, Las Cruces, NM 88005

We request your participation and solicit your comments on the findings in the Draft EIS. Comments may be submitted at any of the public meetings, on the project website, www.HollomanAFBAirspaceEIS.com, or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA 23666. In order to ensure consideration in the Final EIS, comments are requested no later than **16 December 2019**.

My point of contact for this project is Ramon Acevedo-Cruz, Natural Resources Program Manager, (575) 572-3931, ramon.acevedocruz.3@us.af.mil. Please feel free to contact him directly for additional information or with any questions you may have.

Thank you for your assistance in this matter.

Sincerely

JOSEPH L. CAMPO, Colonel, USAF
Commander

Attachment:
Draft EIS (CD)

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

24 FEB 2020

Colonel Joseph L. Campo
Commander, 49th Wing
490 First Street, Ste 1700
Holloman AFB NM 88330-8277

United States Fish and Wildlife Service
Attn: Seth Willey
New Mexico Ecological Services Field Office
2105 Osuna Road NE
Albuquerque NM 87113

SUBJECT: Request for concurrence with Biological Assessment for the Holloman Air Force Base Proposed Special Use Airspace Optimization (Consultation Code: 02ENNM00-2019-SLI-0001); prior consultations #02ENNM00-2012-I-0065; #2-22-96-F-334; and #2-22-98-I-124.

Dear Mr. Willey,

The United States Air Force (Air Force) has prepared a Biological Assessment (BA) to evaluate the potential impacts to threatened and endangered species associated with the optimization of the special use airspace available for current and future pilot training at Holloman Air Force Base (AFB), New Mexico.

The Draft Environmental Impact Statement (EIS) was provided to your office in October 2019. The EIS evaluates the potential environmental impacts associated with optimizing special use airspace available for pilot training at Holman AFB. The training airspace used by aircraft assigned to Holloman AFB today was developed for legacy aircraft. This airspace does not have the optimum volume, proximity, availability or attributes needed to support the Holloman AFB training mission. The purpose of the Proposed Action is to ensure consistent availability of adequately sized and configured training airspace needed to conduct multiple, simultaneous training missions. The Preferred Alternative is Alternative 1, expand the Talon MOA in southeastern New Mexico, described in the Draft EIS.

Official Species Lists were requested and received through the Information, Planning, and Consultation System on October 1, 2018. These lists were considered during the preparation of the BA and EIS. Based on prior consultations (#02ENNM00-2012-I-0065; June 7, 2012, #2-22-96-F-334; May 8, 1998, and #2-22-98-I-124; April 12, 2000) and our Draft EIS, we have determined that the activities proposed as Alternative 1 in the EIS may affect, but are not likely to adversely affect certain endangered species. We request your concurrence with the effects determinations contained in the BA.

My point of contact for this project is Mr. Ramon Acevedo-Cruz. Please feel free to contact him directly at ramon.acevedocruz.3@us.af.mil or (575) 572-6670 for additional information or with any questions you may have. Thank you for your assistance in this matter.

Sincerely

JOSEPH L. CAMPO, Colonel, USAF
Commander

Attachment:
Biological Assessment

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Mexico Ecological Services Field Office
2105 Osuna Road NE
Albuquerque, New Mexico 87113
Telephone 505-346-2525 Fax 505-346-2542
www.fws.gov/southwest/es/newmexico/

April 17, 2020

Cons. # 02ENNM00-2020-I-0781

Colonel Joseph L. Campo
Commander, 49th Wing
Department of the Air Force
490 First Street, Ste 1700
Holloman Air Force Base, NM 88330-8277

Dear Colonel Campo:

Thank you for your letter dated February 24, 2020, requesting informal consultation with the U.S. Fish and Wildlife Service (Service) pursuant to section 7 of the Endangered Species Act (ESA) of 1973 (16 U.S.C. § 1531 *et seq*.), as amended, for the optimization of the special use airspace (SUA) at Holloman Air Force Base in Alamogordo, New Mexico. Your letter included a Biological Assessment (BA), dated February 2020, which is hereby incorporated by reference. The proposed action would expand the current Air Traffic Control Assigned Airspace and one of five Military Operations Areas (MOA) encompassed within this airspace (i.e., the Talon MOA). The proposed action is considered necessary to optimize training opportunities for F-16 pilots, increase efficiencies, and reduce disruptions to training. You describe how this current MOA will be laterally expanded (Talon A) and will include a new MOA area (Talon B) east of Talon A. These MOA sectors will each be divided into low (500-12,500 feet above ground level) and high (12,500-18,000 feet above ground level) sections.

There will be no ground-disturbing activities in the existing and new Talon MOA sectors per the proposed action. However, you described in your BA how low flying aircraft within the Talon Low A and Low B could potentially cause behavioral changes in birds and mammals due to increased noise disturbance. Additionally, you described how some of the listed species you are consulting on that occur within the Talon MOA might be affected by chaff and flare materials that are planned for use within the expanded Talon MOA. While flares are currently used within the Talon MOA, chaff is not. Holloman Air Force Base (AFB) will be requesting authorization from the Federal Aviation Agency for the use of chaff within the expanded Talon MOA and is therefore including it in this consultation along with the use of flares.

In your BA, you determined the proposed action "may affect, is not likely to adversely affect" the endangered Southwestern Willow Flycatcher (*Empidonax traillii extimus;* flycatcher), the threatened Yellow-billed Cuckoo (*Coccyzus americanus*; cuckoo), and the threatened Mexican Spotted Owl (*Strix occidentalis lucida*; owl). The Service concurs with your determination of "may affect, is not likely to adversely affect" for the flycatcher, cuckoo, and the owl based on the conservation measures and rationale provided within your BA, which are summarized below:

- While owls have been observed as permanent residents within the action area, their movement for nesting, migration, and foraging would be below the altitudes where the proposed action would occur. Therefore, any potential for bird/aircraft strikes would not measurably increase as a result of the proposed action than from current potential levels controlled by applicable procedures outlined in the Holloman AFB Bird/Wildlife-Aircraft Strike Hazard Plan.

- Prior consultations with the Air Force in 2018 (#02-ENNM00-2012-1-0065-R001) on the effects of low-altitude military jet aircraft, including the F-16, on the occupancy and nesting success of the owl in New Mexico resulted in implementation of seasonal altitude restrictions of 200 feet above ground level (AGL) above spotted owl habitat. We determined in that consultation that the impacts to the owl from overflights under this restriction were "insignificant and discountable". The Air Force then established the current altitude restriction at Talon MOA above this level to a more protective level of 300 feet AGL. Under the proposed action for this consultation, the Air Force stated that overflights in the Talon MOA A and B sectors would not go below 500 feet AGL. This increased distance further decreases any risk of disturbance to the owl from the proposed action.

- The average level of noise disturbance within the action area is anticipated to slightly increase from the current baseline of 54 decibels beneath Talon Low A MOA to 57 decibels, and to 58 decibels beneath the new Talon Low B MOA. The Mexican Spotted Owl Recovery Plan recommends noise disturbance to be below 69 decibels. Therefore, these levels are still below the threshold for startling or flushing the owl or causing nest abandonment. Most noise disturbance will come from flights between 500 and 2,000 feet AGL. These flights represent less than 10 percent of all flights occurring during training in the proposed action area and will be intermittent and transient in nature.

- Protocol surveys for flycatcher and cuckoo have not been completed throughout the entire action area. From the available historic data, however, flycatchers and cuckoos are not known to occupy the action area during the breeding season. The lowest ceiling level of 500 feet AGL for overflights is set at the level considered optimal for not disturbing nesting flycatchers or cuckoos, were there to be any nesting pairs beneath the Talon MOA. The amount of disturbance associated with noise to potential nesting flycatchers or cuckoos cannot be measured with any sort of certainty and would be considered insignificant and discountable, if either species were to nest in the action area.

- The use of flares and chaff at the altitude proposed and the implementation of fire safety regulations in their deployment described in your BA will not increase any risk for

wildfire on the ground. In addition, there is no critical habitat for the flycatcher or owl or proposed critical habitat for the cuckoo under the expanded Talon MOA. We are not aware of any adverse effects to avian species from encountering chaff on the ground.

In your BA, you also determined the proposed action "may affect, is not likely to adversely affect" the Northern Aplomado Falcon (*Falco femoralis septentrionalis;* falcon), which is considered a nonessential experimental population under section 10(j) of the ESA. For section 7 consultation purposes, any nonessential experimental population located outside a National Park or National Wildlife Refuge System is treated as a proposed species which would receive a determination of "may affect, is not likely to jeopardize the continued existence of" the species. Therefore, the Service concurs with a determination of "may affect, is not likely to jeopardize the continued existence of" the falcon based on the conservation measures and rationale provided within your BA. We do not have any further conservation recommendations for this species at this time.

In addition, you also determined that the proposed action would have no effect on the interior least tern (*Sterna antillarum*) or the piping plover (*Charadrius melodus*). Although the ESA does not require Federal agencies to consult with the Service if the action agency determines their action will have "no effect" on threatened or endangered species or designated critical habitat (50 CFR 402.12), we appreciate notification of your determinations.

This concludes informal section 7 consultation for the optimization of the special use airspace at Holloman Air Force Base in Alamogordo, New Mexico. Please contact the Service if: 1) new information reveals effects of the action that may affect listed species or critical habitat in any way not considered in this analysis, 2) if the action is modified in a manner that causes an effect to listed species or critical habitat not considered in this analysis, or 3) if a new species is listed or critical habitat is designated that may be affected by the proposed project

Thank you for your concern for listed species and New Mexico's fish and wildlife resources. In future communications regarding this letter or the project, please contact Mark Brennan of my staff at (505) 761-4713 or mark_brennan@fws.gov.

Sincerely,

Seth Willey
Acting Field Supervisor

cc:
Director, New Mexico Department of Game and Fish, Santa Fe, NM
Director, New Mexico Energy, Minerals, and Natural Resources Department, Forestry Division, Santa Fe, NM
Natural Resources Manager, Holloman Air Force Base, New Mexico

APPENDIX I
AIRSPACE OBSTRUCTION ANALYSIS

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I1 Introduction – Objects Affected Navigable Airspace

As set forth in Title 49 of the U.S. Code of Federal Regulations, §40103, "The United States Government has exclusive sovereignty of airspace of the United States." In protecting and administering the use of U.S. airspace,

The Administrator [of the FAA] shall prescribe air traffic regulations on the flight of aircraft (including regulations on safe altitudes) for -----

(A) Navigating, protecting, and identifying aircraft;

(B) Protecting individuals and property on the ground;

(C) Using the navigable airspace efficiently; and

(D) Preventing collision between aircraft, between aircraft and land or water vehicles, and between aircraft and airborne objects.

The FAA carries out these responsibilities through a variety of means. The primary means by which the FAA analyzes proposed construction or alteration ("protecting individuals and property on the ground") that may affect navigable airspace is through the Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) process.

A structure proponent must file FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, for any proposed construction or alteration that meets any of the following *Notification Criteria* described in FAR Part 77.13:

- §77.13(a)(1) – A height more than 200 feet AGL at its site;
- §77.13(a)(2) – Within 20,000 feet of a runway more than 3,200 feet in length, and exceeding a 100:1 slope imaginary surface (i.e., a surface rising 1 foot vertically for every 100 feet horizontally) from the nearest point of the nearest runway. (Different standards apply with proximity to airports with no runways greater than 3,200 feet in length, and heliports);
- §77.13(a)(3) – Roadways, railroads, and waterways are evaluated based on heights above surface providing for vehicles; by specified amounts or the height of the highest mobile object normally traversing the transportation corridor;
- §77.13(a)(4) – When requested by the FAA, any construction or alteration that would be in an instrument approach area and may exceed 14 CFR Part 77 obstruction standards; or,
- §77.13(a)(5) – Any construction or alteration on any public-use or military airport.

Structure proponents or their representatives may file online at the FAA's OE/AAA website, http://oeaaa.faa.gov.

The FAA conducts an initial aeronautical study to determine whether the proposal would exceed obstruction standards under the provision of the FAR Part 77.23. An object constitutes an obstruction to air navigation if any of the following obstruction standards are exceeded:

- §77.23(a)(1) – A height more than 500 feet AGL at the object site.
- §77.23(a)(2) – A height AGL or above the airport elevation, whichever is greater, exceeding 200 feet within 3 nautical miles (NM) of the airport, and that height increases at a rate of 100 feet per NM up to 500 feet within 6 miles.

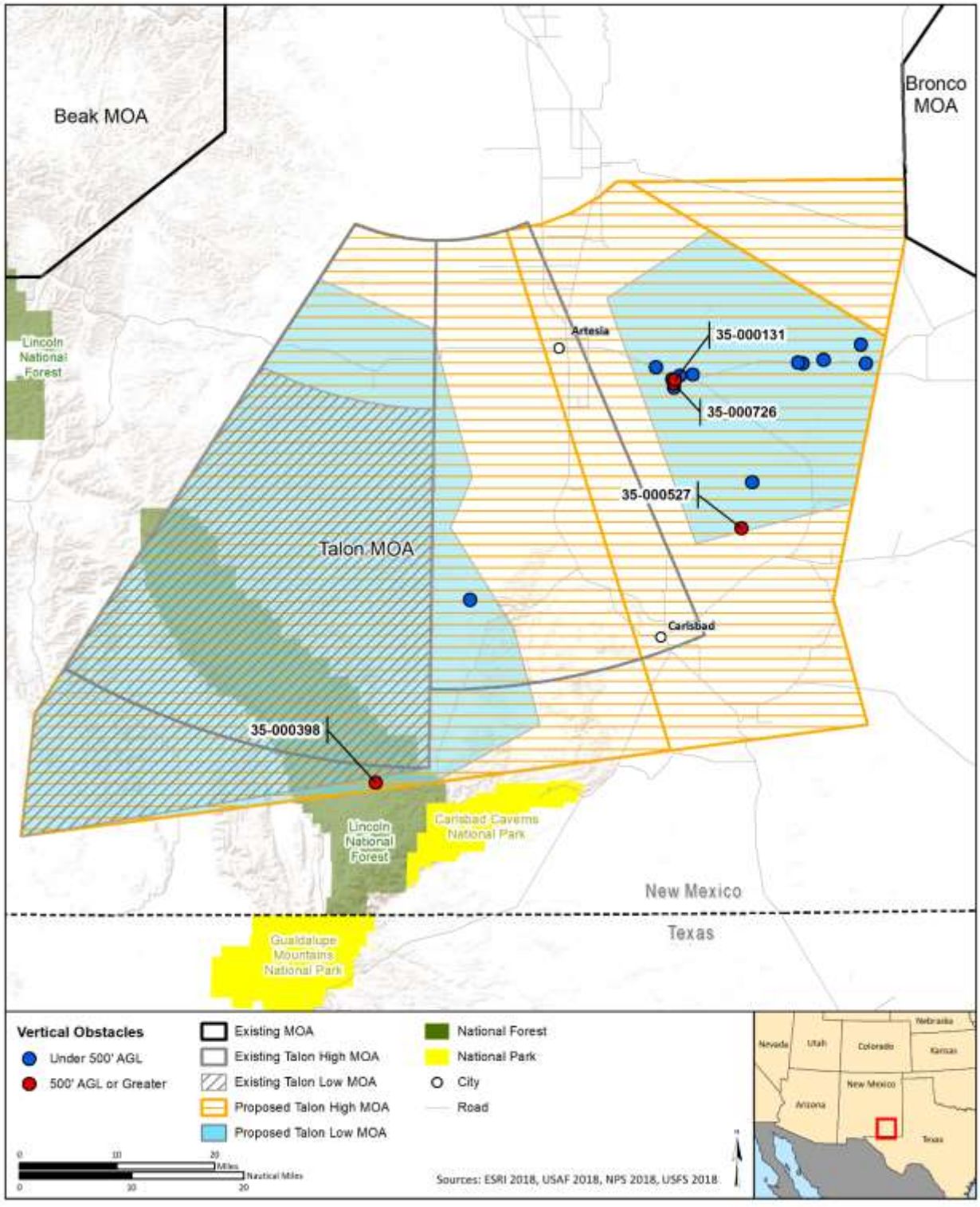
- §77.23(a)(3) – A height that increases a minimum instrument flight altitude within a terminal area. This standard references instrument procedure criteria such as TERPS.
- §77.23(a)(4) – A height that increases a minimum obstruction clearance (MOCA) under enroute criteria.
- §77.23(a)(5) – The surface of a take-off and landing area of an airport or any imaginary surface defined in later sections: §77.25 for civil airports, §77.28 for military airports, and §77.29 for heliports.

