FRTC Modernization EIS

Supporting Study

Noise Study for Military Readiness Activities at the Fallon Range Training Complex

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Blue Ridge Research and Consulting, LLC

Final Report

Noise Study for Military Readiness Activities at the Fallon Range Training Complex

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List of Acronyms

ac.	Acres
AACT	Advanced Air Combat Training
ACT	Adversary Combat Training
ADNL	A-Weighted Day-Night Average Sound Level
$ADNL_{mr}$	A-Weighted Onset-Rate Adjusted Day-Night Average Sound Level
ADV	Adversary
AGL	Above Ground Level
AGNM	Air Gunnery Noise Model
AR	Army Regulation
Army PHC	US Army Public Health Command
ATCAA	Air Traffic Control Assigned Airspace
BFM	Basic Fighter Maneuvers
BNoise	Large Arms Noise Assessment Model
BP	Bombing Pattern
dB	Decibel
dBA	A-Weighted Sound Level
dB_{Pk}	Peak Sound Pressure Level
CAS	Close Air Support
CVW	Carrier Air Wing
CDNL	C-Weighted Day-Night Average Sound Level
CSAR	Combat Search and Rescue
DCAST	Data Collection and Scheduling Tool
DNL	Day-Night Average Sound Level
DoD	Department of Defense
DOPAA	Description of Proposed Action and Alternatives
DVTA	Dixie Valley Training Area
EIS	Environmental Impact Statement
FAC	Fast Attack Craft
FIAC	Fast Inshore Attack Craft
FRTC	Fallon Range Training Complex
ft	Feet
HE	High Explosive
HEI	High Explosive Impact
HIA	Heavy Inert Area
HVBSS	Helicopter Visit Board Search and Seizure
Hz	Hertz
kts	Knots
lbs	Pounds
L_{Cdn}	C-Weighted Day-Night Average Sound Level
L_{dn}	A-Weighted Day-Night Average Sound Level

1	L_{dnmr}	A-Weighted Onset-Rate Adjusted Day-Night Average Sound Level
2	L_{dnr}	Onset-Rate Adjusted L_{dn}
3	LFE	Large Force Exercise
4	L_{Pk}	Peak Sound Level
5	LUPZ	Land Use Planning Zone
6	LZ	Landing Zone
7	m	Meter
8	mm	Millimeter
9	MARS	Maritime Strike
10	MOA	Military Operating Area
11	MR_NMap	MOA and Route NoiseMap Model
12	MSL	Mean Sea Level
13	MTR	Military Training Route
14	NAS	Naval Air Station
15	NAVFAC	Naval Facilities Engineering Command
16	NAWDC	Naval Aviation Warfighting Development Center
17	NM	Nautical Mile
18	PMCF	Post Maintenance Check Flights
19	psf	Pounds per Square Foot
20	SARNAM	Small Arms Range Noise Assessment Model
21	SDZ	Surface Danger Zone
22	SEL	Sound Exposure Level
23	SSOA	Supersonic Operating Area
24	STRIKE U	Naval Strike Warfare Center
25	SUA	Special Use Airspace
26	TERF	Terrain Flight
27	TOPDOME	Carrier Airborne Early Warning Weapons School
28	TOPGUN	Navy Fighter Weapons School
29	WISS	Weapons Impact Scoring Set

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1 Introduction

This noise analysis supports the United States (US) Navy's (hereafter referred to as the Navy) preparation of an Environmental Impact Study (EIS) being conducted to maintain and modernize the land and airspace configurations of the Fallon Range Training Complex (FRTC) in Nevada. The primary purpose of this report is to present the aircraft noise, sonic boom and weaponry noise exposures associated with training operations under Current (baseline), Proposed Action, and No Action Alternatives.

1.1 Purpose

The Navy is preparing an EIS to assess the potential environmental impacts of modernizing the FRTC. Modernization would include: (1) renewal of the Navy's current public land withdrawal, (2) the expansion of land ranges through the additional withdrawal of public lands and the acquisition of non-federal land, and (3) airspace modifications.

A Range is defined in Title 10 of the US Code as a designated land or water area that is set aside, managed, and used for range activities of the Department of Defense (DoD). Range activities means research, development, testing, and evaluation of military munitions, other ordnance, and weapons systems; and the training of members of the Armed Forces in the use and handling of military munitions, other ordnance, and weapon systems.

The Navy's Proposed Action is to modernize the FRTC, including actions to:

- Renew existing public land withdrawal of 201,933 acres (ac.) expiring in November 2021,
- Withdraw and reserve for military use approximately 618,727 ac. of additional public land,
- Acquire approximately 65,153 ac. of non-federal land,
- Expand associated Special Use Airspace (SUA) and reconfigure existing airspace,
- Conduct the same general types and tempos of aviation and ground training as currently authorized, and
- Upgrade range infrastructure to support modernization.

1.2 Description of Fallon Range Training Complex

The FRTC consists of SUA and land training ranges in Nevada for air warfare and ground training, including live-fire training activities. Per Chapter 1 of the Draft Environmental Impact Statement:

> "The FRTC provides a realistic training environment and space for freedom of tactical maneuver where naval personnel can build and sustain combat skills and readiness to meet the requirements established by NAWDC [the Naval Aviation Warfighting Development Center] and other Naval Warfare authorities, such as the Naval Special Warfare Command for ground training. To accomplish its mission, the FRTC encompasses four land bombing ranges (Bravo B-16, B-17, B-19, and B-20), which are used for air-to-ground munitions delivery, close air support (CAS), and tactical small arms firing; the Dixie Valley Training Area (DVTA), used for search and rescue, land navigation, convoy escort, and electronic warfare; and the Shoal Site, used for search and rescue activities. Together, these areas occupy approximately 202,000 ac. of land. A total of 12,256 square

nautical miles (NM^2) of Military Operating Area (MOA) overlays this area as well as large parts of Churchill, Lander, and Eureka counties and smaller portions of Pershing, Lyon, Mineral, and Nye counties (Figure 1-1).

Included with these assets, the FRTC supports an overland supersonic capability (where aircraft can exceed Mach 1, or the speed of sound) and has a sophisticated threat Integrated Air Defense System (comprised of 37 real or simulated radars throughout the DVTA), a Tactical Combat Training System range (the system collects time, space, position, and weapon employment information from participants in training exercises and transfers the information to a ground system that can provide live monitoring of tactical scenarios and debriefing), multiple target types (e.g. bull's-eye; simulated compounds, missile launchers/air defense sites, tanks, and petroleum and oil facilities; tanks; laser-guided bomb targets; radar vans); high-altitude weapons training; and on-site adversary (opposition forces) aircraft and ground training."

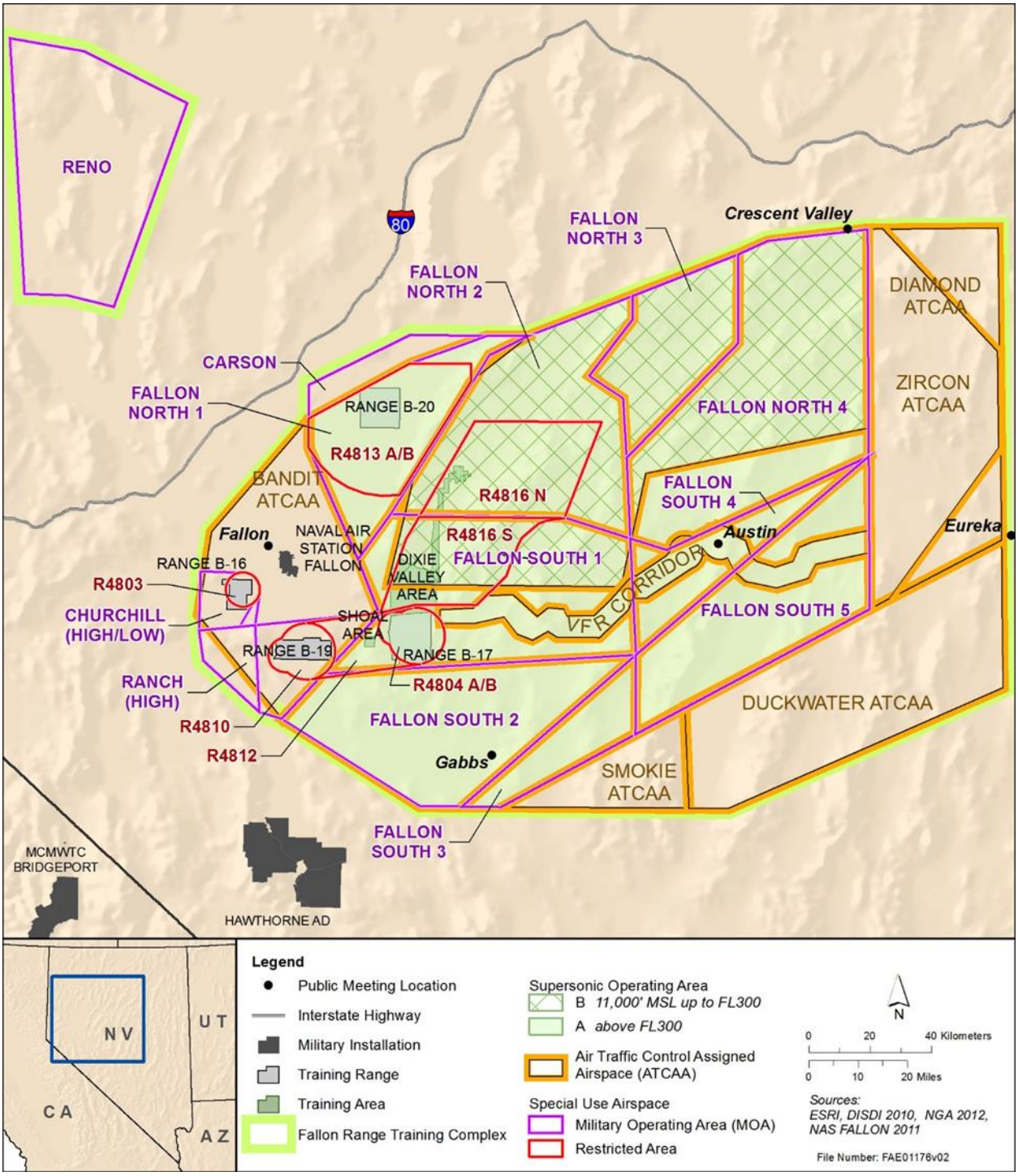

Figure 1-1. FRTC Study Area

1.3 Overview of Scenarios

The noise analysis considers four scenarios: Existing Conditions (Baseline), Proposed Action Alternatives 1 and 3, and the No Action Alternative. Training activities under Alternative 2 or the same as Alternative 1. Thus, the noise impacts are the same under these two alternatives. The training operations associated with Alternatives 1 and 3 involve proposed land withdrawal and range expansions. Ranges B-16 and B-20 have proposed area expansions and new targets, which are identical for Alternatives 1 and 3. Range B-17 also has a proposed area expansion for both Alternatives, although each Alternative has a different set of targets and operational areas. Range B-19 has no change between Existing Conditions and both Action Alternatives. Alternatives 1 and 3 include the same proposed airspace expansions to supplement The Commodore and Adversary Combat Training (ACT) operational areas. For the No Action Alternative, the ranges will close and thus, all air training associated with the ranges will not occur; the remaining operations will be the air-to-air training within the current (non-range) airspace structure.

1.4 Report Outline

To guide the reader, this report will provide the operational data description for the various noise source types and present the noise results for each source type directly after its description. This flow is slightly different from most noise studies, but with the number of unique noise source types, this structure will help the reader focus on each noise type. Section 2 describes noise metrics and noise models used for this noise analysis. For aircraft noise and sonic boom, Section 3 describes the operational parameters for subsonic aircraft noise and the ensuing results, and Section 4 describes the supersonic parameters and comparative results. For weaponry noise, Section 5 describes the airborne gunnery noise and results, and Section 6 describes the ground explosion portion of the weaponry noise. Finally, Section 7 provides a description of the noise buffer areas for tactical small arms ground firing.

2 Noise Metrics and Models

2.1 Noise Metrics

Noise is a prominent environmental issue associated with military training operations.[i] The noise environment at military training areas, such as FRTC, includes various types of noise sources that can either be classified as continuous or impulsive noise. *Continuous noise* is a technical term describing a noise event which has a gradual onset and has a duration greater than a few seconds, such as aircraft overflights, but not necessarily noise that is always occurring. In contrast, *impulsive noise* refers to sudden noise events with rapid onsets and very brief durations such as weapon-firing or the detonation of explosives.

The noise environment at FRTC is dominated by aircraft flight and aerial gunnery events. Humans perceive and react differently to impulsive and continuous noise events depending on the level, frequency, and duration of the event. Because of the difference in human response to these types of noise events, military operational noise is assessed using several noise metrics. The two most commonly used metrics are the Day-Night Average Sound Level (DNL) and peak noise level (L_{Pk}).

The DNL is the federally recommended noise measure used for assessing cumulative sound levels occurring during a 24-hour period. DNL (which is sometimes denoted by L_{dn}) is an average sound level, expressed in decibels (dB), which is commonly used to assess aircraft noise exposures in communities in the vicinity of airfields.[ii,iii,iv] DNL values are related to compatible/incompatible land uses and do not directly relate to any singular sound event a human may hear. DNL includes a 10-dB adjustment for nighttime noise events. Daytime is defined as the period from 0700 to 2200 hours, and nighttime is the period from 2200 to 0700 hours the following morning. The 10 dB adjustment accounts for the generally lower background sound levels and greater community sensitivity to noise during nighttime hours.