I2 Airspace Obstructions Beneath Proposed Airspace

Obstructions within each of the proposed low MOAs are shown below. Highlighted obstacles exceed the proposed 500 feet AGL floor of the low MOAs. As shown, only four obstacles are 500 ft AGL or greater. All are located in the proposed Talon Low A and B MOAs, as shown in **Figure I2-1**.

MOA Name	Obstacle ID	Height AGL (feet)	Obstacle Type	Lighting Type	Latitude	Longitude
LOBOS	35-001370	260	TOWER	D	32.7632	-108.1387
LOBOS	35-000038	206	TOWER	R	32.7814	-108.2703
LOBOS	35-022240	199	TOWER	N	32.5982	-108.9707
LOBOS	35-000155	199	TOWER	N	32.7808	-108.2000
LOBOS	35-031929	180	TOWER	N	32.9154	-107.9987
LOBOS	35-000847	124	TOWER	N	32.5823	-108.4252
LOBOS	35-022955	100	TOWER	N	32.7852	-108.2444
LOBOS	35-000275	70	TOWER	N	32.9244	-108.1797
LOBOS	35-031210	66	TOWER	N	32.5824	-108.4254
SMITTY	35-000741	364	TOWER	N	34.1545	-106.9303
SMITTY	35-000183	335	TOWER	D	34.0380	-107.4464
SMITTY	35-000793	303	TOWER	D	33.4651	-107.2428
SMITTY	35-000373	153	TOWER	R	34.1428	-107.2183
TALON	35-000131	1,054	TOWER	R	32.7939	-104.2083
TALON	35-000527	715	TOWER	R	32.5728	-104.0928
TALON	35-000398	513	TOWER	R	32.1972	-104.7370
TALON	35-000726	500	TOWER	D	32.7881	-104.2097
TALON	35-020008	486	TOWER	D	32.7950	-104.2133
TALON	35-000752	460	TOWER	R	32.8004	-104.1994
TALON	35-001292	349	TOWER	D	32.8171	-103.9833
TALON	35-000082	320	TOWER	R	32.8022	-104.1769
TALON	35-020036	306	TOWER	D	32.8164	-103.8710
TALON	35-022594	259	TOWER	D	32.6410	-104.0740
TALON	35-000057	230	TOWER	U	32.8222	-103.9464
TALON	35-000873	220	TOWER	D	32.8132	-104.2417
TALON	35-031620	195	TOWER	N	32.8183	-103.9911
TALON	35-031169	190	ANTENNA	N	32.7824	-104.2096
TALON	35-000361	170	TOWER	U	32.4692	-104.5706
TALON	35-006013	150	TOWER	U	32.8444	-103.8797

Source: FAA 2018
Notes: AGL = Above Ground Level; D = Medium Density White Strobe & Red; R = Red; N = None; U = Unknown

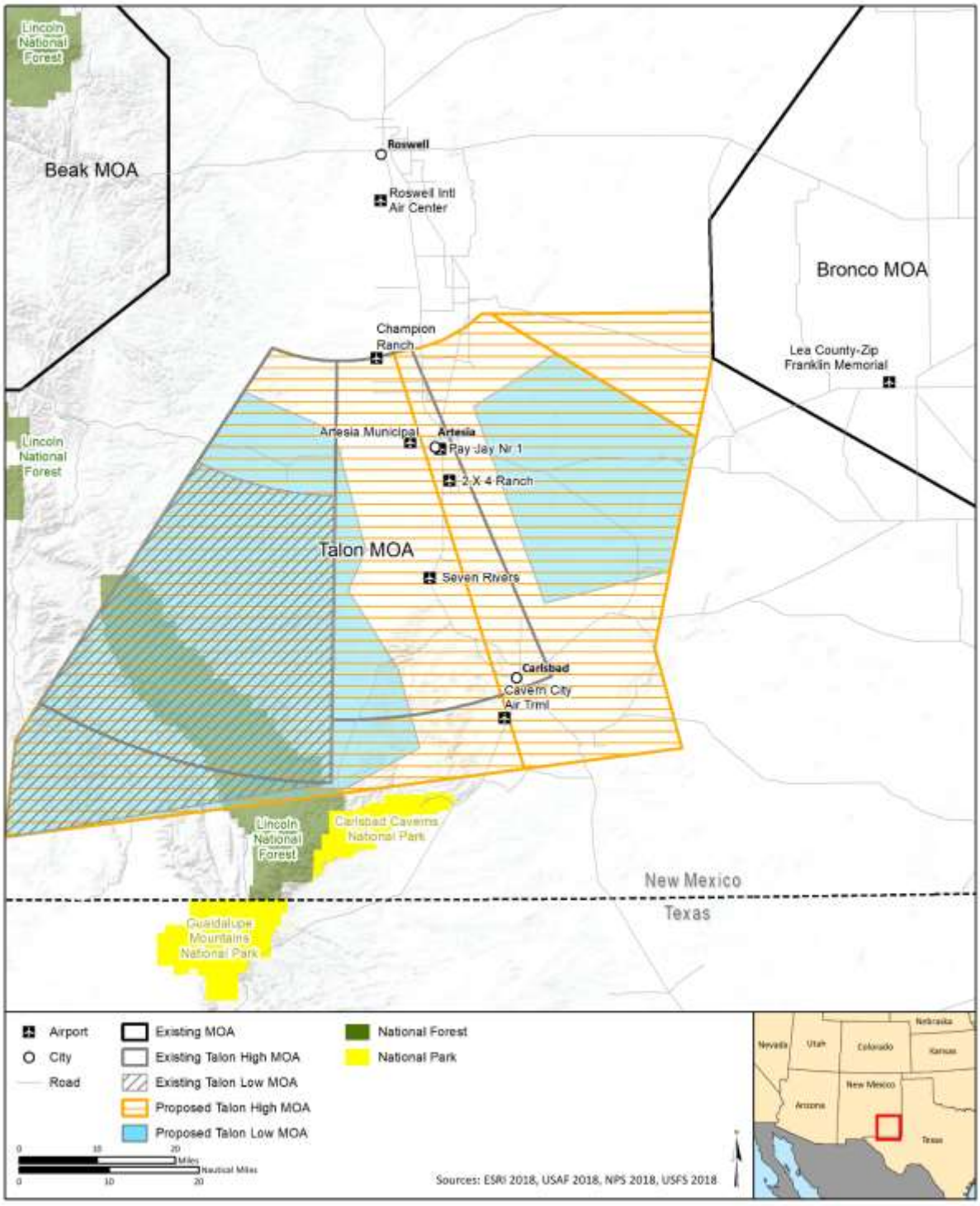


Legend: MOA-Military Operations Area; AGL-Above Ground Level

Figure I2.1Obstructions under Talon Low A and Low B MOA Airspace

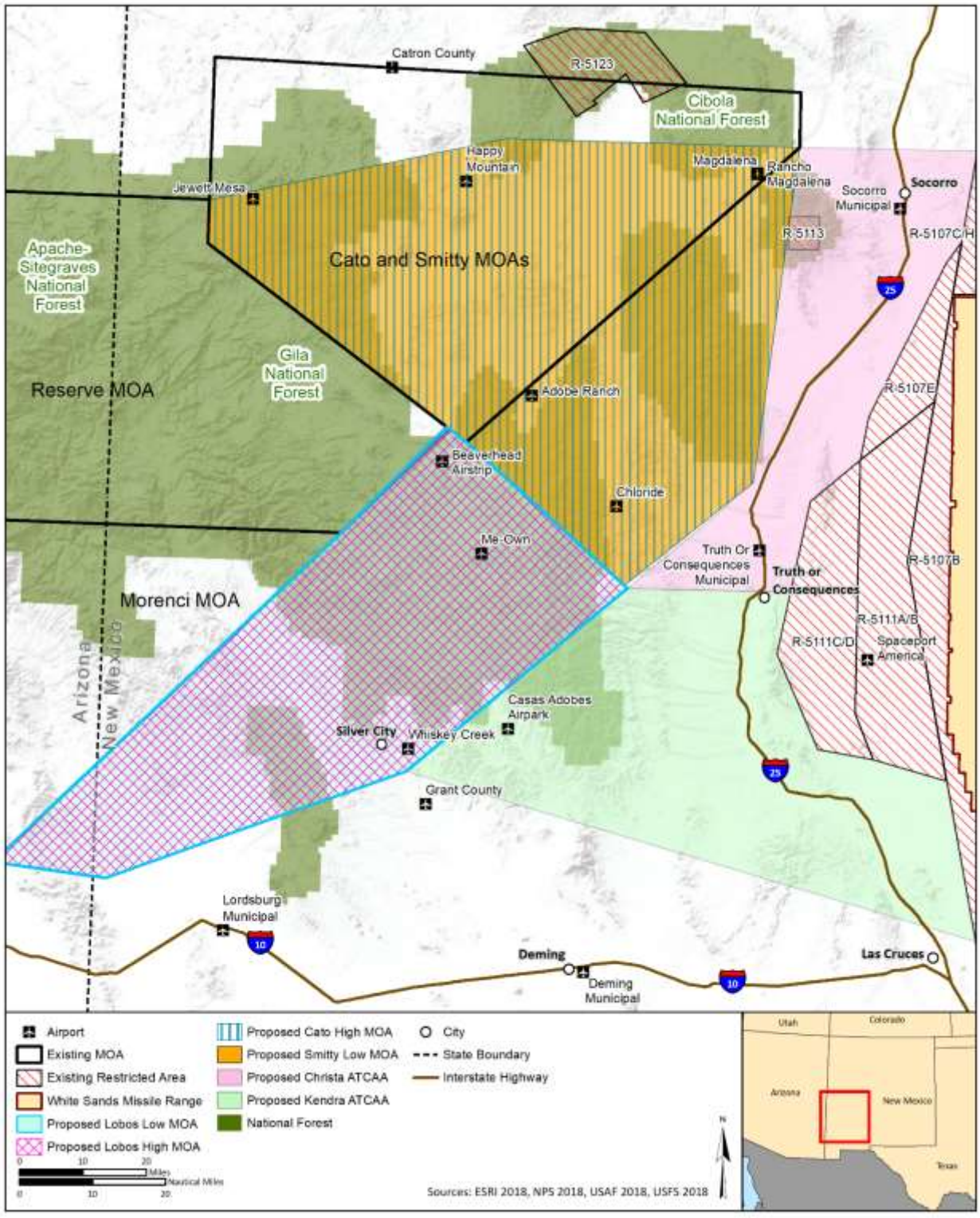
I3 Airfields Beneath Proposed Airspace

Currently, 24 airfields exist within the project airspace. These can be seen in **Figures I3-1 and I3-2**.



Legend: MOA-Military Operations Area.

Figure I3-1. Airfields within Existing and Proposed Talon MOA

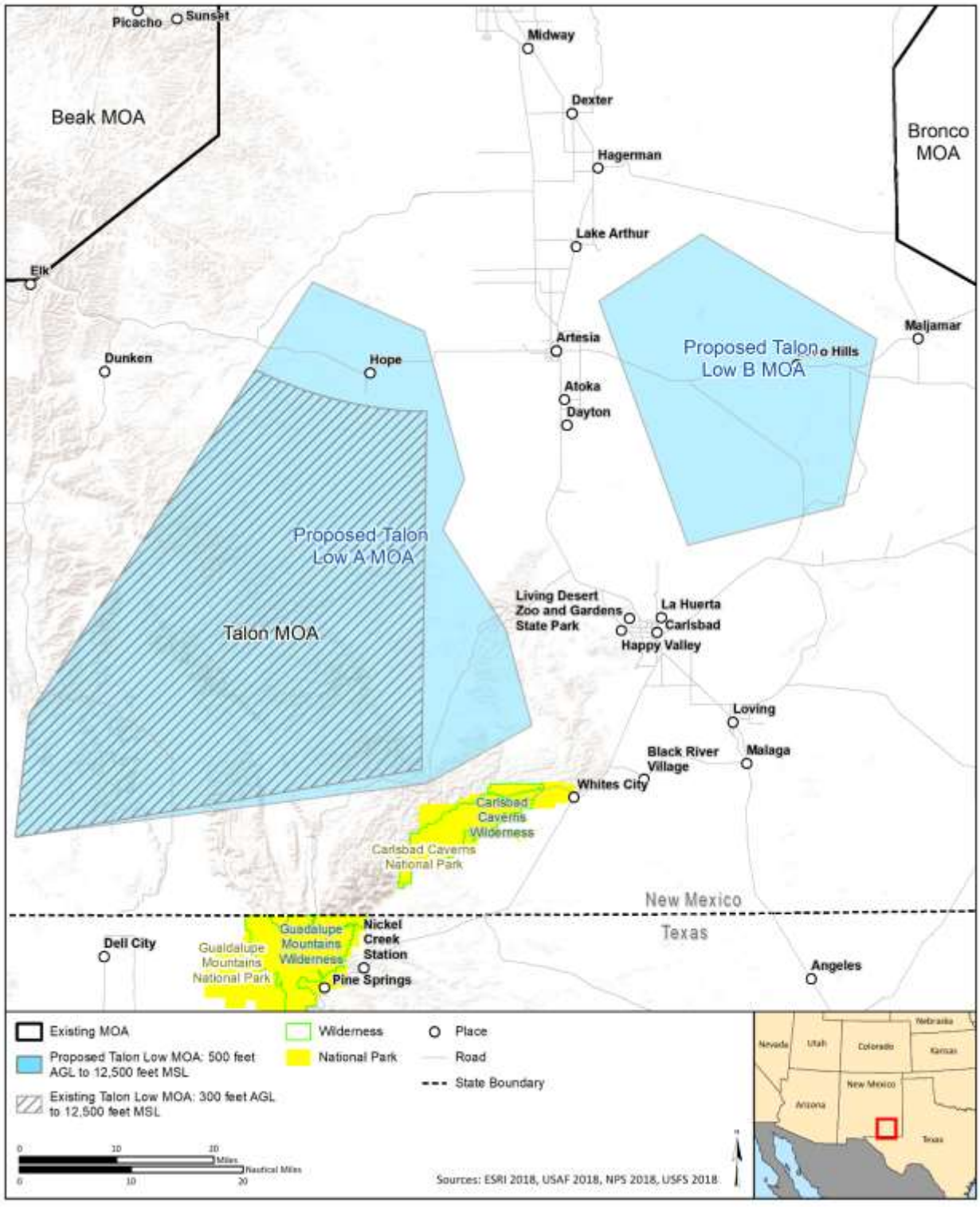


Legend: MOA-Military Operations Area.

Figure I3-2. Airfields within the Existing and Proposed Smitty and Lobos MOAs

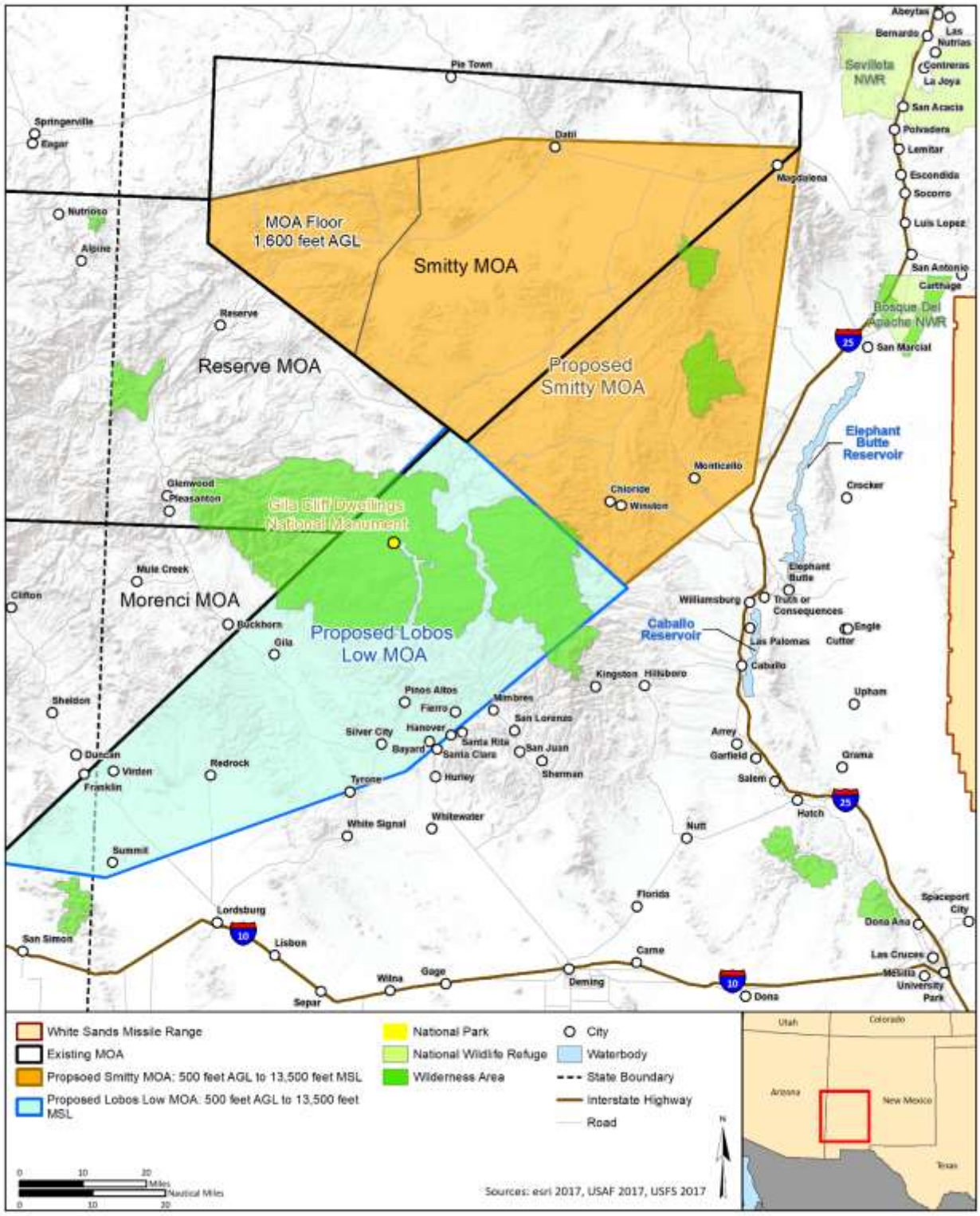
I4 Areas with Overflight Restrictions within Proposed Action

Within the existing Smitty MOA, the western portion that partially overlies Gila National Forrest is currently charted with a minimum altitude of 1,600 feet AGL. This would continue to occur within the proposed Smitty MOA. Additionally, in accordance with the Aeronautical Information Manual (paragraph 7-4-6), pilots are requested to maintain a minimum altitude of 2,000 feet above the surface of the following: National Parks, Monuments, Seashores, Lakeshores, Recreation Areas and Scenic Riverways administered by the National Park Service; National Wildlife Refuges, Big Game Refuges, Game Ranges and Wildlife Ranges administered by the U.S. Fish and Wildlife Service; and Wilderness and Primitive areas administered by the U.S. Forest Service. In accordance with FAA minimum safe altitudes (14 CFR 91.119), aircraft must avoid congested areas of a city, town, or settlement or any open-air assembly of people by 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. Outside congested areas, aircraft must avoid persons, vessels, vehicles, or structures by 500 feet. **Figures I4-1 and I4-2** show the areas that qualify for these restrictions. These restrictions only apply to the proposed low MOAs since the floor of the proposed high MOAs would be well above the 2,000 feet AGL restriction.



Legend: MOA-Military Operations Area.

Figure I4-1.Areas under Proposed Talon Low MOAs Subject to Avoidance



Legend: MOA-Military Operations Area.

Figure I4-2. Areas under Proposed Smitty and Lobos Low MOAs Subject to Avoidance

APPENDIX J
SECTION 106 AND GOVERNMENT TO GOVERNMENT CONSULTATION

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Section 106 Consultation

Federal, State Agencies	
Scoping Phase (August 2018) and Draft EIS Phase (October 2019)	
New Mexico Historic Preservation Division	Jeff Pappas
Arizona State Parks, State Historic Preservation Office	Kathryn Leonard
U.S. Department of the Interior Indian Affairs, Mescalero Agency	Charles Riley
U.S. Department of the Interior Indian Affairs, Southwest Regional Office	William Walker
New Mexico Indian Affairs Department	David Mann

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

Colonel Houston R. Cantwell
Commander, 49th Wing
490 First Street
Holloman AFB NM 88330-8277

New Mexico Historic Preservation Division
Attn: Jeff Pappas, PhD
State Historic Preservation Officer
Bataan Memorial Building
407 Galisteo Street, Suite 236
Sante Fe NM 87501

Dear Dr. Pappas

The United States Air Force is preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental impacts associated with the proposed optimization of the special use airspace available for current and anticipated future pilot training at Holloman Air Force Base (AFB), New Mexico. Under the Proposed Action, existing special use airspace would be reconfigured and expanded or new special use airspace would be established to ensure the availability of training airspace today and into the future. The training airspace used by aircraft assigned to Holloman AFB today was developed for legacy aircraft. This airspace does not have the optimum volume, proximity, availability or attributes needed to support the Holloman AFB training mission. The purpose of the Proposed Action is to ensure consistent availability of adequately sized and configured training airspace needed to conduct multiple, simultaneous training missions. The Proposed Action would increase training efficiencies and provide more scheduling flexibility.

The proposed airspace modifications would include reconfiguring and expanding existing airspace or creating new airspace within parts of the following counties: Graham and Greenlee, Arizona; and Chaves, Catron, Eddy, Grant, Hidalgo, Otero, Sierra, and Socorro, New Mexico (see attachment). The Proposed Action would include aircraft operations from 500 feet above ground level (AGL) up to Flight Level (FL) 500 (50,000 feet above mean sea level [MSL]). The Proposed Action includes supersonic flight above FL300 (30,000 feet above MSL) as well as the use of chaff throughout the designated airspace and flares above 2,000 feet AGL.

The environmental analysis for the Proposed Action is being conducted by the Air Force Civil Engineer Center in accordance with the Council on Environmental Quality guidelines pursuant to the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs* and 36 Code of Federal Regulations Part 800 of the National Historic Preservation Act, this letter initiates consultation with your office regarding the Proposed Action. Additional information on determining the Area of Potential Effects, Identifying Historic Properties, determining effects will be forthcoming as the analyses are completed.

The Air Force published a Notice of Intent to prepare an EIS in the Federal Register on August 24, 2017, initiating the public involvement process. Open-house style public meetings will be held at the locations, dates, and times listed below. The purpose of the meetings is to provide information

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about the proposal and solicit comments on the scope of environmental issues to be addressed in the EIS. No formal presentation will be given. Please attend at your convenience.

Tuesday September 12, 2017 6:00 PM to 8:00 PM Carlsbad Public Library 101 S. Halagueno Street Carlsbad, NM 88220	Wednesday, September 13, 2017 6:00 PM to 8:00 PM Truth or Consequences Civic Center Ralph Edwards Auditorium 400 W. 4th Avenue Truth or Consequences, NM 87901	Thursday, September 14, 2017 6:00 PM to 8:00 PM Hilton Garden Inn 2550 S. Don Roser Dr. Las Cruces, NM 88001

We request your participation and solicit your comments on the Proposed Action. Though comments will be accepted throughout the EIS process, please provide your comments no later than September 25, 2017 to ensure consideration in the Draft EIS. Comments may be submitted at any of the public meetings; on the project website, www.HollomanAFBAirspaceEIS.com; or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA 23666.

My point of contact and Cultural Resources Manager for this project is Mr. Andrew Gomolak. He may be reached at (575) 572-6647, andrew.gomolak@us.af.mil. Please feel free to contact him directly for additional information or with any questions may have. Thank you for your assistance in this matter.

HOUSTON R. CANTWELL, Colonel, USAF
Commander

Attachment
1. Project Area Map

SHPO - 2017 - 1701 (138898) bc
ARIZONA STATE HISTORIC PRESERVATION OFFICE

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

RECEIVED
AUG 31 2017
ARIZONA STATE HISTORIC PRESERVATION OFFICE

Colonel Houston R. Cantwell
Commander, 49th Wing
490 First Street
Holloman AFB NM 88330-8277

Arizona State Parks
State Historic Perservation Office
Attn: Kathryn Leonard
State Historic Preservation Officer
1100 W. Washington Street, Suite 190
Phoenix AZ 85085

Dear Ms. Leonard

The United States Air Force (Air Force) is preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental impacts associated with the proposed optimization of the special use airspace available for current and anticipated future pilot training at Holloman Air Force Base (AFB), New Mexico. Under the Proposed Action, existing special use airspace would be reconfigured and expanded or new special use airspace would be established to ensure the availability of training airspace today and into the future. The training airspace used by aircraft assigned to Holloman AFB today was developed for legacy aircraft. This airspace does not have the optimum volume, proximity, availability or attributes needed to support the Holloman AFB training mission. The purpose of the Proposed Action is to ensure consistent availability of adequately sized and configured training airspace needed to conduct multiple, simultaneous training missions. The Proposed Action would increase training efficiencies and provide more scheduling flexibility.

The proposed airspace modifications would include reconfiguring and expanding existing airspace or creating new airspace within parts of the following counties: Graham and Greenlee, Arizona; and Chaves, Catron, Eddy, Grant, Hidalgo, Otero, Sierra, and Socorro, New Mexico (see attachment). The Proposed Action would include aircraft operations from 500 feet above ground level (AGL) up to Flight Level (FL) 500 (50,000 feet above mean sea level [MSL]). The Proposed Action includes supersonic flight above FL300 (30,000 feet above MSL) as well as the use of chaff throughout the designated airspace and flares above 2,000 feet AGL.

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We request your participation; and, we solicit your comments on the Proposed Action. Though comments will be accepted throughout the EIS process, please provide your comments no later than September 25, 2017 to ensure consideration in the Draft EIS. Comments may be submitted at any of the public meetings; on the project website, www.HollomanAFBAirspaceEIS.com; or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA 23666.

My point of contact and Cultural Resources Manager for this project is Mr. Andrew Gomolak. He may be reached at (575) 572-6647, andrew.gomolak@us.af.mil. Please feel free to contact him directly for additional information or with any questions may have. Thank you for your assistance in this matter.

HOUSTON R. CANTWELL, Colonel, USAF
Commander

1 Attachment: Project Area Map

Lori Powell 9-14-17
AZ STATE HISTORIC PRESERVATION OFFICE
Thank you for the information. We have no comments at this time.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

Colonel Houston R. Cantwell
Commander, 49th Wing
490 First Street
Holloman AFB NM 88330-8277

Charles Riley
U.S. Department of the Interior Indian Affairs
Mescalero Agency
P.O. Box 189
Mescalero, NM 88340

Dear Mr. Riley

Pursuant to the National Environmental Policy Act of 1969, as amended, and its implementing regulations, The United States Air Force (Air Force) is preparing an EIS to evaluate the potential environmental impacts of optimizing the special use airspace available for pilot training at Holloman AFB. Some of the training airspaces used by aircraft assigned to Holloman AFB were developed for legacy aircraft more than 30 years ago and may not have the optimum volume, proximity, times or attributes to support pilot training missions at Holloman AFB. The Proposed Action would increase training efficiencies and provide more scheduling flexibility.