To assess accurately the impacts on humans from these different types of noise events, the DNL metric is used with different weighting factors that emphasize certain parts of the audio frequency spectrum. The normal human ear detects sounds in the range from 20 Hertz (Hz) to 20,000 Hz, and it is most sensitive to sounds in the 1,000 to 4,000 Hz range. Community noise is therefore assessed using a filter that approximates the frequency response of the human ear, adjusting low and high frequencies to match the sensitivity of the ear. This "A-weighting" filter is used to assess most community noise sources.

Aircraft noise generated in SUA is typically different from that associated with airfield operations. As opposed to patterned or continuous noise environments associated with airfields, overflights within SUA can be highly variable in occurrence and location. Individual military overflight events also differ from typical community noise events because noise from a low-altitude, high-airspeed flyover can have a sudden onset (i.e. exhibiting a rate of increase in sound level – onset rate – of up to 30 to 150 dB per second).

To represent these differences, the conventional DNL metric is adjusted to account for the "surprise" effect on humans from the sudden onset of aircraft noise events with an adjustment up to 11 dB above the normal Sound Exposure Level (SEL).[v,vi] Onset rates between 15 to 150 dB per second require an adjustment of 0 to 11 dB, while onset rates below 15 dB per second require no adjustment. The adjusted

DNL is designated as the Onset-Rate Adjusted Day-Night Average Sound Level (L_{dnr}). L_{dnr} employs A-weighted sound levels.

When a vehicle moves through the air, it pushes the air out of its way. At subsonic speeds, the displaced air forms a pressure wave that disperses rapidly. At supersonic speeds, the vehicle is moving too quickly for the wave to disperse, so it remains as a coherent wave. This wave is a sonic boom. When heard at ground level, a sonic boom consists of two shock waves (one associated with the forward part of the vehicle, the other with the rear part) of approximately equal strength and (for fighter aircraft) separated by 100 to 200 milliseconds. When plotted, this pair of shock waves and the expanding flow between them has the appearance of a capital letter "N," so a sonic boom pressure wave is usually called an "N-wave." The boom forms a cone that is said to sweep out a "carpet" under the flight track. The boom levels vary along the lateral extent of the "carpet" with the highest levels directly underneath the flight track and decreasing as the lateral distance increases to the cut-off edge of the "carpet." When the vehicle is maneuvering, the sonic boom energy can be focused in highly localized areas on the ground. The complete ground pattern of a sonic boom depends on the size, weight, shape, speed, and trajectory of the vehicle. Since aircraft fly supersonically with relatively low horizontal angles, the boom is directed toward the ground. Individual sonic booms are normally measured and reported in units of pounds per square inch, which can be related to startle and the potential for structural damage. Cumulative sonic boom exposures are reported with the metric of C-weighted DNL and denoted as either CDNL or L_{Cdn}.

Aerial gunnery operations at FRTC produce substantial noise. This noise is impulsive in nature with sudden bursts of sound pressure originating from the firing of the airborne guns, such as the F/A-18 expenditures of 20-millimeter (mm) ammunition during strafing runs and the delivery of high explosives (HE) bombs and rockets. For impulsive noise, C-weighted sound levels are used. "C-weighted" denotes an adjustment to the frequency content of a noise event to represent human response to louder noise levels. Compared to A-weighting, C-weighting enhances the lower frequency content. Strafing noise has two components: ballistic waves (sonic booms) from the bullets and muzzle blast from the weapon firing. The ballistic waves from the bullets only occur forward of the firing point, whereas muzzle blast can be heard in all directions. The DNL metric is utilized to characterize aerial gunnery noise, and C-weighted sound levels account for the lower frequency content and higher levels of strafing and HE explosions. For these training operations, the DNL is denoted as CDNL (or L_{Cdn}).

For small arms firing ranges, the US Army recommends using the peak pressures (L_{Pk}) to assess the potential for complaints. The L_{Pk} is the highest instantaneous, un-weighted sound level over any given period time. It is used to quantify impulsive, short duration events such as a weapon firing or a sonic boom. High peak sound levels can generate complaints from people in the local community. For small arms, the US Army has established Peak levels of 87 dB_{Pk} and 104 dB_{Pk} that correspond to the likelihood of complaints from the nearby population. For levels between 87 and 104 dB_{Pk} some complaints may occur, whereas if the peak levels are above 104 dB_{Pk}, complaints are expected.[ii] Although this metric is not used specifically for land use planning, it does advise range managers of potential noise complaints in nearby communities. For small arms tactical firing areas, the US Army uses the same peak levels to identify buffer areas around the tactical firing area. These buffer areas only serve to provide situational awareness for any potential noise sensitive areas that may fall within the buffer. The likelihood of any effect is marginal since the higher peak levels are normally contained within the surface danger zone (SDZ) for the tactical firing areas.

In this analysis, range noise was assessed using the DoD recommended noise metrics.[i,vii] Aircraft flight noise was assessed using the A-weighted Onset-Rate Adjusted Day-Night Average Sound Level ($ADNL_{mr}$ or L_{dnmr}), which is the equivalent to L_{dnr}. The air-borne weaponry training was assessed using C-weighted Day-Night Average Sound Level (CDNL or L_{Cdn}). Tactical small arms training was assessed using dB_{Pk} metrics (discussed below). Table 2-1 provides the noise level limits associated with land use planning.[i,vii] In general, most land uses are compatible within Noise Zone 1. For Noise Zone 2, some land uses are incompatible with the noise. Within Noise Zone 3, most land uses are incompatible.

Table 2-1. Noise Zone Definitions

Noise Zone	Noise Limits		
	Aviation dBA L_{dn}	Impulsive dBC L_{Cdn}	Small Arms dBPk (Peak)
LUPZ	60 to 65	57 to 62	N/A
1	< 65	< 62	< 87
2	65 to 75	62 to 70	87 to 104
3	> 75	> 70	>104

2.2 Computerized Noise Exposure Models

Noise contours for aircraft operations were developed using the MOA and Route NoiseMap Model (MR_NMap).[viii] Aerial gunnery noise was modeled using the Air Gunnery Noise Model (AGNM)[ix,x] which models the noise from the muzzle blast, the sonic boom of a supersonic projectile, and rocket/missile firings from an elevated airborne platform. Aircraft sonic booms were modeled using the cumulative sonic boom model, BooMap.[xi,xii,xiii] Ground-based large noise was modeled using the standard DoD computer noise models, Large Arms Noise Assessment Model (BNoise).[xiv]

2.2.1 MOA and Route NoiseMap Model (MR_NMap)

Analyses of aircraft noise exposures and compatible land uses around and underneath SUAs are normally accomplished using MR_NMap. The US Air Force developed this general-purpose computer model for calculating noise exposures occurring away from airbases, since aircraft noise is also an issue within MOAs and ranges, as well as along Military Training Routes (MTRs). This model expands the calculation of noise exposures away from airbases by using algorithms from both NoiseMap[xv] and ROUTEMAP.[xv,xvi] MR_NMap uses two primary noise models to calculate the noise exposure: track and area operations. Track operations are for operations that have a well-defined flight track, such as MTRs, aerial refueling, and strafing tracks. Area operations are for operations that do not have well defined tracks, but occur within a defined area, such as air-to-air combat within a MOA.

The program has a user interface, MR_OPS, for the development of the input data. For track operations, input requirements are the same as for ROUTEMAP, but more than just MTRs can be modeled. For area operations, the model allows flexibility. If little is known about the airspace utilization within a MOA, then the MOA boundaries can simply be used, and the operations are uniformly distributed within the defined area. However, if more is known about how and where the aircraft fly within the MOA, subareas can be defined within the MOA to more accurately model the noise exposure.

Once the airspace is defined, the user must describe the mission types occurring within each airspace segment. Individual aircraft missions include the altitude distribution, airspeed, and engine power settings. These individual profiles are coupled with airspace components and annual operational rates. After the airspace and operational parameters are defined, MR_NMap calculates the resulting L_{dn} or L_{dnr}. The model calculates these noise metrics either for a user-defined grid or at user-defined points. The grid calculation can be passed to NMPlot to plot the noise contours, as provided in this analysis. The specific point calculation generates a table that provides the noise exposure, as well as the top contributors to the noise exposure.

2.2.2 BooMap

BooMap calculates the long-term sonic boom exposures from supersonic operations within authorized supersonic airspace. The model is based on a series of three monitoring efforts underneath three supersonic airspaces in the western United States.[xvii,xviii,xix] These monitoring studies led to the determination that the noise exposure from sonic booms is governed by airspace boundaries, which can be generally described by elliptical contours. The metric calculated by BooMap is CDNL. The model uses currently defined airspace boundaries or user-defined boundaries, along with the distribution of aircraft type and monthly operation rates within the airspace. Single or multiple ovals can best describe the airspace utilization. From such simple input data, the model calculates the CDNL on a grid of points in the NMPlot Binary Grid Format, which is compatible with NMPlot.

2.2.3 PCBoom

PCBoom computes single-event sonic boom footprints and signatures from any supersonic vehicle executing any maneuver in a three-dimensional atmosphere, including winds and terrain effects.[xx,xxi] This model has been verified with field measurements, and accurately accounts for focusing of the sonic boom from aircraft maneuvers.[xxii] The program has a menu interface that simplifies use and the presentation of results. The user specifies the aircraft, the maneuver, and atmospheric conditions. The primary output is the sonic boom footprint, which is defined in terms of contours of equal overpressure (or other amplitude metric) on the ground, relative to the aircraft's position. PCBoom also generates sonic boom signatures, the pressure-time-histories, and spectra of booms at the ground.

2.2.4 Air Gunnery Noise Model (AGNM)

A number of aircraft and ground-based weapon system noise models have been developed over the past 30 years to estimate noise levels from military operations. The results from these models are used to assess the potential for community and environmental impacts from Baseline and Proposed Action operations. Current DoD noise models use common aircraft and weapon system source noise databases maintained by the Air Force Research Laboratory, US Army Construction Engineering Research Laboratory, and the Naval Facilities Engineering Command (NAVFAC). However, these models and the source noise databases do not provide the capability to assess noise impacts due to airborne weapon operations. Thus, a new computer model has been developed to address the generation and propagation of noise from air-weaponry operations. The model handles the complexity of the distributed noise events while maintaining accurate acoustical modeling that is required for environmental noise analysis.

One of the complexities related to AGNM is that aircraft rarely fly the exact attack profile prescribed, and in some cases, the attack run is simply a generalized fan where the pilot can approach the target from a range of headings. To solve this problem of an unknown source location, a generalized statistical firing volume is used. This volume is defined by the parameters of the attack run with a three-dimensional Gaussian distribution of firing points. The noise footprint is then calculated to represent the noise from a single bullet fired from within the space. This statistical method is not representative of a single bullet fired, and instead represents the average noise expected once a statistically large number of bullets have been fired.

For this FRTC study, a wide range of operations were modeled, from H-60 and F/A-18 20 mm munitions to H-60 Hellfire missiles. AGNM handles the noise from the actual firing as well as the ballistic wave of the projectile. As noted in the Large Arms Noise section, the noise from high explosive blasts was modeled using BNoise. The results from AGNM include CDNL and Peak noise contours. The following list of contour shapefiles was generated as part of this analysis. Because of the distances involved, operations at B-16, B-17, B-19, and B-20 were modeled independently.

The model consists of several different programs designed to operate together. The following is a complete list of the programs provided in the initial release:

AG_BoomModel.exe,
AG_DefineRun.exe,
AG_FrontEnd.exe,
Air_Gunnery_Model.exe,
LayerBuilder.exe, and
TargetBuilder.exe.

The AG_BoomModel program is designed to calculate the noise from the projectiles' sonic boom. The noise algorithm itself is based on Carlson's simplified sonic boom theory. It uses the projectile shape factor, length, and speed profile to calculate the footprint of the sonic boom.

The AG_DefineRun program provides a graphical user interface to help the user define a statistical volume for a firing profile. This module then provides the user a way to see the firing line, target, and statistical volume graphically. The program generates a statistical volume that is separated into individual firing points. Each point within the volume is provided a statistical likelihood that a bullet was fired at that location. The total probability of the entire volume is defined as 1.00, making the likelihood that a bullet was fired somewhere within the volume 100%. The probability of a single bullet fired at any one spatial location within the volume is much less than 1.00 and is a function of the volume distribution.

AG_FrontEnd is the initial user interface for AGNM. It is the starting point for creating new cases or importing cases from other sources. When the program is initially launched, it shows an empty grid similar to a spreadsheet. This is the main screen for viewing operational data, with the column headings providing details about individual operations.

The Air_Gunnery_Model is the core calculation engine for determining the muzzle blast and propulsion noise. The primary noise metric is the C-weighted SEL along with correlations to peak levels, A-weighted SELs, and unweighted SELs. This program operates entirely from a command line. The command line argument is a control file that contains all of the information necessary to compute the noise from a single statistical volume.

The input file is relatively simple and is used for the muzzle blast calculation as well as for the sonic boom calculations. The output is an NMPlot grid file that contains all of the case information, listing each of the modeled firing points together with their probabilities.