The Air Force published a Notice of Intent in the *Federal Register* on August 24, 2017 to prepare an EIS, initiating the public involvement process. Open-house style public scoping meetings will be held at the locations, dates, and times listed below. No formal presentation will be given, please attend at your convenience.

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My point of contact and Cultural Resources Manager for this project is Mr. Andrew Gomolak. He may be reached at (575) 572-6647, andrew.gomolak@us.af.mil. Please feel free to contact him directly for additional information or with any questions may have. Thank you for your assistance in this matter.

Sincerely,

HOUSTON R. CANTWELL, Colonel, USAF
Commander

1 Attachment
1. Project Area Map

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

Colonel Houston R. Cantwell
Commander, 49th Wing
490 First Street
Holloman AFB NM 88330-8277

William Walker
U.S. Department of the Interior Indian Affairs
Southwest Regional Office
1001 Indian School Road, NW
Albuquerque, NM 87104

Dear Mr. Walker

The United States Air Force is preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental impacts associated with the proposed optimization of the special use airspace available for current and anticipated future pilot training at Holloman Air Force Base (AFB), New Mexico. Under the Proposed Action, existing special use airspace would be reconfigured and expanded or new special use airspace would be established to ensure the availability of training airspace today and into the future. The training airspace used by aircraft assigned to Holloman AFB today was developed for legacy aircraft. This airspace does not have the optimum volume, proximity, availability or attributes needed to support the Holloman AFB training mission. The purpose of the Proposed Action is to ensure consistent availability of adequately sized and configured training airspace needed to conduct multiple, simultaneous training missions. The Proposed Action would increase training efficiencies and provide more scheduling flexibility.

The proposed airspace modifications would include reconfiguring and expanding existing airspace or creating new airspace within parts of the following counties: Graham and Greenlee, Arizona; and Chaves, Catron, Eddy, Grant, Hidalgo, Otero, Sierra, and Socorro, New Mexico (see attachment). The Proposed Action would include aircraft operations from 500 feet above ground level (AGL) up to Flight Level (FL) 500 (50,000 feet above mean sea level [MSL]). The Proposed Action includes supersonic flight above FL300 (30,000 feet above MSL) as well as the use of chaff throughout the designated airspace and flares above 2,000 feet AGL.

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We request your participation and solicit your comments on the Proposed Action. Though comments will be accepted throughout the EIS process, please provide your comments no later than September 25, 2017 to ensure consideration in the Draft EIS. Comments may be submitted at any of the public meetings; on the project website, www.HollomanAFBAirspaceEIS.com; or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA 23666.

My point of contact and Cultural Resources Manager for this project is Mr. Andrew Gomolak. He may be reached at (575) 572-6647, andrew.gomolak@us.af.mil. Please feel free to contact him directly for additional information or with any questions may have. Thank you for your assistance in this matter.

Sincerely,

HOUSTON R. CANTWELL, Colonel, USAF
Commander

1 Attachment
1. Project Area Map

United States Department of the Interior
Bureau of Indian Affairs
Southwest Region
1001 Indian School Road N.W.
Albuquerque, New Mexico 87104-2303

TAKE PRIDE IN AMERICA

In Reply Refer To:
620-Division of Environmental, Safety,
and Cultural Resources Management

OCT 04 2017

Holloman Air Force Base Airspace EIS
c/o Cardno
501 Butler Farm Rd., Suite H
Hampton, Virginia 23666

To Whom It May Concern:

The Bureau of Indian Affairs (BIA), Division of Environmental, Safety, and Cultural Resources Management has received your request for comments regarding the Draft Environmental Impact Statement (EIS) to evaluate the potential environmental impacts associated with the proposed optimization of the special use airspace available for current and anticipated future pilot training at Holloman Air Force Base, New Mexico. We recommend that the Department of Defense contact tribes and pueblos on a government-to-government basis regarding environmental issues and impacts to resources, specifically cultural resources in relation to the proposed action.

As is, the proposed action does not impact any trust resources under the jurisdiction of the BIA. Therefore, our office does not have any comments; however we may choose to participate in subsequent stages of the EIS process.

Thank you for the opportunity to participate and comment on the proposed action. If you have any questions or concerns, please contact Mrs. Priscilla J. Avila at (505) 563-3417.

Sincerely,

Regional Director

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

Colonel Houston R. Cantwell
Commander, 49th Wing
490 First Street
Holloman AFB NM 88330-8277

New Mexico Indian Affairs Department
David Mann
Wendell Chino Building, 2nd Floor
1220 South St. Francis Drive
Santa Fe, NM 87505

Dear Mr. Mann

The United States Air Force is preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental impacts associated with the proposed optimization of the special use airspace available for current and anticipated future pilot training at Holloman Air Force Base (AFB), New Mexico. Under the Proposed Action, existing special use airspace would be reconfigured and expanded or new special use airspace would be established to ensure the availability of training airspace today and into the future. The training airspace used by aircraft assigned to Holloman AFB today was developed for legacy aircraft. This airspace does not have the optimum volume, proximity, availability or attributes needed to support the Holloman AFB training mission. The purpose of the Proposed Action is to ensure consistent availability of adequately sized and configured training airspace needed to conduct multiple, simultaneous training missions. The Proposed Action would increase training efficiencies and provide more scheduling flexibility.

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My point of contact and Cultural Resources Manager for this project is Mr. Andrew Gomolak. He may be reached at (575) 572-6647, andrew.gomolak@us.af.mil. Please feel free to contact him directly for additional information or with any questions may have. Thank you for your assistance in this matter.

Sincerely,

HOUSTON R. CANTWELL, Colonel, USAF
Commander

1 Attachment: Project Area Map

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

OCT 18 2019

Colonel Joseph L. Campo
Commander, 49th Wing
490 First Street, Ste 1700
Holloman AFB NM 88330-8277

Arizona State Parks
State Historic Preservation Office
Attn: Kathryn Leonard
State Historic Preservation Officer
1100 W. Washington Street, Suite 190
Phoenix AZ 85085

SUBJECT: National Historic Preservation Act, Section 106 Consultation for the Special Use Airspace Optimization to Support Existing Aircraft at Holloman Air Force Base Draft Environmental Impact Statement

Dear Ms. Leonard

The United States Air Force (Air Force) is proposing to optimize special use airspace available for pilot training at Holloman Air Force Base (AFB), New Mexico. The Air Force is preparing an Environmental Impact Statement (EIS) under the National Environmental Policy Act to evaluate potential environmental impacts associated with the Special Use Airspace Optimization Draft EIS.

In accordance with Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR, Part 800, the Air Force, Holloman AFB, is informing you of a proposed undertaking that was analyzed for the potential to affect historic properties. The undertaking would require airspace modifications to support the Holloman AFB mission.

The Special Use Airspace Optimization Draft EIS analyzes proposed airspace modifications that would include expanding existing airspace or creating new airspace within parts of the following counties: Graham and Greenlee, Arizona; and Catron, Chaves, Eddy, Grant, Hidalgo, Otero, Sierra, Lea, and Socorro, New Mexico. The Proposed Action would include aircraft training operations from 500 feet above ground level (AGL) up to flight level (FL) 510 (51,000 feet above mean sea level [MSL]), supersonic flight above FL300 (30,000 feet above MSL), and the use of chaff and flares throughout the proposed airspace. The Area of Potential Effect (APE) for this undertaking is therefore defined as the land under the proposed airspace that would be used by F-16 aircraft. Three alternatives and the No Action Alternative have been analyzed. Each of the three alternatives are described below, which includes a description of the APE for each alternative.

Alternative-1 would expand the existing Talon Military Operations Area (MOA) to the south and east. The proposed Talon MOA would be divided into low and high MOAs offering a combined training airspace with a floor of 500 feet AGL (raised from the existing 300 feet AGL) and a ceiling up to 18,000 feet MSL. The existing Talon Air Traffic Control Assigned Airspace (ATCAA) would also be expanded with the same lateral dimensions as the proposed Talon MOA. The ATCAA would be assigned above the

COMBAT AIRPOWER STARTS HERE

MOA expanding the usable airspace to FL510 (51,000 feet above MSL) when requested from the Federal Aviation Administration and available. The proposed Talon MOA/ATCAA would continue to be scheduled for use between 7:00 a.m. to 10:00 p.m., Monday through Friday, with some operations conducted after dark. Up to 10,000 training sorties would be conducted annually in the proposed airspace along with the use of chaff and flares (15,360 each annually). Supersonic flights would account for approximately 10 percent of the training sorties (1,000 sorties annually) and would only occur above FL300 (30,000 feet above MSL).

Alternative-2 would reconfigure and expand the existing Cato and Smitty MOAs and the associated ATCAA to the southeast. The floor of these combined MOAs would remain 500 feet AGL and the ceiling would be up to 18,000 feet MSL. The overlying ATCAA would extend the training airspace to FL510 (51,000 feet above MSL). Alternative-2 also includes the creation of a new MOA, the Lobos MOA to the south of the proposed Cato and Smitty MOAs. The proposed Lobos MOA would have a floor of 500 feet AGL and a ceiling up to 18,000 feet MSL. The proposed Lobos MOA would also have an ATCAA above the MOA to extend the training airspace to FL510 (51,000 feet above MSL). Two additional ATCAAs (Christa and Kendra) would be established to the east of the proposed Cato, Smitty, and Lobos MOAs/ATCAAs to provide direct access to and from White Sands Missile Range. The ATCAAs would have a floor of 18,000 feet MSL and a ceiling of FL510. The proposed MOAs/ATCAAs would be scheduled for use between 7:00 a.m. to 10:00 p.m., Monday through Friday with some operations conducted after dark. Up to 9,100 training sorties would be conducted annually in the proposed airspace along with use of chaff and flares (15,360 each annually). Supersonic flights would account for approximately 10 percent of the training sorties (910 sorties annually) and would only occur above FL300 (30,000 feet above MSL).

Alternative-3 would be a combination of Alternatives-1 and -2 with the following differences. The proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative-1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL as opposed to the 500 feet AGL proposed under Alternative-2. The proposed aircraft training would be distributed throughout all of the proposed airspace and up to 6,800 annual sorties would occur in the proposed Talon MOA/ATCAA. Moreover, up to 3,200 annual sorties would occur in the proposed Cato, Smitty, and Lobos MOAs/ATCAAs, as well as the Christa and Kendra ATCAAs. Chaff and flare usage would be approximately 10,752 each annually in the Talon MOA/ATCAA and 4,608 each annually in Cato, Smitty, and Lobos MOAs/ATCAAs.

The Draft EIS found that the potential impacts to historic properties would be minimal to non-existent and the same under all of the action alternatives. The potential impacts would be limited to minimal, benign visual intrusions from the proposed aircraft training operations and no anticipated risk of structural damage from sonic booms as a result of supersonic flights. None of the alternatives propose any ground disturbance activity that would physically affect historic properties. A brief summary of the potential impacts follows.

The Draft EIS found that visual intrusion under any of the alternatives would be minimal and would not cause adverse impacts to the settings of existing archaeological or architectural sites. The high altitude of the overflights, small size of the aircraft, and the high speeds make it unlikely that the training operations would be readily visible or intrusive to observers on the ground. Chaff and flares deployed from the aircraft would not pose a visual intrusion since these materials are small in size (1 inch to no more than 13 inches in length), burn only for a few seconds (flares only), and would be released at a relatively high altitude making them virtually undetectable to observers on the ground. The likelihood of residual chaff and flare material to land at archaeological or architectural sites would be very rare and would not have an adverse effect on these resources.

The Draft EIS found that there would be no anticipated structural damage to archaeological or architectural resources since the sonic boom overpressures would not exceed 1 pound per square foot (psf). The risk of damaging structures at this level of psf would be very low, one in a billion. Some prehistoric archaeological sites could contain natural structures such as rock shelters or caves which often house petroglyphs or pictographs. However, these types of natural formations are not expected to be affected by sonic booms.

Holloman AFB has reviewed the Criteria of Adverse Effect and has determined that none apply to the activities that would be carried out in this undertaking. Pursuant to 36 CFR, Section 800.5(b), the Air Force has determined that there would be no adverse effect to historic properties by the Special Use Airspace Optimization EIS.

We request your comment and/or concurrence on the finding of No Adverse Effect. If we do not receive your comments and/or concurrence within the required 30 days we will assume concurrence and proceed with the undertaking as described.

Please contact Jennifer Frederick, Cultural Resources Program Manager, (575) 572-3931, jennifer.frederick.2@us.af.mil if you have any questions.

Sincerely

JOSEPH L. CAMPO, Colonel, USAF
Commander

Attachment:
Draft EIS (CD)

SHPO - 2017-1201 (151307)
ARIZONA STATE HISTORIC PRESERVATION OFFICE

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

OCT 18 2019

Colonel Joseph L. Campo
Commander, 49th Wing
490 First Street, Ste 1700
Holloman AFB NM 88330-8277

RECEIVED
OCT 30 2019
ARIZONA STATE HISTORIC
PRESERVATION OFFICE

Arizona State Parks
State Historic Preservation Office
Attn: Kathryn Leonard
State Historic Preservation Officer
1100 W. Washington Street, Suite 190
Phoenix AZ 85085

SUBJECT: National Historic Preservation Act, Section 106 Consultation for the Special Use Airspace Optimization to Support Existing Aircraft at Holloman Air Force Base Draft Environmental Impact Statement

Dear Ms. Leonard

The United States Air Force (Air Force) is proposing to optimize special use airspace available for pilot training at Holloman Air Force Base (AFB), New Mexico. The Air Force is preparing an Environmental Impact Statement (EIS) under the National Environmental Policy Act to evaluate potential environmental impacts associated with the Special Use Airspace Optimization Draft EIS.

In accordance with Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR, Part 800, the Air Force, Holloman AFB, is informing you of a proposed undertaking that was analyzed for the potential to affect historic properties. The undertaking would require airspace modifications to support the Holloman AFB mission.

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MOA expanding the usable airspace to FL510 (51,000 feet above MSL) when requested from the Federal Aviation Administration and available. The proposed Talon MOA/ATCAA would continue to be scheduled for use between 7:00 a.m. to 10:00 p.m., Monday through Friday, with some operations conducted after dark. Up to 10,000 training sorties would be conducted annually in the proposed airspace along with the use of chaff and flares (15,360 each annually). Supersonic flights would account for approximately 10 percent of the training sorties (1,000 sorties annually) and would only occur above FL300 (30,000 feet above MSL).

Alternative-2 would reconfigure and expand the existing Cato and Smitty MOAs and the associated ATCAA to the southeast. The floor of these combined MOAs would remain 500 feet AGL and the ceiling would be up to 18,000 feet MSL. The overlying ATCAA would extend the training airspace to FL510 (51,000 feet above MSL). Alternative-2 also includes the creation of a new MOA, the Lobos MOA to the south of the proposed Cato and Smitty MOAs. The proposed Lobos MOA would have a floor of 500 feet AGL and a ceiling up to 18,000 feet MSL. The proposed Lobos MOA would also have an ATCAA above the MOA to extend the training airspace to FL510 (51,000 feet above MSL). Two additional ATCAAs (Christa and Kendra) would be established to the east of the proposed Cato, Smitty, and Lobos MOAs/ATCAAs to provide direct access to and from White Sands Missile Range. The ATCAAs would have a floor of 18,000 feet MSL and a ceiling of FL510. The proposed MOAs/ATCAAs would be scheduled for use between 7:00 a.m. to 10:00 p.m., Monday through Friday with some operations conducted after dark. Up to 9,100 training sorties would be conducted annually in the proposed airspace along with use of chaff and flares (15,360 each annually). Supersonic flights would account for approximately 10 percent of the training sorties (910 sorties annually) and would only occur above FL300 (30,000 feet above MSL).

Alternative-3 would be a combination of Alternatives-1 and -2 with the following differences. The proposed Talon MOA/ATCAA would be slightly smaller than what is proposed under Alternative-1 and the proposed Lobos MOA would have a floor of 13,500 feet MSL as opposed to the 500 feet AGL proposed under Alternative-2. The proposed aircraft training would be distributed throughout all of the proposed airspace and up to 6,800 annual sorties would occur in the proposed Talon MOA/ATCAA. Moreover, up to 3,200 annual sorties would occur in the proposed Cato, Smitty, and Lobos MOAs/ATCAAs, as well as the Christa and Kendra ATCAAs. Chaff and flare usage would be approximately 10,752 each annually in the Talon MOA/ATCAA and 4,608 each annually in Cato, Smitty, and Lobos MOAs/ATCAAs.

The Draft EIS found that the potential impacts to historic properties would be minimal to non-existent and the same under all of the action alternatives. The potential impacts would be limited to minimal, benign visual intrusions from the proposed aircraft training operations and no anticipated risk of structural damage from sonic booms as a result of supersonic flights. None of the alternatives propose any ground disturbance activity that would physically affect historic properties. A brief summary of the potential impacts follows.

The Draft EIS found that visual intrusion under any of the alternatives would be minimal and would not cause adverse impacts to the settings of existing archaeological or architectural sites. The high altitude of the overflights, small size of the aircraft, and the high speeds make it unlikely that the training operations would be readily visible or intrusive to observers on the ground. Chaff and flares deployed from the aircraft would not pose a visual intrusion since these materials are small in size (1 inch to no more than 13 inches in length), burn only for a few seconds (flares only), and would be released at a relatively high altitude making them virtually undetectable to observers on the ground. The likelihood of residual chaff and flare material to land at archaeological or architectural sites would be very rare and would not have an adverse effect on these resources.

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Holloman AFB has reviewed the Criteria of Adverse Effect and has determined that none apply to the activities that would be carried out in this undertaking. Pursuant to 36 CFR, Section 800.5(b), the Air Force has determined that there would be no adverse effect to historic properties by the Special Use Airspace Optimization EIS.

We request your comment and/or concurrence on the finding of No Adverse Effect. If we do not receive your comments and/or concurrence within the required 30 days we will assume concurrence and proceed with the undertaking as described. ✓

Please contact Jennifer Frederick, Cultural Resources Program Manager, (575) 572-3931, jennifer.frederick.2@us.af.mil if you have any questions.

Sincerely

JOSEPH L. CAMPO, Colonel, USAF
Commander

Attachment:
Draft EIS (CD)

CONCUR

11/29/19

ARIZONA STATE HISTORIC PRESERVATION OFFICE
ARIZONA STATE PARKS BOARD

ERIN DAVIS
For Arizona portion.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

OCT 18 2019

Colonel Joseph L. Campo
Commander, 49th Wing
490 First Street, Ste 1700
Holloman AFB NM 88330-8277

New Mexico Historic Preservation Division
Attn: Jeff Pappas, PhD
State Historic Preservation Officer
Bataan Memorial Building
407 Galisteo Street, Suite 236
Sante Fe NM 87501

SUBJECT: National Historic Preservation Act, Section 106 Consultation for the Special Use Airspace Optimization to Support Existing Aircraft at Holloman Air Force Base Draft Environmental Impact Statement

Dear Dr. Pappas

The United States Air Force (Air Force) is proposing to optimize special use airspace available for pilot training at Holloman Air Force Base (AFB), New Mexico. The Air Force is preparing an Environmental Impact Statement (EIS) under the National Environmental Policy Act to evaluate potential environmental impacts associated with the Special Use Airspace Optimization Draft EIS.

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COMBAT AIRPOWER STARTS HERE

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Please contact Jennifer Frederick, Cultural Resources Program Manager, (575) 572-3931, jennifer.frederick.2@us.af.mil if you have any questions.

Sincerely

JOSEPH L. CAMPO, Colonel, USAF
Commander

Attachment:
Draft EIS (CD)

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

OCT 18 2019

Colonel Joseph L. Campo
Commander, 49th Wing
490 First Street, Ste 1700
Holloman AFB NM 88330-8277

QC OCT 28 2019
HPD Log # 111826

New Mexico Historic Preservation Division
Attn: Jeff Pappas, PhD
State Historic Preservation Officer
Bataan Memorial Building
407 Galisteo Street, Suite 236
Sante Fe NM 87501

SUBJECT: National Historic Preservation Act, Section 106 Consultation for the Special Use Airspace Optimization to Support Existing Aircraft at Holloman Air Force Base Draft Environmental Impact Statement

Dear Dr. Pappas

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Sincerely

JOSEPH L. CAMPO, Colonel, USAF
Commander

Attachment:
Draft EIS (CD)

Concur with recommendation of eligibility and/or effect as proposed.
10-30-19
for NM State Historic Preservation Officer

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

Colonel Joseph L. Campo
Commander, 49th Wing
490 First Street, Ste 1700
Holloman AFB NM 88330-8277

OCT 18 2019

U.S. Department of Interior Indian Affairs
Mescalero Agency
Attn: Charles Riley
590 Sage Avenue
Mescalero, NM 88340

SUBJECT: National Historic Preservation Act, Section 106 Consultation for the Special Use Airspace Optimization to Support Existing Aircraft at Holloman Air Force Base Draft Environmental Impact Statement

Dear Charles Riley,

The United States Air Force (Air Force) is proposing to optimize special use airspace available for pilot training at Holloman Air Force Base (AFB), New Mexico. The Air Force is preparing an Environmental Impact Statement (EIS) under the National Environmental Policy Act to evaluate potential environmental impacts associated with the Special Use Airspace Optimization Draft EIS. We previously wrote to you in December 2017. Since then, we have continued to refine the proposal and the most recent version of the Draft EIS is on the enclosed Compact Disk (CD). Per Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 Code of Federal Regulations CFR, Part 800, we look forward to continuing our consultation with you to identify any properties of cultural significance that may be affected by the proposal, and to resolve adverse effects to any such properties eligible for listing on the National Register of Historic Places.

The Special Use Airspace Optimization Draft EIS analyzes proposed airspace modifications that would include expanding existing airspace or creating new airspace within parts of the following counties: Graham and Greenlee, Arizona; and Catron, Chaves, Eddy, Grant, Hidalgo, Otero, Sierra, Lea, and Socorro, New Mexico. The Proposed Action would include aircraft training operations from 500 feet above ground level (AGL) up to flight level (FL) 510 (51,000 feet above mean sea level [MSL]), supersonic flight above FL300 (30,000 feet above MSL), and the use of chaff and flares throughout the proposed airspace. Three alternatives and the No Action Alternative have been analyzed.

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COMBAT AIRPOWER STARTS HERE

We have also initiated government to government consultation with the following Tribes and Pueblos to ensure they have an opportunity to provide their concerns on the proposal.

The Navajo Nation	Kiowa Tribe of Oklahoma	Pueblo of Nambe
San Carlos Apache Tribe	Comanche Nation of Oklahoma	Ohkay Owingeh
Zuni Heritage and Historic Preservation	The Hopi Tribe	Pueblo of Picuris
Mescalero Apache Tribe	Pueblo of Acoma	Pueblo of Pojoaque
Apache Tribe of Oklahoma	Pueblo of Cochiti	Pueblo of San Felipe
Fort Sill Apache Tribe of Oklahoma	Pueblo of Isleta	Pueblo of San Ildefonso
White Mountain Apache Tribe	Pueblo of Jemez	Pueblo of Sandia
Ysleta del Sur Pueblo	Pueblo of Laguna	Pueblo of Santa Ana
Pueblo of Santa Clara	Pueblo of Santo Domingo	Pueblo of Taos
Pueblo of Tesuque	Pueblo of Zia	Pueblo of Zuni

Please review the Draft EIS and provide your comments. Comments on the Draft EIS may be submitted on the project website, www.HollomanAFBAirspaceEIS.com, or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd, Suite H, Hampton, VA 23666. Comments are requested no later than **16 December 2019** to ensure that we can give them full consideration in the Final EIS.

If you have any questions, please contact Adam Kusmak, Installation Management Flight Chief, (575) 572-3931, adam.kusmak@us.af.mil. Thank you in advance for your assistance in this effort.

Sincerely

JOSEPH L. CAMPO, Colonel, USAF
Commander

Attachment:
Draft EIS (CD)

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

Colonel Joseph L. Campo
Commander, 49th Wing
490 First Street, Ste 1700
Holloman AFB NM 88330-8277

OCT 18 2019

U.S. Department of Interior Indian Affairs
Southwest Regional Office
Attn: William Walker
1001 Indian School Road, NW
Albuquerque, NM 87104

SUBJECT: National Historic Preservation Act, Section 106 Consultation for the Special Use Airspace Optimization to Support Existing Aircraft at Holloman Air Force Base Draft Environmental Impact Statement

Dear William Walker,

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Pueblo of Santa Clara	Pueblo of Santo Domingo	Pueblo of Taos
Pueblo of Tesuque	Pueblo of Zia	Pueblo of Zuni

Please review the Draft EIS and provide your comments. Comments on the Draft EIS may be submitted on the project website, www.HollomanAFBAirspaceEIS.com, or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd. Suite 11, Hampton, VA 23666. Comments are requested no later than **16 December 2019** to ensure that we can give them full consideration in the Final EIS.

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Sincerely

JOSEPH L. CAMPO, Colonel, USAF
Commander

Attachment:
Draft EIS (CD)

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
Southwest Regional Office
1001 Indian School Road NW
Albuquerque, New Mexico 87104

In Reply Refer To:
620-Division of Environmental, Safety,
and Cultural Resources Management

DEC 0 2 2019

Colonel Joseph L. Campo
Holloman Air Force Base (AFB)
Airspace Environmental Impact Statement (EIS),
c/o Cardno
501 Butler Farm Rd., Suite H
Hampton, Virginia 23666

Dear Colonel Joseph L. Campo:

The Department of the Interior, Bureau of Indian Affairs (BIA), Southwest Region, Division of Environmental, Safety, and Cultural Resources Management has received the Compact Disc (CD) for the Holloman AFB Draft EIS National Historic Preservation Act Section 106 Consultation for review. The proposed action does not impact trust resources under the jurisdiction of the BIA. Therefore, we do not have any comments, however, we do request that United States Air Force continues its consultation efforts with local Pueblos or Tribes regarding Section 106 consultation of National Historic Preservation Act.

Thank you for the opportunity to participate and comment on the proposed action. If you have any questions or concerns, please contact Mrs. Priscilla J Avila, Regional Environmental Protection Specialist at (505) 563-3417.

Sincerely,

Patricia L. Mattingly
Regional Director

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

Colonel Joseph L. Campo
Commander, 49th Wing
490 First Street, Ste 1700
Holloman AFB NM 88330-8277

OCT 18 2019

New Mexico Indian Affairs Department
Attn: David Mann
1220 South St. Francis Drive
Wendell Chino Building, 2nd Floor
Santa Fe, NM 87505

SUBJECT: National Historic Preservation Act, Section 106 Consultation for the Special Use Airspace Optimization to Support Existing Aircraft at Holloman Air Force Base Draft Environmental Impact Statement

Dear David Mann,

The United States Air Force (Air Force) is proposing to optimize special use airspace available for pilot training at Holloman Air Force Base (AFB), New Mexico. The Air Force is preparing an Environmental Impact Statement (EIS) under the National Environmental Policy Act to evaluate potential environmental impacts associated with the Special Use Airspace Optimization Draft EIS. We previously wrote to you in December 2017. Since then, we have continued to refine the proposal and the most recent version of the Draft EIS is on the enclosed Compact Disk (CD). Per Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 Code of Federal Regulations CFR, Part 800, we look forward to continuing our consultation with you to identify any properties of cultural significance that may be affected by the proposal, and to resolve adverse effects to any such properties eligible for listing on the National Register of Historic Places.

The Special Use Airspace Optimization Draft EIS analyzes proposed airspace modifications that would include expanding existing airspace or creating new airspace within parts of the following counties: Graham and Greenlee, Arizona; and Catron, Chaves, Eddy, Grant, Hidalgo, Otero, Sierra, Lea, and Socorro, New Mexico. The Proposed Action would include aircraft training operations from 500 feet above ground level (AGL) up to flight level (FL) 510 (51,000 feet above mean sea level [MSL]), supersonic flight above FL300 (30,000 feet above MSL), and the use of chaff and flares throughout the proposed airspace. Three alternatives and the No Action Alternative have been analyzed.

The Draft EIS found that the potential impacts to historic properties would be minimal to non-existent and the same under all of the action alternatives. The potential impacts would be limited to minimal, benign visual intrusions from the proposed aircraft training operations and there would be no risk of structural damage from sonic booms as a result of supersonic flights. None of the alternatives propose any ground disturbance activity that would physically affect historic properties.