2.2.5 Large Arms Noise Assessment Model (BNoise)

The noise associated with the detonation of the HE rounds was modeled using BNoise. Hellfire missile impacts were modeled using 70, 62, and 57 dB CDNL. Per the BNoise software usage requirements, the model inputs and results were submitted to and approved by the Army Public Health Command (Army PHC).

2.2.6 Small Arms Range Noise Assessment Model (SARNAM)

The standard DoD model SARNAM computes a number of noise metrics including L_{Pk} based on the range description (geographic coordinates, size of the range, number of targets, and direction of fire), weapons and ammunition used (munition type and number of day/nighttime rounds fired), and atmospheric conditions. SARNAM was used in this analysis to calculate the buffer area distances for 87 dB_{Pk} and 104 dB_{Pk} for tactical small arms range operations in the FRTC.

3 Subsonic Aircraft Noise

The types of training operations conducted at FRTC are numerous and variable. Composite profiles provide accurate modeling of the overall noise from these various missions. Assessment of aircraft noise at air-to-ground ranges requires a range of data to describe the types, frequency, and locations of noise-generating operations occurring within and around the range. The primary sources of data are the training and readiness manual, interviews with aircrews and range personnel, and annual reports. The primary missions executed at the FRTC include ground attacks by fixed-wing aircraft, including the F/A-18E/F, F/A-18C/D, and F-35B/C airframes. For rotorcraft, the primary user is the H-60 helicopter. Secondary users at the FRTC account for less than 3% of the total operations and include the F-15, P-8, C-130, T-34, E-2, Unmanned Aerial Vehicle (UAV), and AH-64. The contributions to the overall noise environment of these aircraft are negligible, so these secondary aircraft are not modeled. For annual sortie rates, the Data Collection and Scheduling Tool (DCAST) was primarily used to establish the "existing condition," and these data were derived from 2014, 2015, and scaled 2016 aircraft data. In DCAST, the F/A-18E/F are not always identified as E/F. Therefore, ops numbers are adjusted between C/D and E/F based on a 15%/85% split for all F/A-18 operations. The Baseline and Proposed Action have the same training operational tempos for each aircraft. The only difference is the addition of the F-35B/C operations for the Proposed Action. The No Action would likely remove the range operations in B-16, B-17, B-19, and B-20, and maintains the air-to-air operations occurring in the Commodore, NAWDC-1, NAWDC-2, and Reno airspaces. Table 3-2 provides the total training sorties at FRTC for current conditions (Baseline). Table 3-2 displays the total Proposed Action training sorties under Alternatives 1 and 3. The total sortie numbers are identical under both Alternatives.

Table 3-1. Total Annual Training Sorties at FRTC for Baseline

Aircraft	Unit ID or A/C Type	B-16	B-17	B-19	B-20	Commodore DCAST	NAWDC-1 DCAST	NAWDC-2 DCAST	Reno	Total Number Number
PRIMARY A/C										
F/A-18E/F	Fighters	636	1,710	3,194	745	1,118	9,344	9,209	222	**26,178**
F/A-18C/D	Fighters	112	302	564	132	197	1,649	1,625	39	**4,620**
F-5E	Fighters	35	195	37	529	580	1,508	1,624	182	**4,690**
F-16	Fighters	38	117	-	284	409	1,827	1,160	726	**4,561**
EA-18G	Fighters	30	209	177	128	139	865	1,103	113	**2,764**
H-60	Helicopters	130	264	123	89	116	739	342	-	**1,803**
P-8	Large Jet	-	-	-	-	32	12	7	-	**51**
E-2	Twin prop	-	-	-	-	94	354	347	14	**809**
Modeled Aircraft Total		**981**	**2,797**	**4,095**	**1,907**	**2,559**	**15,932**	**15,063**	**1,282**	**45,476**
SECONDARY A/C (Not Modeled)										
F-15	Fighters	-	-	-	-	77	293	290	2	**662**
AH-64	Helicopters	31	53	38	19	16	-	-		**157**
C-130	Multiprop	38	10	-	9	22	-	-		**79**
T-34	Single prop	6	52	39	25	-	16	32		**170**
UAV	UAV	14	-	-	-	7	-	-		**21**
Secondary Aircraft Total		**89**	**115**	**77**	**53**	**231**	**624**	**627**	**14**	**1,089**
Grand Total		**1,070**	**2,912**	**4,172**	**1,960**	**2,790**	**16,556**	**15,690**	**1,296**	**46,565**

Table 3-2. Total Annual Training Sorties at FRTC for Alternative 1 and Alternative 3

Aircraft	Unit ID or A/C Type	B-16	B-17	B-19	B-20	Commodore DCAST	NAWDC-1 DCAST	NAWDC-2 DCAST	Reno	Total Number
PRIMARY A/C										
F/A-18E/F	Fighters	636	1,710	3,194	745	1,118	9,344	9,209	222	**26,178**
F/A-18C/D	Fighters	112	302	564	132	197	1,649	1,625	39	**4,620**
F-5E	Fighters	35	195	37	529	580	1,253	1,879	182	**4,690**
F-16	Fighters	38	117	0	284	409	1,195	1,792	726	**4,561**
EA-18G	Fighters	30	209	177	128	139	865	1,103	113	**2,764**
F-35C	Fighters	25	100	25	100	449	573	567	9	**1,848**
H-60	Helicopters	130	264	123	89	116	739	342	0	**1,803**
P-8	Large Jet	-	-	-	-	32	12	7	-	**51**
E-2	Twin prop	-	-	-	-	94	354	347	14	**809**
Modeled Aircraft Total		**1,006**	**2,897**	**4,120**	**2,007**	**3,008**	**15,618**	**16,517**	**1,291**	**47,324**
SECONDARY A/C (Not Modeled)										
F-15	Fighters	-	-	-	-	77	293	290	2	**662**
AH-64	Helicopters	31	53	38	19	16	-	-		**157**
C-130	Multiprop	38	10	-	9	22	-	-		**79**
T-34	Single prop	6	52	39	25	-	16	32		**170**
UAV	UAV	14	-	-	-	7	-	-		**21**
Secondary Aircraft Total		**89**	**115**	**77**	**53**	**231**	**624**	**627**	**14**	**1,089**
Grand Total		**1,095**	**3,012**	**4,197**	**2,060**	**3,239**	**16,242**	**17,144**	**1,305**	**48,413**

Operational noise from subsonic flight activity within, to, and from FRTC was modeled using MR_NMap. The set of modeled flight operations is vast and includes entry/exit routes, air gunnery patterns, close air support, and landing zone operations within target areas, restricted areas, MOAs, and Air Traffic Control Assigned Airspace (ATCAA). The operations for the entire FRTC will be broken up and presented for each of the four Bravo training ranges (Sections 3.1 through 3.4), entry/exit routes to/from each of the Bravo ranges (Section 3.5), and aircraft activity associated with the Adversary Exercises such as Navy Fighter Weapons School (TOPGUN) and Carrier Air Wing (CVW) (Section 3.6). The Proposed Action Alternative 1 and 3 changes to each of these airspace units will also be presented.

3.1 Bravo-16 Range Flight Training Missions

The B-16 range is located approximately 6 miles west of Naval Air Station (NAS) Fallon and approximately 7 miles southwest of the City of Fallon. The range consists of two Weapons Impact Scoring Set (WISS) bullseye targets. Only inert ordnance may be used on B-16. The Proposed Action (Alternative 1 and Alternative 3) calls for B-16 range expansion to the west of approximately 32,200 ac. (Figure 3-1), with the entire range closed and restricted from public use. At B-16, Alternatives 1 and 3 are identical. R-4803 (associated with B-16) would be: (1) increased in horizontal size to match associated land range changes, (2) current altitudes will be consolidated from the surface to 17,999 ft mean sea level (MSL). For Alternatives 1 and 3, new targets would be established to the west of the existing B-16 targets. The No Action Alternative would likely remove all B-16 operations. Table 3-3 displays the general tracked training missions and area missions conducted by each airframe within B-16, which includes R-4803. The mission types and the associated profiles for each aircraft type are described in detail in the following sections.

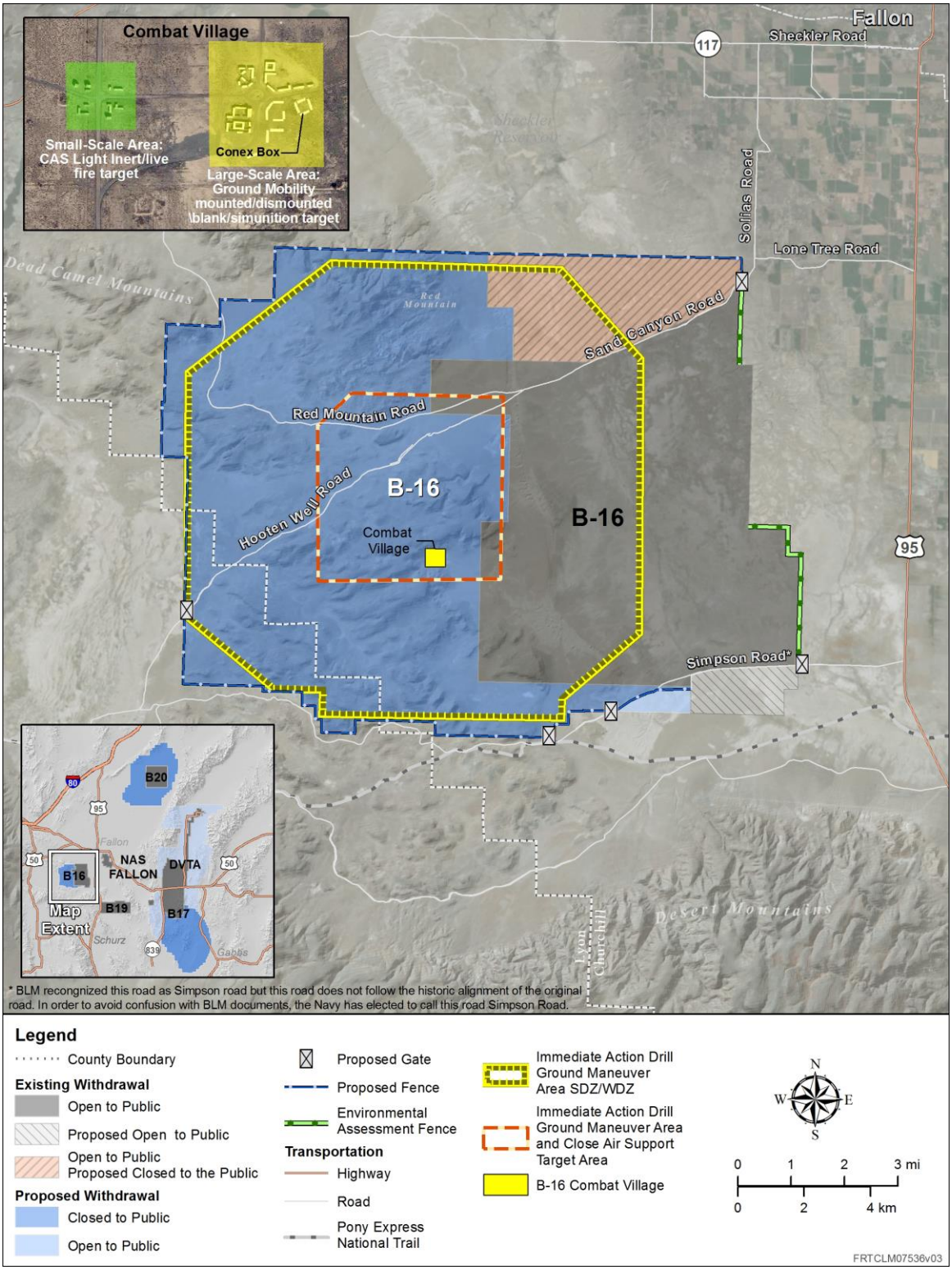

Figure 3-1. Proposed Expansion of the B-16 Range

Table 3-3. Mission Distribution for B-16

Aircraft	Tracked Patterns				Area Missions			
	Entry/Exit	Strafing	High Dive/ Low Dive	Rotocraft Gunnery	Support/ DT	CAS/ UCAS	Rotocraft Gunnery	TERF/CAS/ CSAR/HVBSS
F-35A	✦	✦	✦			✦		
F/A-18E/F	●	●	●			●		
F/A-18C/D	●	●	●			●		
F-5E	●				●			
F-16	●				●			
EA-18G	●				●			
H-60	●			✦			✦	●

● Baseline & Proposed Action ✦ Baseline Only ✦ Proposed Action Only

3.1.1 Tracked Missions

For B-16, the noise analysis utilizes one fixed-wing aircraft entry route (arrival flights), a fixed-wing exit route (departure flights), high dive/low dive, pop-left/pop-right, and level bombing tracks, a helicopter entry/exit route, and a helicopter air gunnery route. Figure 3-2 displays the modeled tracks, which consist of five fixed-wing and two helicopter tracks within B-16. Fixed-wing aircraft travel along the entry/exit route at 300 to 350 knots (kts) between 9,500 and 10,500 ft above ground level (AGL). The H-60 flies the entry/exit route at 110 kts, between 200 and 500 ft AGL and the air gunnery route at 110 kts between 100 and 500 ft AGL. The air gunnery route is removed in Alternatives 1 and 3 and replaced with an area operation since the proposed attack heading will be unrestricted for the new target locations. The F-18 (both C/D and E/F) flies the high dive at 300 to 480 kts between 3,000 and 12,000 ft AGL. The low dive is flown at 350 to 480 kts between 1,000 and 5,000 ft AGL, and the pop routes are flown at 300 to 500 kts between 200 and 3,500 ft AGL. These training operations will not change with the proposed expansion of B-16. For the Proposed Action Alternatives, the only additions are F-35B/C operations, which will mirror the F/A-18E/F operations within the expanded airspace.