COMBAT AIRPOWER STARTS HERE

We have also initiated government to government consultation with the following Tribes and Pueblos to ensure they have an opportunity to provide their concerns on the proposal.

The Navajo Nation	Kiowa Tribe of Oklahoma	Pueblo of Nambe
San Carlos Apache Tribe	Comanche Nation of Oklahoma	Ohkay Owingeh
Zuni Heritage and Historic Preservation	The Hopi Tribe	Pueblo of Picuris
Mescalero Apache Tribe	Pueblo of Acoma	Pueblo of Pojoaque
Apache Tribe of Oklahoma	Pueblo of Cochiti	Pueblo of San Felipe
Fort Sill Apache Tribe of Oklahoma	Pueblo of Isleta	Pueblo of San Ildefonso
White Mountain Apache Tribe	Pueblo of Jemez	Pueblo of Sandia
Ysleta del Sur Pueblo	Pueblo of Laguna	Pueblo of Santa Ana
Pueblo of Santa Clara	Pueblo of Santo Domingo	Pueblo of Taos
Pueblo of Tesuque	Pueblo of Zia	Pueblo of Zuni

Please review the Draft EIS and provide your comments. Comments on the Draft EIS may be submitted on the project website, www.HollomanAFBAirspaceEIS.com, or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd, Suite H, Hampton, VA 23666. Comments are requested no later than **16 December 2019** to ensure that we can give them full consideration in the Final EIS.

If you have any questions, please contact Adam Kusmak, Installation Management Flight Chief, (575) 572-3931, adam.kusmak@us.af.mil. Thank you in advance for your assistance in this effort.

Sincerely

JOSEPH L. CAMPO, Colonel, USAF
Commander

Attachment:
Draft EIS (CD)

Government to Government Consultation

	Scoping Phase				Draft EIS Phase		
TRIBE/PUEBLO	Air Force Scoping Letter Sent	Tribe/Pueblo Response	Air Force Scoping Letter (2) Sent	Tribe/Pueblo Response	Air Force Draft EIS Letter Sent	Additional Air Force Coordination/Tribe or Pueblo Response	Final Resolution
Apache Tribe of Oklahoma Chairman Bobby Komardley	25-Aug-17	None	14-Dec-18	telephone call from Chairman Killsfirst - 1/30/2019 (1000 hours) left message and request for additional information. Air Force made multiple attempts to contact, unsuccessful.		Air Force sent email follow-up on 2/4/20; Air Force phone call 2/26/20 was answered and Air Force left message for Chairman Komardley	No contact; consultation complete
Apache Tribe of Oklahoma Chairman Kristopher Killsfirst					18-Oct-19		
Fort Sill Apache Tribe of Oklahoma Chairwoman Lori Gooday-Ware	25-Aug-17	None	14-Dec-18	None	18-Oct-19	Air Force phone call 2/26/20 was answered and Air Force left message for Chairwoman Gooday-Ware who was unavailable	No contact; consultation complete
Mescalero Apache Tribe President Gabe Aguilar	25-Aug-17	None	14-Dec-18	None	18-Oct-19	telephone call 12/5/19 from Jacob Deukei; followed up with text msg; concerns were addressed by Air Force	Consultation complete
Mescalero Apache Tribe THPO Ms. Holly Houghton	25-Aug-17	None		None	18-Oct-19	Air Force sent email follow-up on 2/4/20	No contact; consultation complete
San Carlos Apache Tribe Chairman Terry Rambler	25-Aug-17	None	14-Dec-18	1/22/19; concur, request for more information; request additional contact	18-Oct-19	Air Force sent email follow-up on 2/4/20; Air Force phone call 2/26/20 left voicemail message for THPO	No contact; assume Consultation complete
San Carlos Apache Tribe THPO Ms. Vernelda Grant	25-Aug-17	None					

	Scoping Phase				Draft EIS Phase		
White Mountain Apache Tribe Chairwoman Gwendena Lee-Gatewood	25-Aug-17	None	14-Dec-18	None	18-Oct-19	Air Force sent email follow-up on 2/4/20; response rec. 2/5/20 from THPO; requested a summary of the proposal and was directed to the EIS website; letter dated 2/6/20 indicates "will not have an adverse effect"	Consultation complete
White Mountain Apache Tribe THPO Mr. Mark Altaha	25-Aug-17	None		None	18-Oct-19		
Comanche Nation of Oklahoma Chairman William Nelson	25-Aug-17	None	14-Dec-18	None	18-Oct-19	12/5/19; email rec. from Theodore.Villicana@comanchenation.com; "no properties" identified; contact via ph at (580) 595-9960/9618 if Air Force needs further info	Consultation complete
Comanche Nation of Oklahoma THPO Ms. Martina Callahan	25-Aug-17	None					
The Hopi Tribe Chairman Timothy L. Nuvangyaoma	25-Aug-17	None	14-Dec-18	Response dated Jan 07 2019 defers to SHPO and other interested tribes and parties. Requests notification of inadvertent discoveries.	18-Oct-19	See Scoping response	Consultation complete
The Hopi Tribe Acting THPO Cultural Preservation Office Director (Acting) Mr. Stewart Koyiyumptewa	25-Aug-17	None					
Kiowa Tribe of Oklahoma Chairman Matthew Komalty	25-Aug-17	None	14-Dec-18	1/10/2019; minimal potential to adversely affect, may proceed		See scoping response	Consultation complete

	Scoping Phase				Draft EIS Phase		
Kiowa Tribe of Oklahoma THPO (Acting) Ms. Kellie J. (Poolaw) Lewis	25-Aug-17	None			18-Oct-19		
Navajo Nation President Jonathan Nez	25-Aug-17	None	14-Dec-18	None	18-Oct-19	Air Force sent email follow-up on 2/4/20; Air Force phone call 2/26/20 left voicemail for THPO	No contact; assume consultation complete
Navajo NationTHPO Mr. Richard M. Begay	25-Aug-17	None		None	18-Oct-19		
Pueblo of Acoma Governor Brian Vallo	25-Aug-17	None	14-Dec-18	None	18-Oct-19	Air Force sent email follow-up on 2/4/20; email returned as undeliverable; Air Force phone call 2/26/20 left voicemail; Air Force sent email 2/26/20 to tscissons@poamail.org	No contact; assume consultation complete
Pueblo of Acoma THPO Todd Scissons	25-Aug-17	None		None			
Pueblo of Isleta Governor Max A. Zuni	25-Aug-17	None	14-Dec-18	None	18-Oct-19	Air Force sent follow-up email on 2/4/20; Air Force phone call to 505-245-7481 2/26/20 went to a wrong number; Air Force phone call 2/26/20 to 505-869-9767, Dept of Cultural and Historic Preservation went to Nadine Wakanda voicemail, left a message for Dr. Henry Walt	No contact; assume consultation complete
Pueblo of Isleta THPO Dr. Henry Walt	25-Aug-17	None		None			
Pueblo of Laguna Governor Wilfred Herrera, Jr.	25-Aug-17	None	14-Dec-18	None	18-Oct-19	Air Force sent follow-up email on 2/4/20; Air Force phone call 2/26/20 left voicemail for Adam Ringia	No contact; assume

	Scoping Phase				Draft EIS Phase		
Pueblo of Laguna Acting THPO Adam Ringia	25-Aug-17	None		None			consultation complete
Pueblo of Tesuque Governor Robert Mora, Sr.	25-Aug-17	None	14-Dec-18	1/10/2019 (email); identified potential impacts. 1/16/2019 Air Force respone to email.		Air Force sent follow-up email on 2/5/20; Air Force phone call 2/26/20 left voicemail at 505-709-1274 for THPO	No contact; assume consultation complete
Pueblo of Tesuque THPO Mr. Mark Mitchell	25-Aug-17	None			18-Oct-19		
Ysleta del Sur Pueblo Governor E. Michael Silvas	25-Aug-17	None	14-Dec-18	None	18-Oct-19	Air Force sent follow-up email on 2/4/20; Air Force phone call 2/26/20 was transferred to Governor's office, left voicemail	No contact; assume consultation complete
Zuni Heritage & Historic Preservation Kurt Dongoske	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete
Pueblo of Cochiti Governor Eugene Herrera	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete
Pueblo of Jemez Governor Joseph Toya	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete
Pueblo of Nambe Governor Phillip A Perez	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete
Ohkay Owingeh Governor Peter Garcia, Jr.	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete
Pueblo of Picuris Governor Craig Quanchello	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete

	Scoping Phase				Draft EIS Phase		
Pueblo of Pojoaque Governor Joseph M Talachy	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete
Pueblo of San Felipe Governor Anthony Ortiz	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete
Pueblo of San Ildefonso Governor James R Mountain	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete
Pueblo of Sandia Governor Malcolm Montoya	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete
Pueblo of Santa AnaGovernor Lawrence Montoya	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete
Pueblo of Santa Clara Governor J Michael Chavarria	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete
Pueblo of Santo Domingo Governor Brian Coriz (Now knowm as Kewa Pueblo)	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete
Pueblo of Taos Governor Ruben Romero	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete
Pueblo of Zia Governor Carl B. Schildt	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete

	Scoping Phase				Draft EIS Phase		
Pueblo of Zuni Governor Val Panteah, Sr.	25-Aug-17	None			18-Oct-19	Pueblo not within APE	Consultation complete

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

Colonel Houston R. Cantwell
Commander, 49th Wing
490 First Street
Holloman AFB NM 88330-8277

Heritage and Historic Preservation Department
The Navajo Nation
Mr. Richard Begay
PO BOX 4950
Window Rock, AZ 86515

Dear Mr. Begay:

Pursuant to the National Environmental Policy Act of 1969, as amended, and its implementing regulations, The United States Air Force (Air Force) is preparing an EIS to evaluate the potential environmental impacts of optimizing the special use airspace available for pilot training at Holloman AFB. Some of the training airspaces used by aircraft assigned to Holloman AFB were developed for legacy aircraft more than 30 years ago and do not have the optimum volume, proximity, times or attributes to support pilot training missions at Holloman AFB. The Proposed Action would increase training efficiencies and provide more scheduling flexibility by reconfiguring and expanding existing airspace or creating new airspace (see attachment). The Air Force published a Notice of Intent in the Federal Register on August 24, 2017 to prepare an EIS.

As a part of the NEPA process, government-to-government consultation with Federally recognized Native American Tribes is required per Executive Order 13175: Memorandum on Government-to-Government Relations with Native American Tribal Governments; Department of Defense (DoD) Instruction 4710.02: DoD Interactions with Federally-Recognized Tribes; and Air Force Instruction (AFI) 90-2002: Air Force Interactions with Federally-Recognized Tribes. In addition, consultations are being conducted in accordance with the National Historic Preservation Act (NHPA) and regulations at 36 CFR Part 800.

The Air Force would like to initiate consultations on this proposal on a government-to-government basis. As the 49th Wing Commander, I am offering to discuss our proposal in detail with you, and would like to hear from you regarding any comments, concerns, and suggestions you may have. In addition, open-house style public meetings will be held at the locations, dates, and times listed below. No formal presentation will be given, but we invite you to attend at your convenience.

COMBAT AIRPOWER STARTS HERE

Tuesday September 12, 2017 6:00 PM to 8:00 PM Carlsbad Public Library 101 S. Halagueno Street Carlsbad, NM 88220	Wednesday, September 13, 2017 6:00 PM to 8:00 PM Truth or Consequences Civic Center Ralph Edwards Auditorium 400 W. 4th Avenue Truth or Consequences, NM 87901	Thursday, September 14, 2017 6:00 PM to 8:00 PM Hilton Garden Inn 2550 S Don Roser Drive Las Cruces, NM 88011

If you wish to meet with me to discuss the proposal as well as your concerns about the effects on your interests if this proposal is implemented, I invite you to call me at (575) 572-5571 to arrange a meeting.

Sincerely,

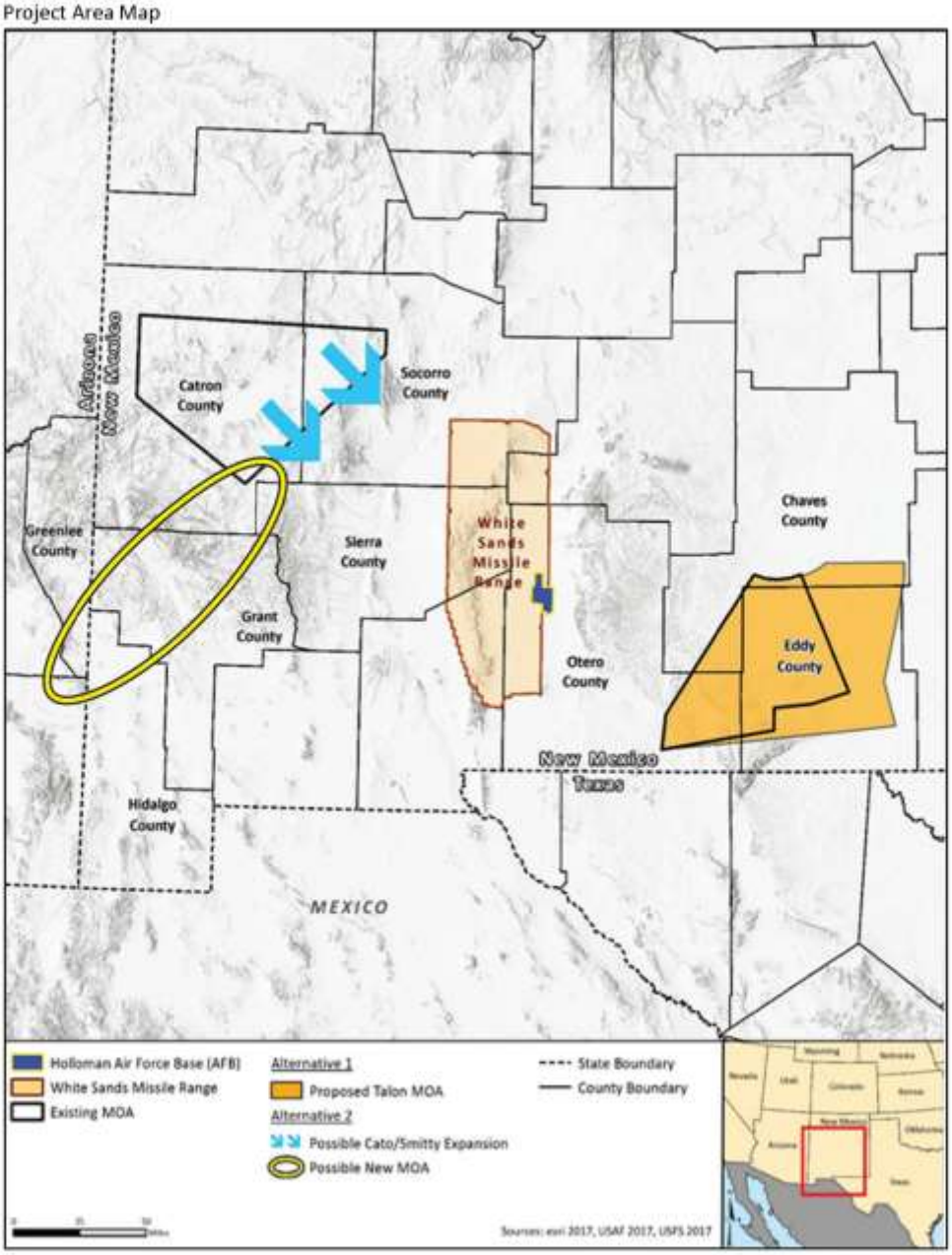
HOUSTON R. CANTWELL, Colonel, USAF
Commander

1 Attachment
1.Project Area Map

SAMPLE

Attachment 1

Project Area Map



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

DEC 14 2018

Colonel Joseph L. Campo
49th Wing Commander
490 First Street, Ste 1700
Holloman AFB NM 88330-8277

Governor Frederick Vigil
Pueblo of Tesuque
Route 42, Box 360-T
Santa Fe NM 87506

Dear Governor Vigil

The United States Air Force (USAF) is preparing an Environmental Impact Statement (EIS) under the National Environmental Policy Act to evaluate potential environmental impacts associated with optimizing the special use airspace available for pilot training at Holloman Air Force Base (AFB), New Mexico. Per Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations in 36 CFR Part 800, the USAF is accounting for various environmental concerns and engaging early with tribal governments as it formulates the proposed undertaking.