3.1.2 Area Missions

Area missions associated with B-16, R-4803, the Churchill MOA and the Bandit ATCAA include support activities for the F-5E and F-16 in air-to-air adversary roles; CAS, Urban CAS (UCAS), and Defensive Tactical (DT), combat search and rescue (CSAR), and helicopter visit board search and seizure (HVBSS) missions for the H-60 within the R-4803 helicopter operating area. Figure 3-3 outlines the modeled areas for Baseline operations of fixed-wing and helicopter operations within B-16, and Figure 3-4 outlines the modeled areas for Proposed Action operations of fixed-wing and helicopter operations within B-16. In the Proposed Action, helicopter operations will shift to the west into the expanded airspace. Flight altitudes range from 500 to 17,999 ft AGL for the fixed-wing operations and surface to 200 ft AGL for the H-60 operations. Fixed-wing airframes performing support missions within the FRTC were modeled at 350 kts with an

average training duration of 90 minutes. The H-60 missions were modeled at 40, 70, and 90 kts depending on the mission type and with an average training duration of 2 hours.

3.2 Bravo-17 Range Flight Training Missions

The B-17 range is the most frequently used range at FRTC and is located approximately 25 miles E-SE of NAS Fallon and S of US Highway 50 at an elevation of approximately 4,200 ft MSL. The range consists of four surface areas with various ground targets. The Proposed Action Alternatives 1 (Figure 3-5) and 3 (Figure 3-6) propose range expansions to the south of approximately 173,400 ac. with the entire range closed and restricted from public use. The restricted range airspace associated with B-17 would be expanded with the addition of R-4805. R-4805 would be established south of R-4804. For Alternative 1, R-4804 would be modified, and R-4805 would abut R-4804 and expand to the south. R-4804 would be modified to align with R-4812. Under Alternative 1, new targets would be located to the south of the current target complex and a second Hellfire Area and a Heavy Inert Area (HIA) would be added. The missions within R-4804 and R-4805 would change to utilize both the proposed and current targets. For Alternative 3, R-4804 would remain the same, but R-4805 would expand to the south and align with the Alternative 3 proposed target locations, which are proposed to be further expanded to the south within B-17. Additionally, the operational altitude ceiling would increase from 35,000 to 50,000 ft MSL.

Shared changes for Alternatives 1 and 3:

- Sorties match current distributions from DCAST for the expanded B-17 area (approximately 50% LFE, 25% CAS, and 25% Weapons and Tactics training.
- New Fixed-wing CAS Area Missions added to the south where new proposed targets are located and evenly split between current and new target areas.

Additional changes for Alternative 1:

- Other non-CAS missions (area and tracked) shifted to new proposed target areas.
- LFE bomb deliveries focus on new High Explosive Impact (HEI) 1 and HEI 2 proposed target areas.
- H-60 Hellfire expenditures at proposed HEI 1 and HEI 2 areas.
- Fixed-wing and Helicopter Air Gunnery concentrated at proposed targets HEI 4 and HIA.

Additional changes for Alternative 3:

- H-60 Hellfire uses new HEI 3 area exclusively.
- Fixed-wing Air Gunnery concentrated at current tracked strafing targets and more tactical strafing will occur at the new proposed targets HIA, HEI 4, and southern targets.
- Helicopter Air Gunnery will split between old and new HIA areas.

The No Action Alternative would likely remove all B-17 operations. Table 3-4 displays the general tracked training and area missions conducted by each airframe within B-17, which includes R-4804. The mission types and the associated profiles for each aircraft type are described in detail in the following sections.

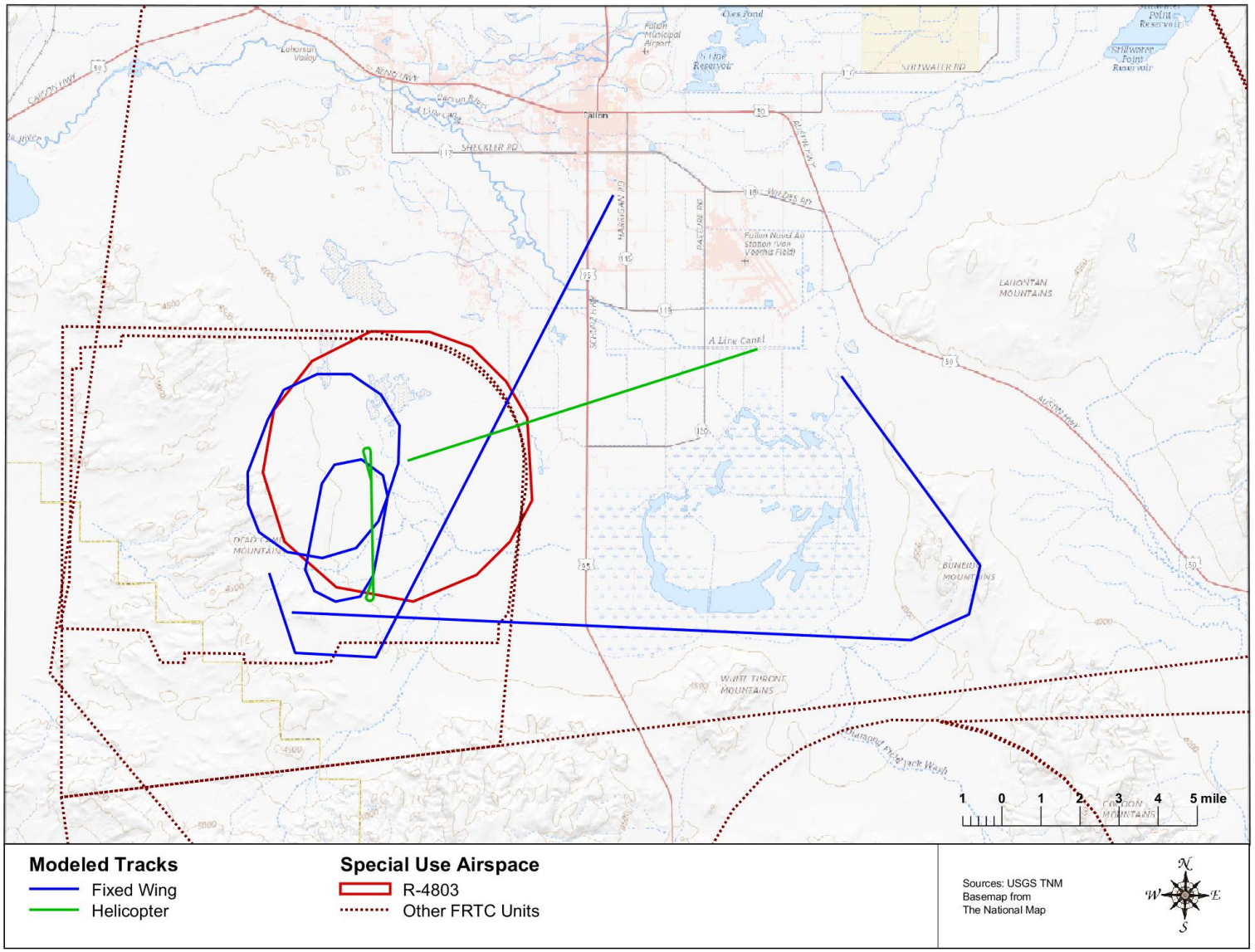

Figure 3-2. Baseline and Proposed Fixed-wing and Helicopter Modeled Tracks for B-16 Training Operations

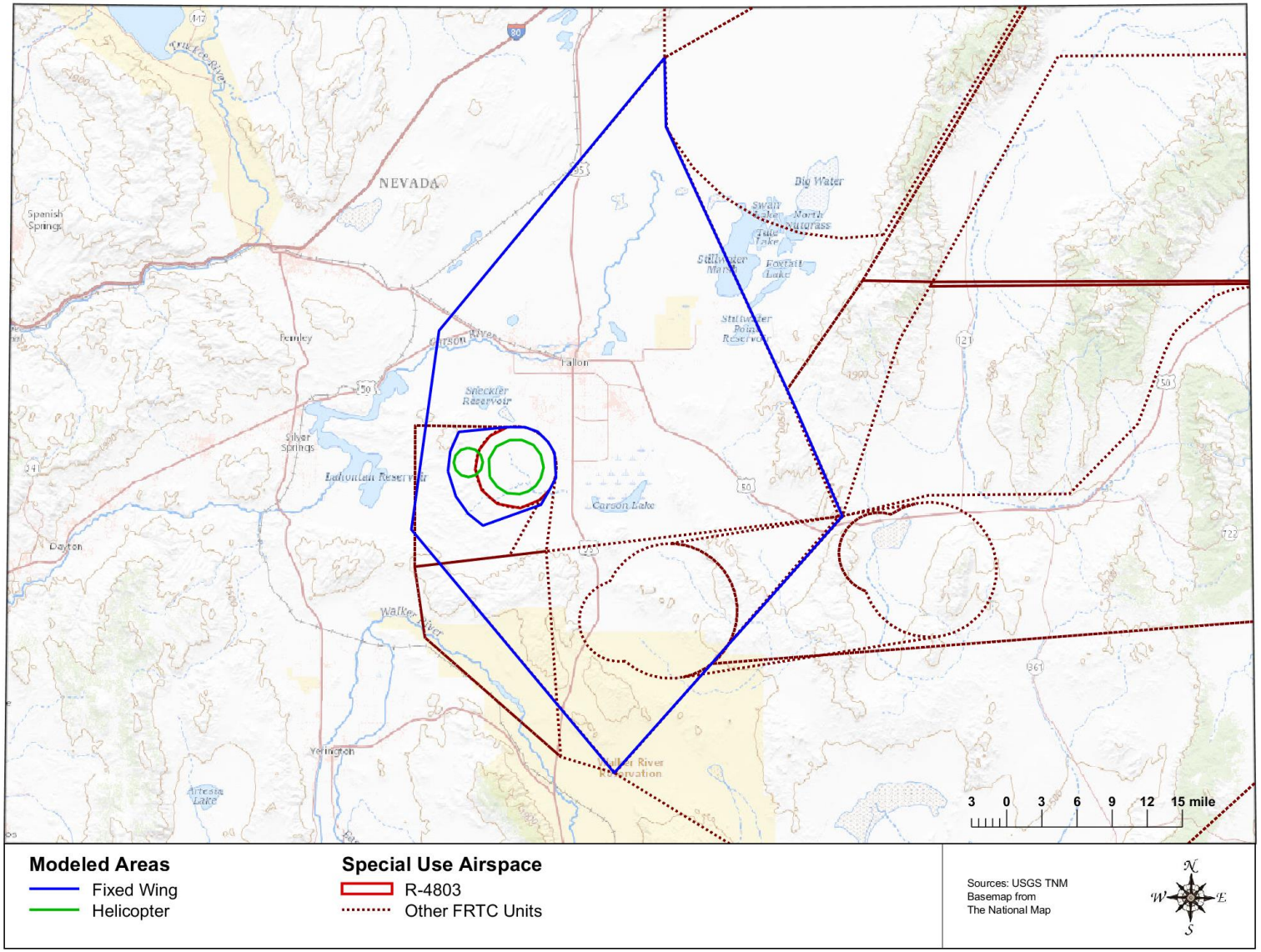

Figure 3-3. B-16 Baseline Modeled Operational Areas (including R-4803)

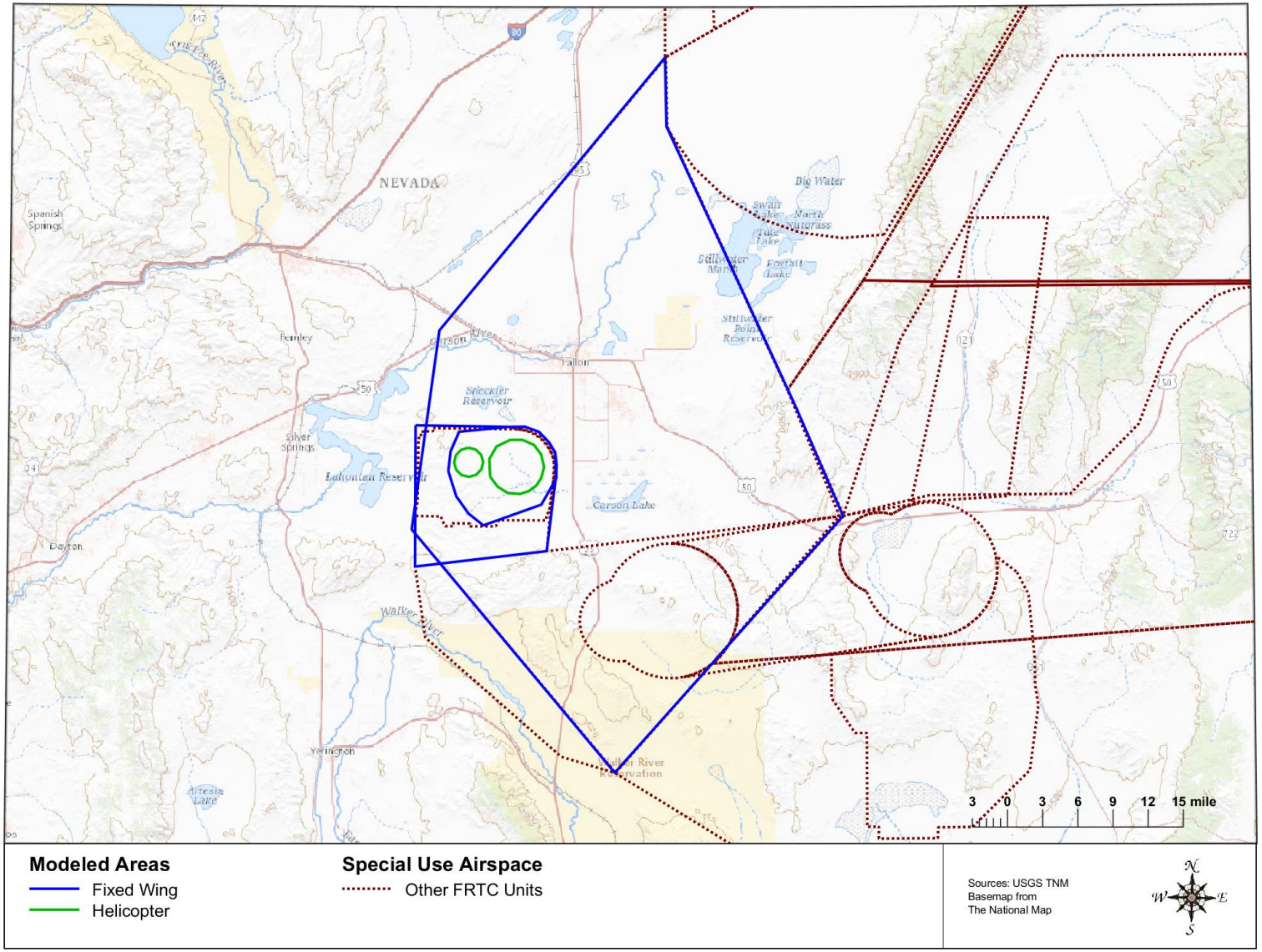

Figure 3-4. B-16 Proposed Expansion Modeled Operational Areas (including R-4803)

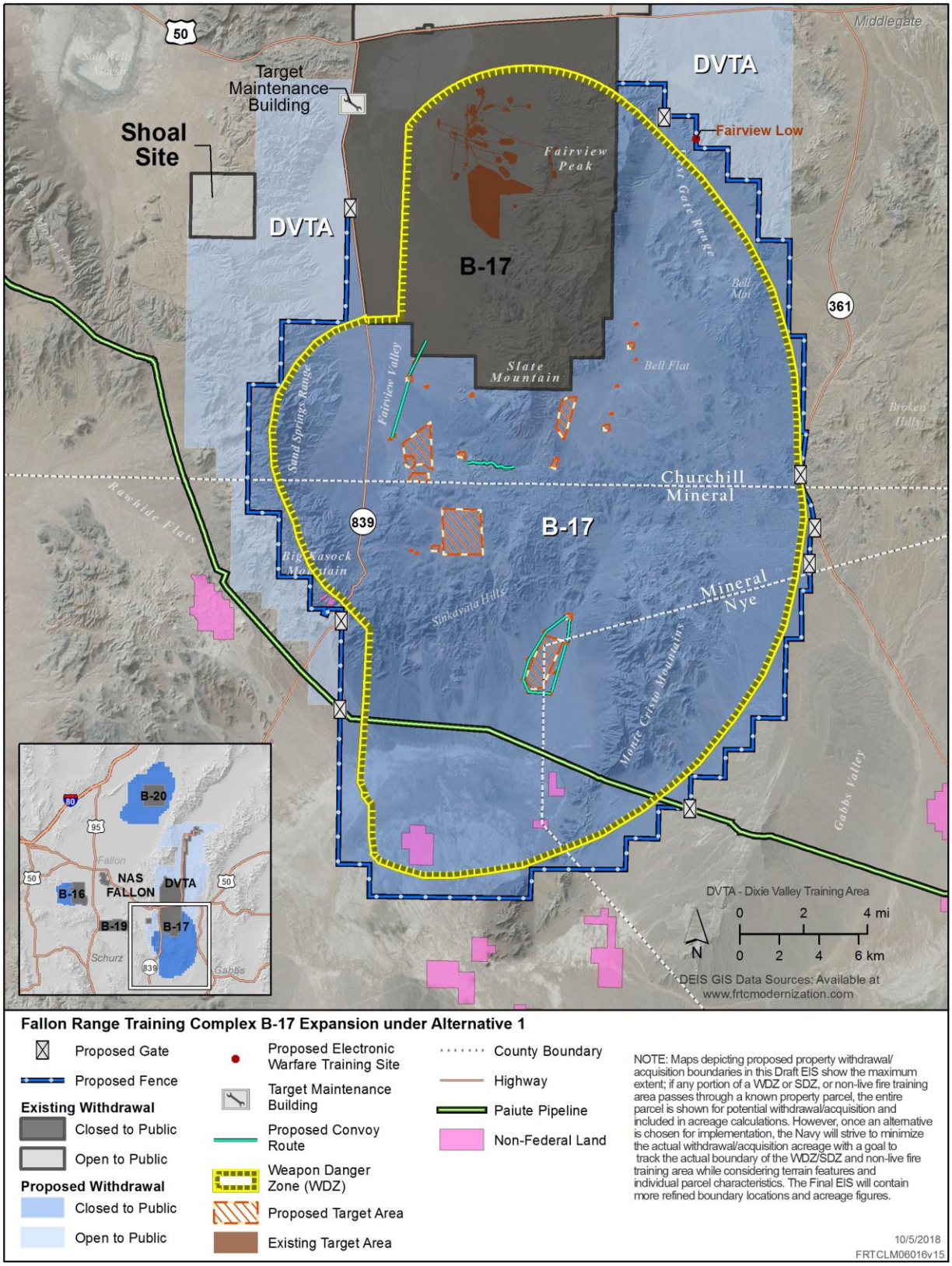

Figure 3-5. Proposed Expansion of the B-17 Range for Alternative 1

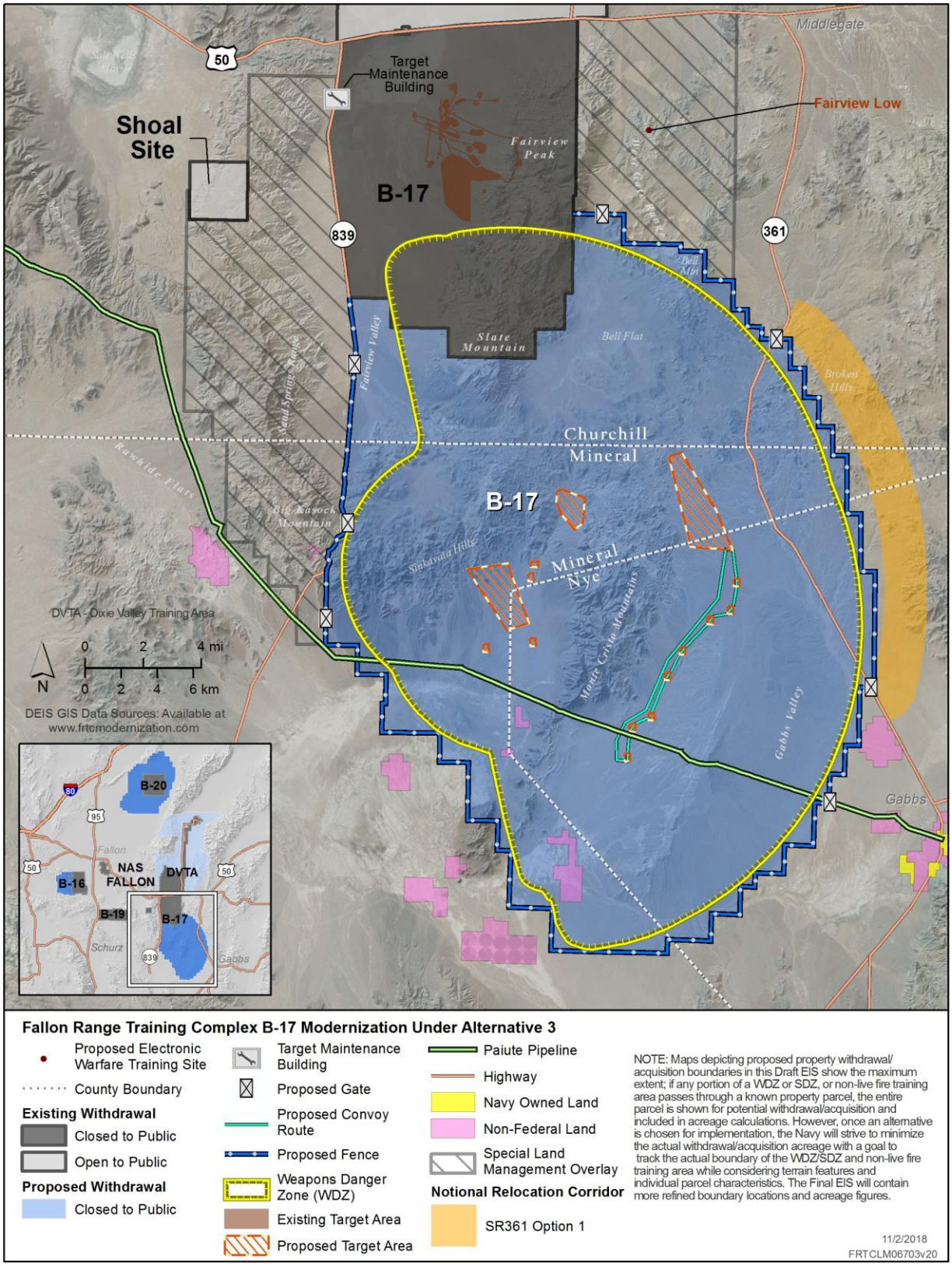

Figure 3-6. Proposed Expansion of the B-17 Range for Alternative 3

Table 3-4. Mission Distribution for B-17

Aircraft	Tracked Patterns			Area Missions					
	Entry/Exit	Strafing	Air Gunnery	Bombing Delivery	CAS	BFM/ ACCT	Support	MARS Strike	Air Gunnery
F-35A	✦	✦	✦	✦	✦				
F/A-18E/F	✦	✦	✦	✦	✦	✦			
F/A-18C/D	✦	✦	✦	✦	✦	✦			
F-5E	✦						✦		
F-16	✦						✦		
EA-18G	✦					✦			
H-60	✦		✦		✦			✦	✦

✦ Baseline & Proposed Action ✦ Baseline Only ✦ Proposed Action Only

3.2.1 Tracked Missions

B-17 has a conventional/strafing track with varied mission profiles, a tactical intercept track, a helicopter air gunnery track, and a helicopter entry/exit route between NAS Fallon and the range. Figure 3-7 displays the fixed-wing strafing track and one helicopter track within B-17 for Existing Conditions. Fixed-wing aircraft travel along the staffing route at 450 kts between 500 and 1,000 ft AGL. The H-60 flies the air gunnery route at 110 kts between 100 and 500 ft AGL. The proposed expansion of B-17 moves the conventional/strafing tracks and helicopter air gunnery track to the south to match the new targets for Alternative 1 (Figure 3-8). For Alternative 3, some tracked operations will remain at the current target areas, and more operations will move further south to coincide with the new proposed Alternative 3 targets (Figure 3-9). These new southern operations were modeled as area operations since the attack headings are less restrictive.

3.2.2 Area Missions

Area missions within the B-17 range include bombing delivery, CAS activity, BFM, AACT, and support operations within and through R-4804 for the fixed-wing aircraft, CAS, maritime strike (MARS), and Air Gunnery missions for the H-60 within the helicopter operating area inside of R-4804 and to/from R-4804. Figure 3-10, Figure 3-11, and Figure 3-12, outline the Baseline, Alternative 1, and Alternative 3 operation areas, respectively, for fixed-wing and helicopter operations within B-17. Alternatives 1 and 3 split the CAS operations between the baseline area and the Alternative 1 and 3 proposed target areas. Alternative 3 area is larger because more targets are proposed, which requires the CAS area surrounding the targets to be larger. For the other non-CAS operations, the area missions are shifted to the south for Alternatives 1 and 3 to coincide with the Alternative 1 and Alternative 3 target locations. Flight altitudes range from 7,000 ft AGL to 30,000 ft MSL for the fixed-wing operations and 100 to 500 ft AGL for the H-60 operations. Fixed-wing airframes performing bombing delivery and CAS missions within B-17 were modeled between 400 and 500 kts, and F-5E support missions were modeled at 350 kts. H-60 missions were modeled at 70 and 90 kts. The training durations for the fixed-wing aircraft were modeled at 90 minutes, and the helicopter modeled durations were 2 hours. The BFM and AACT missions do not change.