The proposed undertaking addressed in the Special Use Airspace Optimization EIS would increase training efficiencies and provide more scheduling flexibility by reconfiguring and expanding existing airspace or creating new airspace (see Attachment). The Air Force published a Notice of Intent to prepare an EIS in the Federal Register on 24 August, 2017. Although the conceptual proposal distributed September 2017 is still under development with the Federal Aviation Administrative (FAA), the USAF welcomes additional input on this proposal from Pueblo of Tesuque. Therefore, we would like to initiate government-to-government consultation at this time to afford you the opportunity to identify any issues or areas of concern you feel should be included in the environmental analysis, and any properties of religious and cultural significance that may be affected. Your input will help us develop the Description of the Proposed Action and Alternatives (DOPAA) that will be presented in the Draft EIS.

In order to arrange initiation of our consultations, or if you have any questions, please contact Ms. Allison Harvey, Acting Cultural Resources Manager, at (575) 572-3931 or allison.harvey.1.ctr@us.af.mil. I look forward to our consultations concerning this matter.

Sincerely

JOSEPH L. CAMPO, Colonel, USAF
Commander

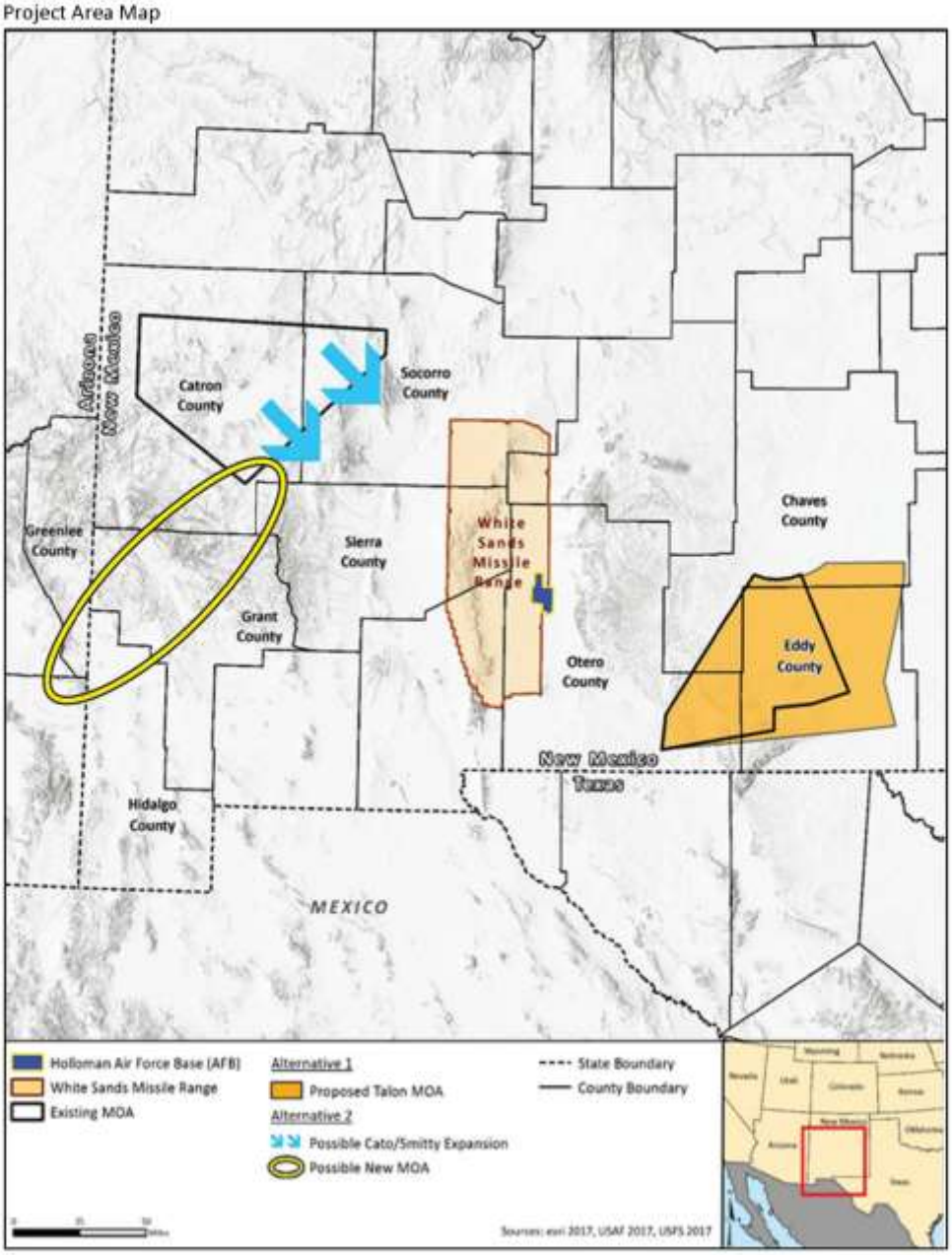
Attachment:
Project Area Map

cc:
Mr. Mark Mitchell, THPO
Pueblo of Tesuque

COMBAT AIRPOWER STARTS HERE

Attachment 1

Project Area Map



P.O. Box 50 I Carnegie, OK 73015 I 405.203.2874

January 10, 2019

Colonel Joseph L. Campo
49th Wing Commander
490 First Street, Ste. 1700
Holloman AFB, NM 88330-8277

RE: Section 106 Consultation and Review of Proposed Environmental Impact Statement (EIS), to evaluate potential impacts associated with optimizing the special use airspace available for pilot training at Holloman AFB, Otero County, NM

Dear Colonel Campo,

The Kiowa Tribe Office of Historic Preservation has received the information and materials requested for our Section 106 Review and Consultation. Section 106 of the National Historic Preservation Act of 1966 (NHPA), and 36 CFR Part 800 requires consultation with the Kiowa Tribe.

Given the information provided, you are hereby notified that the proposal project location should have minimal potential to adversely affect any known Archaeological, Historical, or Sacred Kiowa sites. Therefore, in accordance with 36 CFR 800.4(d)(1), you may proceed with your proposed project. However, please be advised undiscovered properties may be encountered and must be immediately reported to the Kiowa Tribe Office of Historic Preservation under both the NHPA and NAGPRA regulations.

This information is provided to assist you in complying with 36 CFR Part 800 for Section 106 Consultation procedures. Please retain this correspondence to show compliance. Should you have any questions, please do not hesitate to contact me at kellie@tribaladminservices.org. Thank you for your time and consideration.

Sincerely,

Kellie J. Lewis
Acting Tribal Historic Preservation Officer (THPO)

Received from Tribal Admin 02/04/19 VN
E-mailed 02/05/19 VN (initial & date)
Scanned 02/05/19 VN (initial & date)

SAN CARLOS APACHE TRIBE
Historic Preservation & Archaeology Department
P.O. Box 0
San Carlos Arizona 85550
Tel. (928) 475-5797, apachevern@yahoo.com

Tribal Consultation Response Letter

Date: January 15, 2019
Contact Name: Allison Harvey (575)572-3931/Allison.harvey.1.ctr@us.af.mil
Company: Department of the Air Force
Address: 49th Wing Commander 490 First Street, Ste 1700 Holloman AFB NM 88330-8277
Project Name/#: USAF is preparing an EIS under the National Environmental Policy Act to evaluate potential environmental impacts associated with optimizing the special use airspace available for pilot training.

Dear Sir or Madam:

Under Section 106 and 110 of the National Historic Preservation Act, we are replying to the above referenced project. Please see the appropriate marked circle, including the signatures of Vernelda Grant, Tribal Historic Preservation Officer (THPO), and the concurrence of the Chairman of the San Carlos Apache Tribe:

- ○ **NO INTEREST/NO FURTHER CONSULTATION/NO FUTURE UPDATES**
  We defer to the Tribe located nearest to the project area.
- ☒ **CONCURRENCE WITH REPORT FINDINGS & THANK YOU**
- ☒ **REQUEST ADDITIONAL INFORMATION**
  I require additional information in order to provide a finding of effect for this proposed undertaking, i.e. Project description ___ Map ___ Photos X Other Please call us @ # listed above.
- ○ **NO EFFECT** We may have concerns about flights over Acorn Picking areas.
  I have determined that there are no properties of religious and cultural significance to the San Carlos Apache 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**
  Properties of cultural and religious significance within the area of effect have been identified that 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 that are eligible for listing in the National Register. I believe the proposed project would cause an adverse effect on these properties. Please contact the THPO for further discussion.

We were taught traditionally not to disturb the natural world in a significant way, and that to do so may cause harm to oneself or one's family. Apache resources can be best protected by managing the land to be as natural as it was in pre-1870s settlement times. Please contact the THPO, if there is a change in any portion of the project, especially if Apache cultural resources are found at any phase of planning and construction. Thank you for contacting the San Carlos Apache Tribe, your time and effort is greatly appreciated.

DIRECTOR/THPO: Vernelda Grant 01/22/19
Vernelda J. Grant, Tribal Historic Preservation Officer — Date

CONCURRENCE: Terry Rambler 1/25/19
Terry Rambler, Tribal Chairman — Date

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (AETC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

Colonel Joseph L. Campo
Commander, 49th Wing
490 First Street, Ste 1700
Holloman AFB NM 88330-8277

OCT 18 2019

The Navajo Nation
Heritage and Historic Preservation Department
Attn: Richard Begay
PO Box 4950
Window Rock, AZ 86515

Dear Mr. Begay,

I previously wrote to you on 25 September 2017 and 14 December 2018 about an Air Force proposal to optimize special use airspace at Holloman Air Force Base (AFB) that is used for pilot training. Since then, we have continued to refine the proposal and are preparing a Draft Environmental Impact Statement (EIS) that evaluates its environmental impacts. The most recent version of the Draft EIS is on the enclosed Compact Disc (CD). Per Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 Code of Federal Regulations CFR, Part 800, we look forward to continuing our consultation with you to identify any properties of religious and cultural significance that may be affected by the proposal, and to resolve adverse effects to any such properties eligible for listing on the National Register of Historic Places.

As described in the Draft EIS, we propose expanding existing airspace or creating new airspace within parts of the following counties: Graham and Greenlee, Arizona; and Catron, Chaves, Eddy, Grant, Hidalgo, Otero, Sierra, Lea, and Socorro, New Mexico. The undertaking includes aircraft operations within the proposed airspace from 500 feet above ground level (AGL) up to flight level (FL) 510 (50,000 feet above mean sea level [MSL]), supersonic flight above FL300 (30,000 feet above MSL), and the use of chaff and flares.

Based on the information we have received to date, we believe that potential impacts to cultural resources or traditional cultural properties from each of the three action alternatives will be the same. Expected impacts are limited to minimal, benign visual intrusions from the proposed aircraft training operations and no anticipated risk of structural damage from sonic booms as a result of supersonic flights. None of the alternatives propose any ground disturbance activity that would physically affect archaeological resources or traditional cultural properties. A brief summary of the potential impacts follows.

The analysis found that visual intrusion under any of the action alternatives would be minimal and would not cause adverse impacts to the settings of existing archaeological or architectural sites or traditional cultural properties. The high altitude of the overflights, small size of the aircraft, and the high speeds make it unlikely that the training operations would be readily visible or intrusive to observers on the ground. Chaff and flares deployed from the aircraft would not pose a visual intrusion since these materials are small in size (1 inch to no more than 13 inches in length), burn only for a few seconds

SAMPLE

(flares only), and would be released at a relatively high altitude making them virtually undetectable to observers on the ground. The likelihood of residual chaff and flare material to land at archaeological sites, architectural sites, or traditional cultural properties would be very rare and would not have an adverse effect on these resources.

The proposed supersonic flights could result in sonic booms that have the potential to damage architectural structures. However, the Draft EIS found that there would be no anticipated structural damage to archaeological or architectural resources since the sonic boom overpressures would not exceed 1 pound per square foot (psf). The risk of damaging structures at this level of psf would be very low, one in a billion. Some prehistoric archaeological sites could contain natural structures such as rock shelters or caves which often house petroglyphs or pictographs. However, these types of natural formations are not expected to be affected by sonic booms.

Please take the opportunity to review the Draft EIS and let me know if you have information that you would like for us to include in the analysis, or if you would like to meet with me personally to discuss the proposal, or have concerns about the effects on your interests if this proposal is implemented. I invite you to call me at (575) 572-4901 to arrange a meeting.