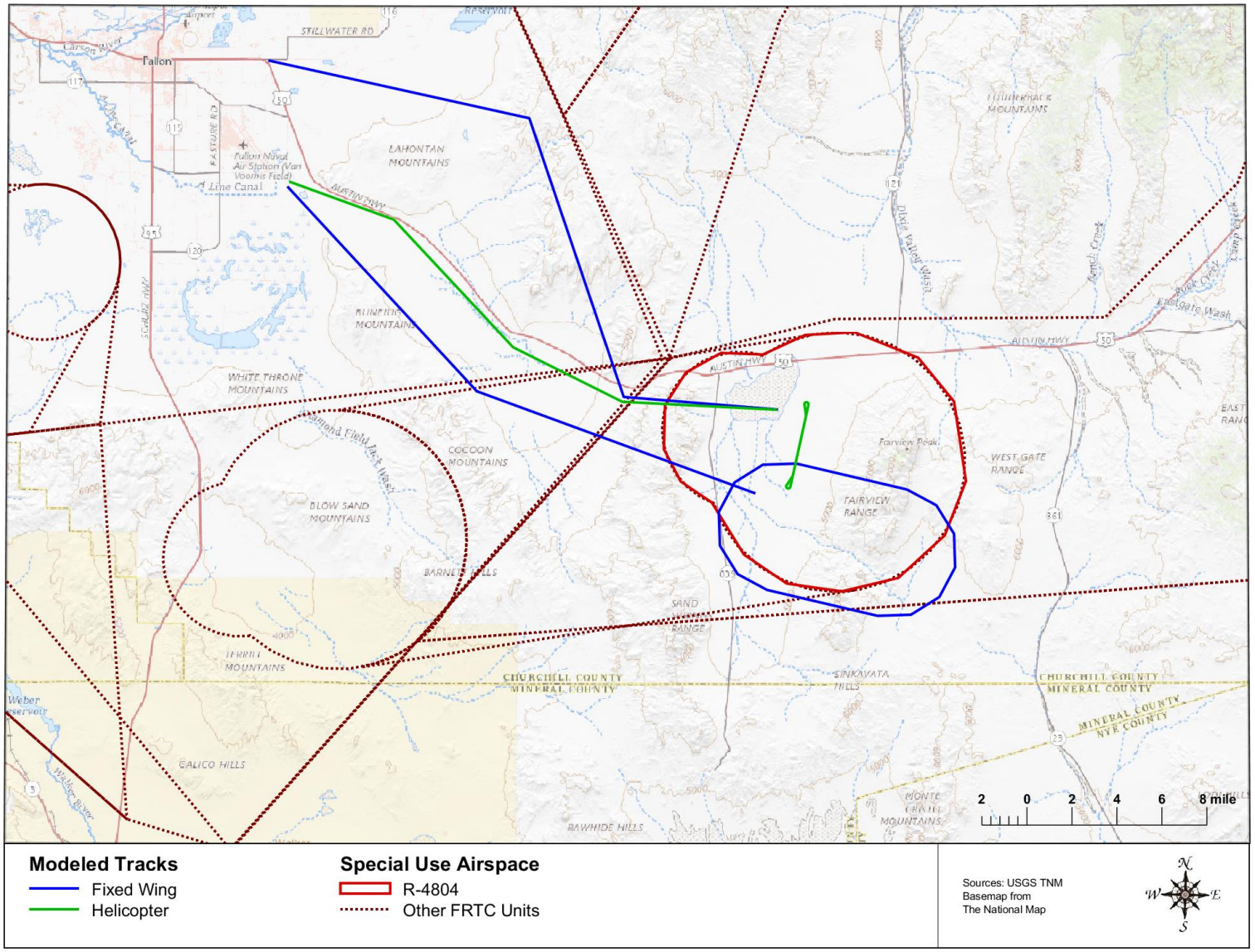

Figure 3-7. Baseline Fixed-wing and Helicopter Routes Into/Out and within B-17

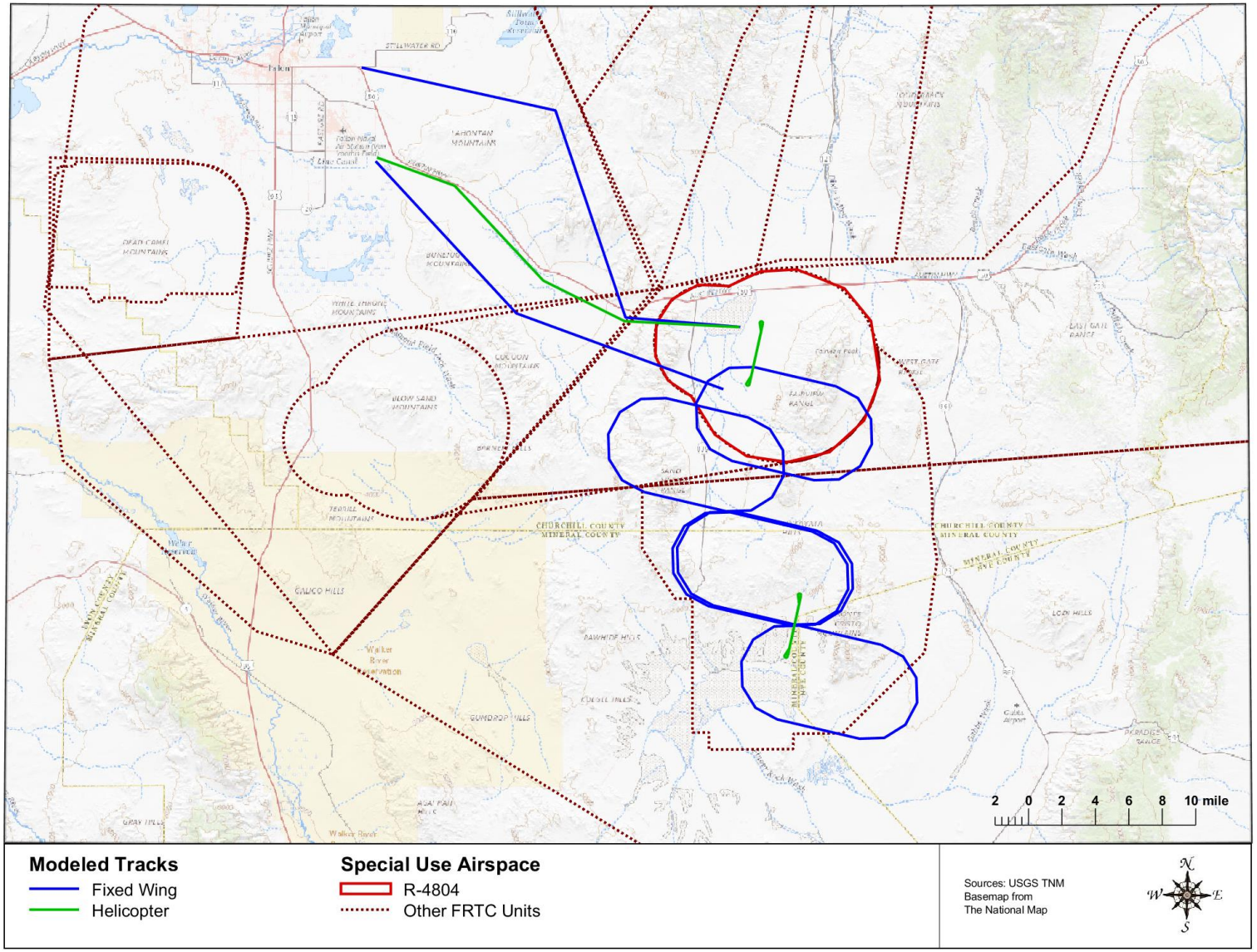

Figure 3-8. Proposed Alternative 1 Fixed-wing and Helicopter Routes Into/Out and within B-17

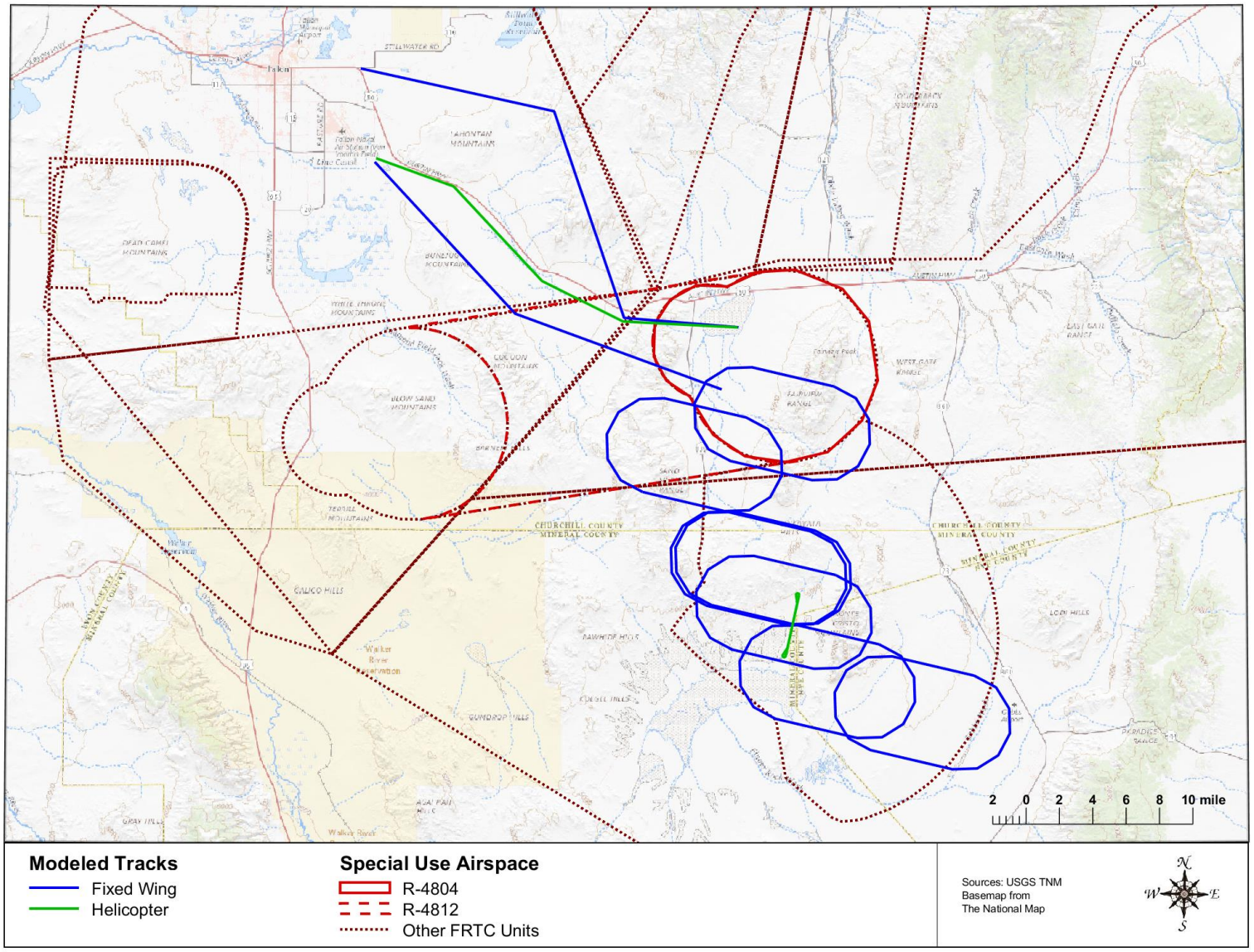

Figure 3-9. Proposed Alternative 3 Fixed-wing and Helicopter Routes Into/Out and within B-17

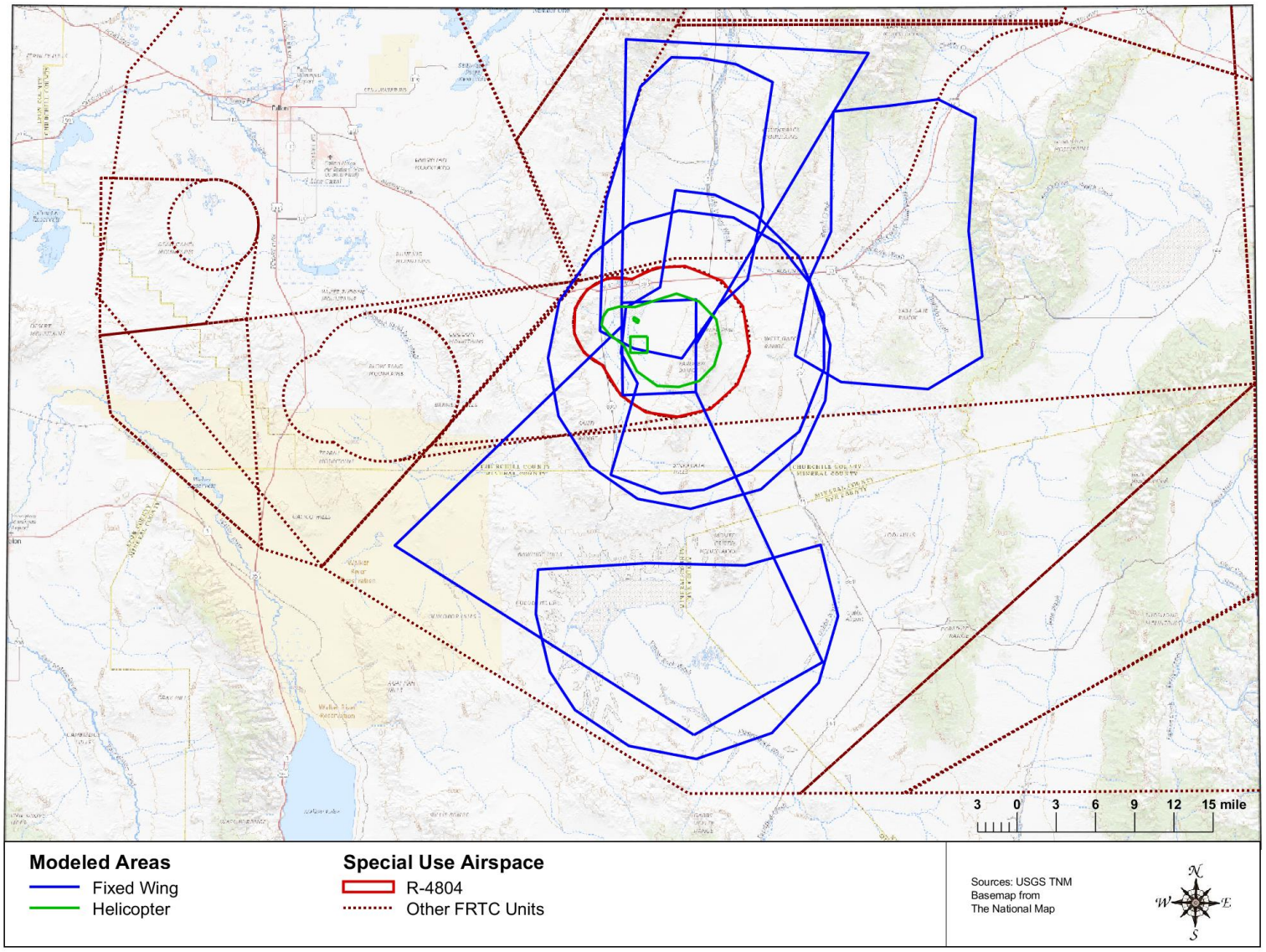

Figure 3-10. B-17 Baseline Modeled Operational Areas (including R-4804)

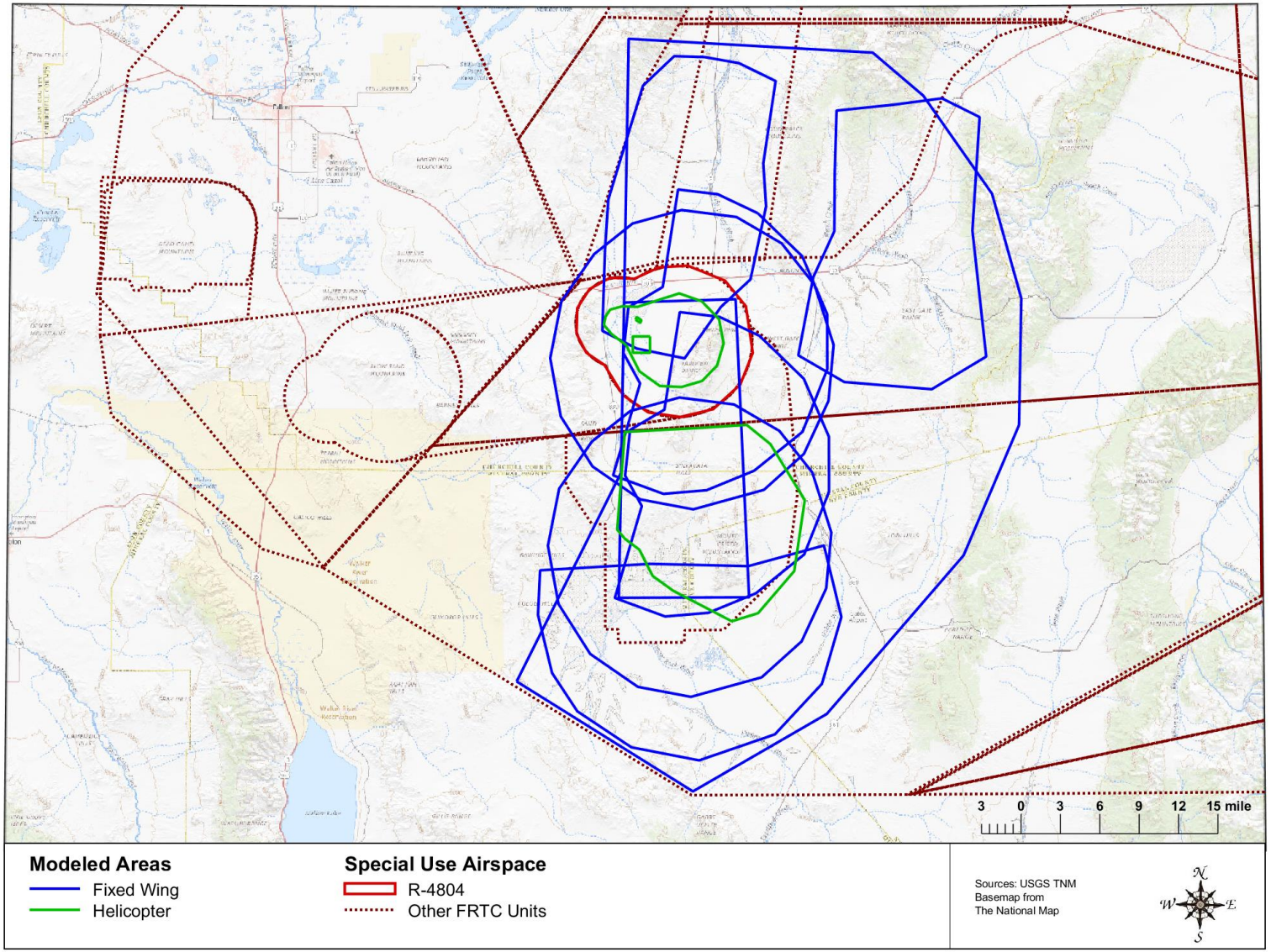

Figure 3-11. Proposed Alternative 1 Modeled Operational Areas (including R-4804)

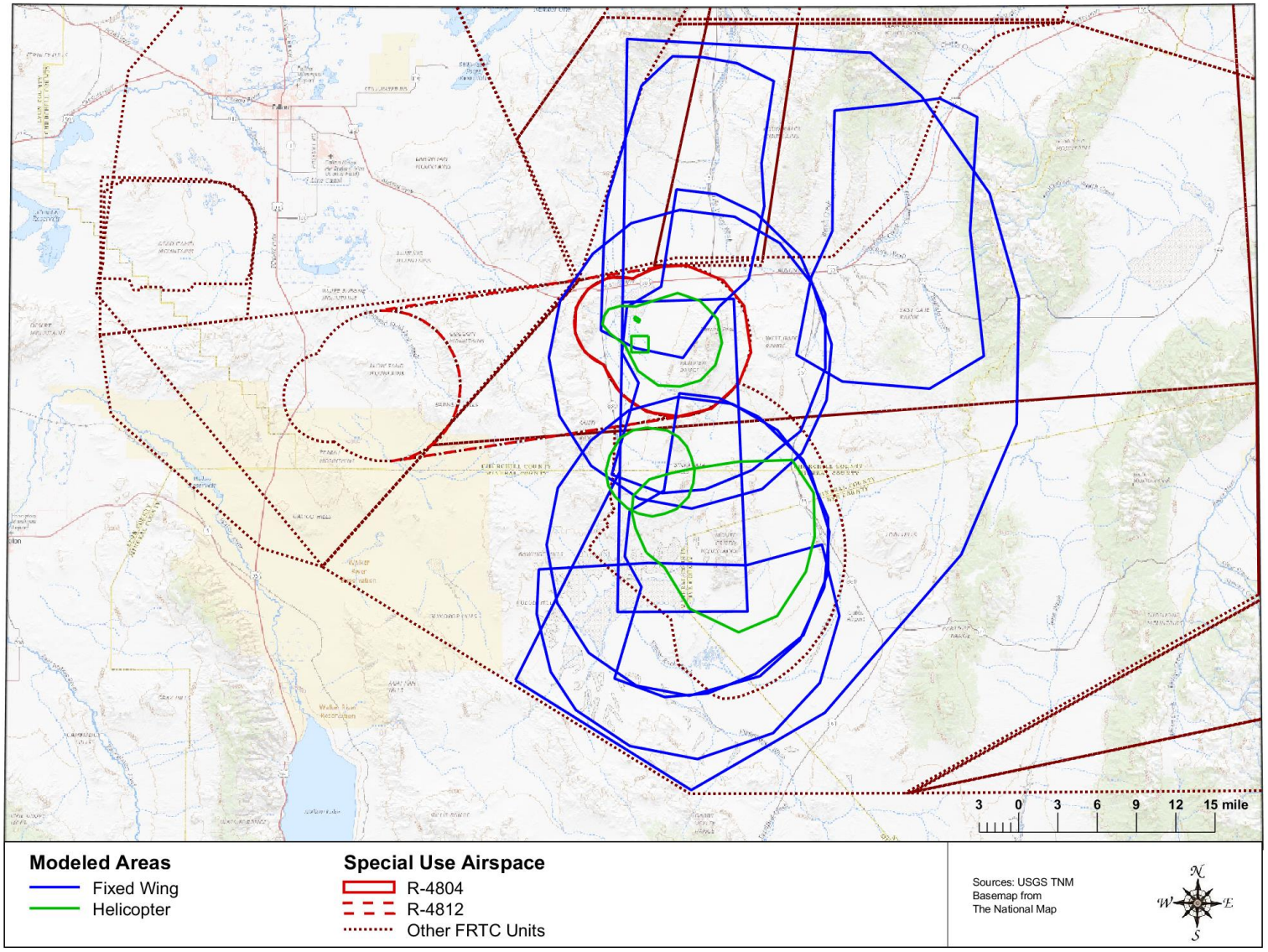

Figure 3-12. Proposed Alternative 3 Modeled Operational Areas (including R-4804)

3.3 Bravo-19 Range Flight Training Missions

The B-19 area (including R-4810) is comprised of alkali flats with areas of patchy desert sand, sparsely vegetated by sagebrush. This target complex, which lies approximately 16 NM S-SE of NAS Fallon at an elevation of 3,882 ft MSL, consists of a strafe target with an acoustic transducer, a HEI area, and a helicopter strafe area. The primary missions are CAS and strafing. The Proposed Action Alternatives call for the establishment of R-4810B with a floor of 17,000 ft MSL and a ceiling of 17,999 ft MSL. Within B-19 Alternatives 1 and 3 are identical. Additionally, the only added training missions for the Proposed Action will be for the F-35B/C, which will follow the F/A-18E/F missions. The No Action Alternative would likely remove all B-19 operations. Table 3-5 displays the general tracked training missions and area missions conducted by each airframe within B-19, which includes R-4810. The mission types and the associated profiles for each aircraft type are described in detail in the following sections.

Table 3-5. Mission Distribution for B-19

Aircraft	Tracked Patterns			Area Missions				
	Entry/Exit	Strafing	Rotocraft Gunnery	CAS	Bombing	ACCT	Support	TERF
F-35A	✦	✦		✦	✦			
F/A-18E/F	✦	✦		✦	✦			
F/A-18C/D	✦	✦		✦	✦			
F-5E	✦						✦	
F-16	✦						✦	
EA-18G	✦					✦		
H-60	✦		✦	✦				✦

✦ Baseline & Proposed Action ✦ Baseline Only ✦ Proposed Action Only

3.3.1 Tracked Missions

B-19 has tracks for fixed-wing aircraft and helicopter air gunnery and entry/exit routes between NAS Fallon and the range. Figure 3-13 displays the two fixed-wing and one helicopter tracks within B-19. Fixed-wing aircraft travel along the track between 350 and 500 kts and between 500 and 1,500 ft AGL. The H-60 flies the air gunnery route at 110 kts, between 100 and 500 ft AGL.

3.3.2 Area Missions

Area missions within B-19 include CAS activity for the fixed-wing aircraft, and CAS and TERF missions for the H-60 (within the helicopter operating area inside of R-4810 and to/from R-4810). Figure 3-14 outlines both the Baseline operations and Proposed Action operations area (which are identical) for fixed-wing and helicopter operations within B-19. Flight altitudes range from 7,000 to 15,000 ft AGL for the fixed-wing operations and 100 to 200 ft AGL for the H-60 operations. Fixed-wing airframes performing CAS missions within B-19 were modeled between 325 and 350 kts with a duration of 90 minutes. The H-60 missions were modeled at 40 to 90 kts with a duration of 2 hours.