While not part of the government-to-government consultation process, you are also welcome to attend the public hearings that we will be holding at the dates and locations listed below. All hearings will be held from 5:30 PM to 8:30 PM. The hearings will start with an open house from 5:30 PM to 6:00 PM, at which time Air Force representatives will be available to answer questions about the proposal. A formal hearing will begin at 6:00 PM with a brief presentation by the Air Force on the Proposed Action and alternatives and the findings provided in the Draft EIS. I will be attending the public hearings and you can meet with me then if you wish.

SAMPLE

Public Hearing Locations	
Date	**Location**
Monday, November 18	Hilton Garden Inn, Hobbs, 4620 Lovington Highway Hobbs, NM 88240
Tuesday, November 19	Roswell Convention and Civic Center, 912 N Main Street, Roswell, NM 88201
Wednesday, November 20	Artesia Public Library, 205 West Quay Avenue, Artesia, NM 88210
Thursday, November 21	New Mexico State University, Gymnasium (Room 103), 1500 University Drive, Carlsbad, NM 88220
Monday, December 2	Macey Center, 801 Leroy Place, Socorro, NM 87801
Tuesday, December 3	Commission Chambers, 405 W. Third Street, Truth or Consequences, NM 87901
Wednesday, December 4	Grant County Chamber of Commerce, 3031 Highway 180 East, Silver City, NM 88061
Thursday, December 5	Ramada by Wyndham Las Cruces Hotel and Conference Center, 201 East Avenue, Las Cruces, NM 88005

Comments on the Draft EIS may be submitted at any of the public meetings; on the project website, www.HollomanAFBAirspaceEIS.com; or in writing to: Holloman AFB Airspace EIS, c/o Cardno, 501 Butler Farm Rd., Suite H, Hampton, VA 23666. Comments are requested no later than **16 December 2019** to ensure that we can give them full consideration.

If you have any questions, please contact Jennifer Frederick, Cultural Resources Program Manager, (575) 572-3931, jennifer.frederick.2@us.af.mil. Thank you in advance for your assistance in this effort.

Sincerely

JOSEPH L. CAMPO, Colonel, USAF
Commander

Attachment:
Draft EIS (CD)

SAMPLE

COMANCHE NATION

Headquarters 49th Wing (AETC)
Attn: Ms. Jennifer Frederick
490 First Street, Ste. 1700
New Mexico 88330-8277

December 5, 2019

Re: Air Force Proposal to Optimize Special Use Airspace at
Holloman Air Force Base (AFB)

Dear Ms. Frederick:

In response to your request, the above reference project has been reviewed by staff of this office to identify areas that may potentially contain prehistoric or historic archeological materials. The location of your project has been cross referenced with the Comanche Nation site files, where an indication of "***No Properties***" have been identified. (IAW 36 CFR 800.4(d)(1)).

Please contact this office at (580) 595-9960/9618) if you require additional information on this project.

This review is performed in order to identify and preserve the Comanche Nation and State cultural heritage, in conjunction with the State Historic Preservation Office.

Regards

Comanche Nation Historic Preservation Office
Theodore E. Villicana , Technician
#6 SW "D" Avenue, Suite C
Lawton, OK. 73502

COMANCHE NATION P.O. BOX 908 / LAWTON, OK 73502
PHONE: 580-492-4988 TOLL FREE:1-877-492-4988

White Mountain Apache Tribe
Office of Historic Preservation
PO Box 1032
Fort Apache, AZ 85926
Ph: (928) 338-3033 Fax: (928) 338-6055

To: Jennifer Frederick, Archaeologist/ Cultural Resource Manager Holloman AFB

Date: February 06, 2020

Re: *Proposed changes to the Holloman AFB Special Use Airspace*

The White Mountain Apache Tribe Historic Preservation Office appreciates receiving information on the project dated; October 2019. In regards to this, please attend to the following statement below.

Thank you for allowing the White Mountain Apache tribe the opportunity to review and respond to the proposed airspace changes for the Special Use Airspace at the Holloman Air Force Base, in southern New Mexico. Upon reviewing the draft EIS, we've determined the proposed project plans to change/increase the special airspace will ***"Not have an Adverse Effect"*** on White Mountain Apache tribe's historic properties and/or traditional cultural properties, as there are no cultural heritage resources and/or traditional cultural properties identified with the APE.

Thank you for your continued collaborations in protecting and preserving places of cultural and historical importance.

Sincerely,

Mark T. Altaha

White Mountain Apache Tribe – THPO
Historic Preservation Office

From: FREDERICK, JENNIFER J GS-12 USAF AETC 49 CES/CEIE
To: "apachevem@yahoo.com"
Subject: Consultation Follow-up re: Holloman AFB Special Use Airspace EIS
Date: Tuesday, February 4, 2020 10:58:00 AM

Good morning,
I am contacting you to follow-up on consultation efforts regarding the proposed airspace changes outlined in the Special Use Airspace Draft EIS received by your office in October 2019.
In particular, have you had a chance to review the document? If so, do you have any comments or information that you would like incorporated into the final EIS? Are there any historic properties or traditional cultural places that may be affected by the proposed action or the alternatives that you would like to identify?
If you have not had an opportunity to review the draft EIS, please let me know and I will follow-up at a later time.
I have a note from Jan 22 2019 that you may have requested additional information. I am new to this position and wanted to reach out and make sure you received the information requested.
The Air Force appreciates your input into our activities and we look forward to your response.
Have a wonderful day,

Jennifer Frederick
Archaeologist/Cultural Resource Manager
Holloman AFB, 49th CES/CEIE
550 Tabosa Ave.
Holloman AFB, 88330
Phone: 575-572-6654
Pronouns: she/her

From: FREDERICK, JENNIFER J GS-12 USAF AETC 49 CES/CEIE
To: chairman@apachetribe.org
Subject: Consultation follow-up re: Holloman AFB Special Use Airspace EIS
Date: Tuesday, February 4, 2020 10:47:00 AM

Good morning,
I am contacting you to follow-up on consultation efforts regarding the proposed airspace changes outlined in the Special Use Airspace Draft EIS received by your office in October 2019.
In particular, have you had a chance to review the document? If so, do you have any comments or information that you would like incorporated into the final document? Are there any historic properties or traditional cultural places that may be affected by the proposed action or the alternatives that you would like to identify?
If you have not had an opportunity to review the document, please let me know and I will follow-up at a later time.
The Air Force appreciates your input into our activities and we look forward to your response.
Have a wonderful day,

Jennifer Frederick
Archaeologist/Cultural Resource Manager
Holloman AFB, 49th CES/CEIE
550 Tabosa Ave.
Holloman AFB, 88330
Phone: 575-572-6654
Pronouns: she/her

From: FREDERICK, JENNIFER J GS-12 USAF AETC 49 CES/CEIE
To: dgarcia@pueblooficcma.org
Subject: Consultation follow-up re: Holloman AFB Special Use Airspace EIS
Date: Tuesday, February 4, 2020 11:05:00 AM

Good morning,
I am contacting you to follow-up on consultation efforts regarding the proposed airspace changes outlined in the Special Use Airspace Draft EIS received in October 2019.
In particular, have you had a chance to review the document? If so, do you have any comments or information that you would like incorporated into the final document? Are there any historic properties or traditional cultural places that may be affected by the proposed action or the alternatives that you would like to identify?
If you have not had an opportunity to review the document, please let me know and I will follow-up at a later time.
The Air Force appreciates your input into our activities and we look forward to your response.
Have a wonderful day,

Jennifer Frederick
Archaeologist/Cultural Resource Manager
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550 Tabosa Ave.
Holloman AFB, 88330
Phone: 575-572-6654
Pronouns: she/her

From: FREDERICK, JENNIFER J GS-12 USAF AETC 49 CES/CEIE
To: [redacted]
Subject: Consultation follow-up re: Holloman AFB Special Use Airspace EIS
Date: Tuesday, February 4, 2020 11:06:00 AM

Good morning,
I am contacting you to follow-up on consultation efforts regarding the proposed airspace changes outlined in the Special Use Airspace Draft EIS received by your office in October 2019.
In particular, have you had a chance to review the document? If so, do you have any comments or information that you would like incorporated into the final document? Are there any historic properties or traditional cultural places that may be affected by the proposed action or the alternatives that you would like to identify?
If you have not had an opportunity to review the document, please let me know and I will follow-up at a later time.
The Air Force appreciates your input into our activities and we look forward to your response.
Have a wonderful day,

Jennifer Frederick
Archaeologist/Cultural Resource Manager
Holloman AFB, 49th CES/CEIE
550 Tabosa Ave.
Holloman AFB, 88330
Phone: 575-572-6654
Pronouns: she/her

From: FREDERICK, JENNIFER J GS-12 USAF AETC 49 CES/CEIE
To: GSiow@lagunapueblo-nsn.gov
Subject: Consultation follow-up re: Holloman AFB Special Use Airspace EIS
Date: Tuesday, February 4, 2020 11:08:00 AM

Good morning,
I am contacting you to follow-up on consultation efforts regarding the proposed airspace changes outlined in the Special Use Airspace Draft EIS received by your office in October 2019.
In particular, have you had a chance to review the document? If so, do you have any comments or information that you would like incorporated into the final document? Are there any historic properties or traditional cultural places that may be affected by the proposed action or the alternatives that you would like to identify?
If you have not had an opportunity to review the document, please let me know and I will follow-up at a later time.
The Air Force appreciates your input into our activities and we look forward to your response.
Have a wonderful day,

Jennifer Frederick
Archaeologist/Cultural Resource Manager
Holloman AFB, 49th CES/CEIE
550 Tabosa Ave.
Holloman AFB, 88330
Phone: 575-572-6654
Pronouns: she/her

From: FREDERICK, JENNIFER J GS-12 USAF AETC 49 CES/CEIE
To: holly@mathpo.org
Subject: Consultation follow-up re: Holloman AFB Special Use Airspace EIS
Date: Tuesday, February 4, 2020 10:54:00 AM

Good morning,
I am contacting you to follow-up on consultation efforts regarding the proposed airspace changes outlined in the Special Use Airspace Draft EIS received by your office in October 2019.
In particular, have you had a chance to review the document? If so, do you have any comments or information that you would like incorporated into the final document? Are there any historic properties or traditional cultural places that may be affected by the proposed action or the alternatives that you would like to identify?
If you have not had an opportunity to review the document, please let me know and I will follow-up at a later time.
I did receive communication from Jacob Deukei in December 2019 ahead of the public hearings that indicated his concerns have been addressed. Is Jacob Deukei associated with your office?
The Air Force appreciates your input into our activities and we look forward to your response.
Have a wonderful day,

Jennifer Frederick
Archaeologist/Cultural Resource Manager
Holloman AFB, 49th CES/CEIE
550 Tabosa Ave.
Holloman AFB, 88330
Phone: 575-572-6654
Pronouns: she/her

From: FREDERICK, JENNIFER J GS-12 USAF AETC 49 CES/CEIE
To: r.begay@navajo-nsn.gov
Subject: Consultation follow-up re: Holloman AFB Special Use Airspace EIS
Date: Tuesday, February 4, 2020 11:03:00 AM

Good morning,
I am contacting you to follow-up on consultation efforts regarding the proposed airspace changes outlined in the Special Use Airspace Draft EIS received by your office in October 2019.
In particular, have you had a chance to review the document? If so, do you have any comments or information that you would like incorporated into the final document? Are there any historic properties or traditional cultural places that may be affected by the proposed action or the alternatives that you would like to identify?
If you have not had an opportunity to review the document, please let me know and I will follow-up at a later time.
The Air Force appreciates your input into our activities and we look forward to your response.
Have a wonderful day,

Jennifer Frederick
Archaeologist/Cultural Resource Manager
Holloman AFB, 49th CES/CEIE
550 Tabosa Ave.
Holloman AFB, 88330
Phone: 575-572-6654
Pronouns: she/her

From: FREDERICK, JENNIFER J GS-12 USAF AETC 49 CES/CEIE
To: tscissons@pcamail.org
Subject: Holloman Special Use Airspace EIS
Date: Wednesday, February 26, 2020 12:12:00 PM

Dear Todd Scissons,

I am contacting you in regards to the Holloman Air Force Base airspace EIS. A copy of the draft EIS was sent last October and is available at HollomanAFBairspaceEIS.com. If there are any traditional cultural properties or properties of religious significance that you would like to identify as being affected by the actions described in the EIS, please contact me as soon as possible.

I would also like to confirm your contact details for future tribal consultation efforts.

Thank you,
Jennifer Frederick
Archaeologist/Cultural Resource Manager
Holloman AFB, 49th CES/CEIE
550 Tabosa Ave.
Holloman AFB, 88330
Phone: 575-572-6654
Pronouns: she/her

From: Altaha, Mark
To: FREDERICK, JENNIFER J GS-12 USAF AETC 49 CES/CEIE
Subject: [Non-DoD Source] Re: Consultation follow-up re: Holloman AFB Special Use Airspace EIS
Date: Friday, February 7, 2020 9:41:51 AM
Attachments: THPO Consultation Letter.pdf

From: Altaha, Mark
Sent: Wednesday, February 5, 2020 11:52:18 AM
To: FREDERICK, JENNIFER J GS-12 USAF AETC 49 CES/CEIE
Subject: Re: Consultation follow-up re: Holloman AFB Special Use Airspace EIS

Good Afternoon...

Thank you for touching bases in regards to the Special Use Airspace for Holloman AFB. I do recall reviewing the document and coming to the conclusion that here weren't any specific issues and/or concerns...but can't be positive I sent a response letter indicating so.

Unfortunately all the documents reviewed in the previous fiscal year has been cataloged and put away. Would it be possible to email a copy of the proposal, and we can work on sending an appropriate response for the proposal.

Thank you,

Mark Altaha -THPO
White Mountain Apache Tribe
Historic Preservation Office
Fort Apache, Arizona

From: FREDERICK, JENNIFER J GS-12 USAF AETC 49 CES/CEIE <jennifer.frederick.2@us.af.mil>
Sent: Tuesday, February 4, 2020 11:01:03 AM
To: Altaha, Mark
Subject: Consultation follow-up re: Holloman AFB Special Use Airspace EIS

Good morning,
I am contacting you to follow-up on consultation efforts regarding the proposed airspace changes outlined in the Special Use Airspace Draft EIS received by your office in October 2019.
In particular, have you had a chance to review the document? If so, do you have any comments or information that you would like incorporated into the final document? Are there any historic properties or traditional cultural places that may be affected by the proposed action or the alternatives that you would like to identify?
If you have not had an opportunity to review the document, please let me know and I will follow-up at a later time.
The Air Force appreciates your input into our activities and we look forward to your response.

Have a wonderful day,

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