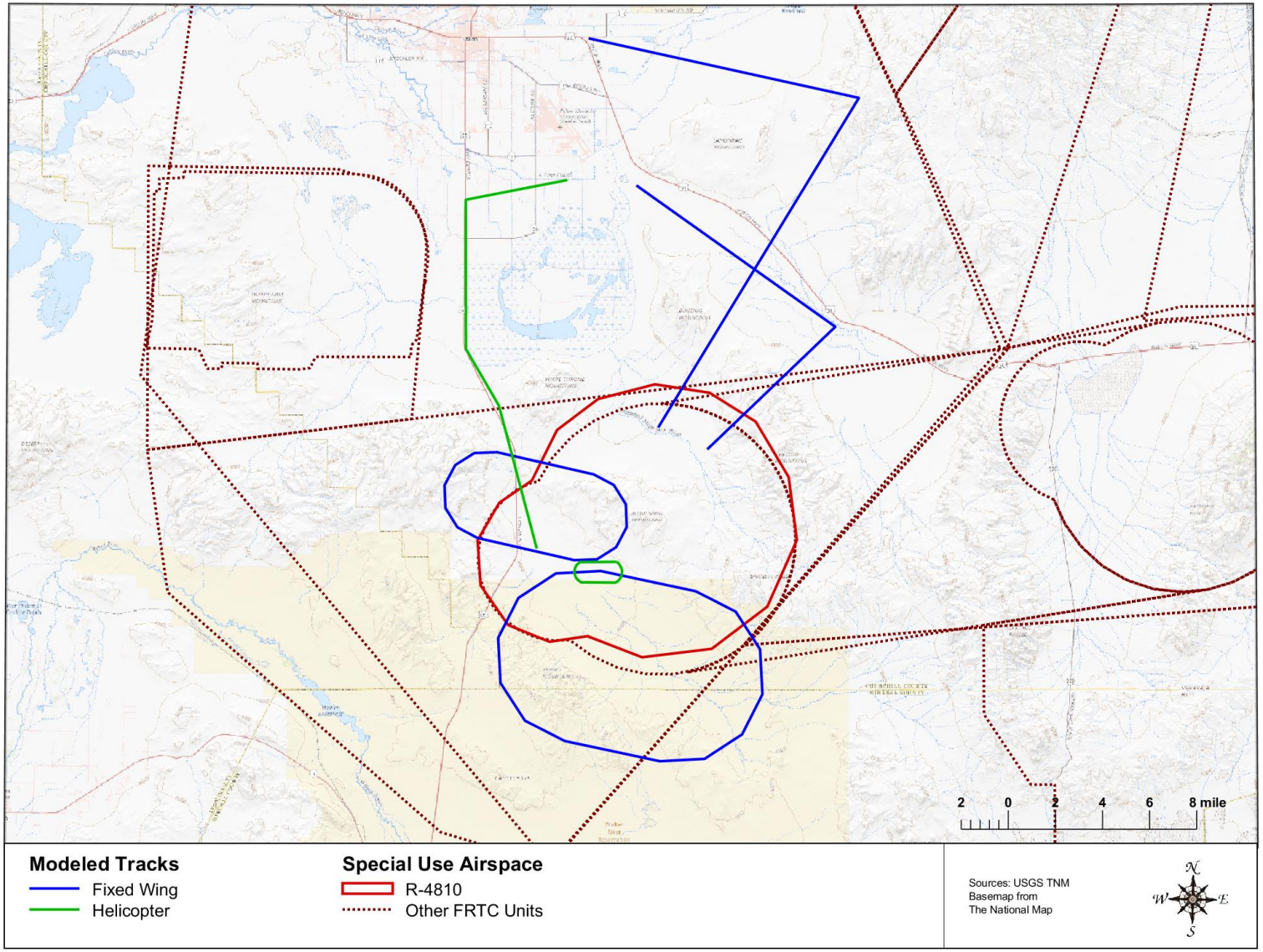

Figure 3-13. Fixed-wing and Helicopter Modeled Track Operations Into/Out and Within B-19

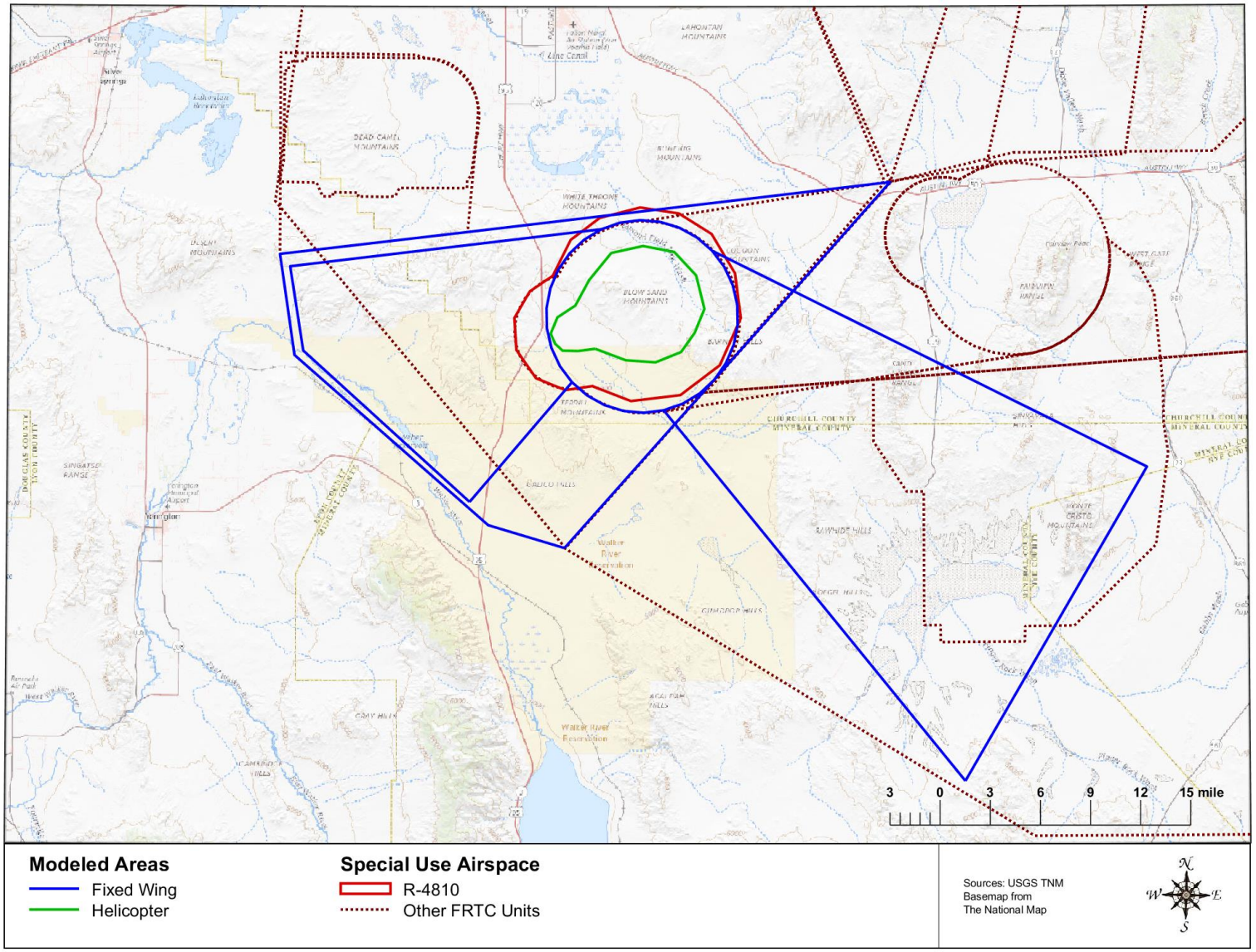

Figure 3-14. B-19 Baseline and Proposed Modeled Operational Areas (including R-4810)

3.4 Bravo-20 Range Flight Training Missions

The B-20 area (including R-4813) is approximately 31 NM N-NE of NAS Fallon at an elevation of 4,040 ft MSL at the center of the target area. In the Proposed Action Alternatives, new targets are added NW into the expanded area, and all associated tracked operations and area operations are shifted to the NW except for BFM missions. The No Action Alternative would likely remove all air-to-ground B-20 operations. Table 3-6 displays the general tracked training missions and area missions conducted by each airframe within B-20, which includes R-4813. The mission types and the associated profiles for each aircraft type are described in detail in the following sections.

Table 3-6. Mission Distribution for B-20

Aircraft	Tracked Patterns				Area Missions					
	Entry/Exit	Conventional Bombing	Strafing	Rotocraft Gunnery	BFM	Conventional Bombing	Support	MARS Strike	FAC/ FIAC	Air Gunnery
F-35A	✦		✦		✦	✦				
F/A-18E/F	✦	✦	✦		✦	✦				
F/A-18C/D	✦	✦	✦		✦	✦				
F-5E	✦						✦			
F-16	✦						✦			
EA-18G	✦									
H-60	✦			✦				✦	✦	✦

✦ Baseline & Proposed Action ✦ Baseline Only ✦ Proposed Action Only

3.4.1 Tracked Missions

B-20 has a conventional bombing track and a strafing track for fixed-wing aircraft, a helicopter air gunnery track, and a helicopter entry/exit route between NAS Fallon and the range. Under the Proposed Action Alternatives, new targets would be added NW of the existing targets into the expanded area. The strafing, and rotorcraft air gunnery tracks would all be shifted to the new targets, and the conventional bombing mission will be switched to an area type mission. Figure 3-15 displays the two fixed-wing and single helicopter routes within B-20 for Baseline, and Figure 3-16 displays the routes for the Proposed Action. Fixed-wing aircraft travel along the conventional and strafing tracks between 400 and 465 kts at 1,000 ft AGL. The F-35B/C level bombing tracks are flown at 500 kts and 10,000 ft AGL. The H-60 flies the air gunnery route at 110 kts, between 100 and 500 ft AGL.

3.4.2 Area Missions

Area missions within B-20 include BFM, air-to-ground, and support activity for the fixed-wing aircraft, MARS fast attack craft (FAC)/fast inshore attack craft (FIAC), and air gunnery missions for the H-60 (within the R-3813 helicopter operating area). The Proposed Action Alternatives allows the conventional bombing mission to utilize a significantly larger range of attack angles, and the helicopter area missions are shifted to include the new target areas in the expanded B-20 area. Figure 3-17 outlines the Baseline operations area and Figure 3-18 outlines the Proposed Action operations area for fixed-wing and helicopter operations within B-20. Flight altitudes range from 500 to 15,000 ft AGL for air-to-ground missions and 9,000 to 25,000 ft AGL for BFM missions. H-60 missions were modeled between 100 and 500 ft AGL. Fixed-wing airframes performing all missions within B-20 were modeled between 350 and 500 kts, and H-60 missions were modeled at 70 to 80 kts.

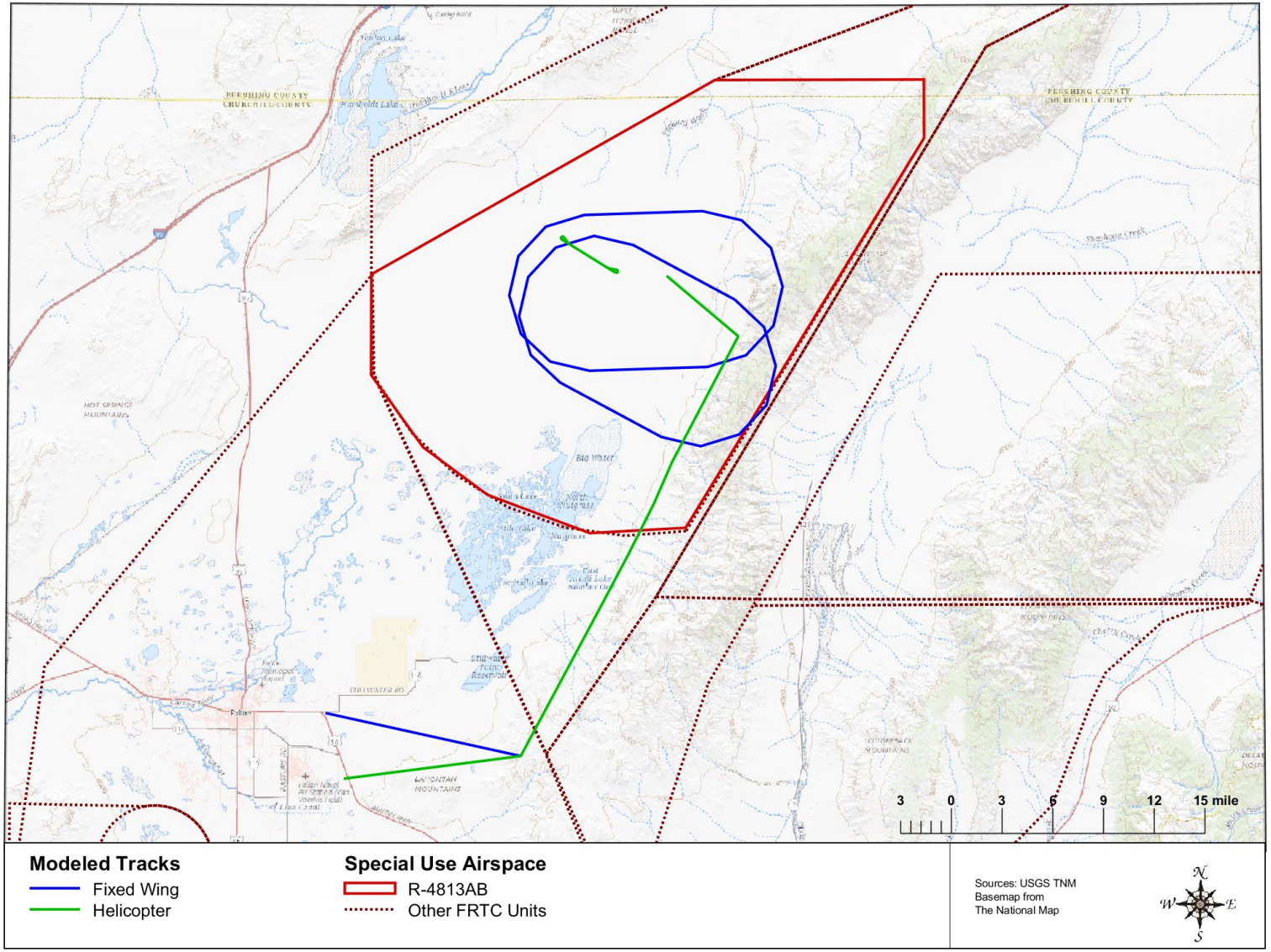

Figure 3-15. Baseline Fixed-wing and Helicopter Modeled Track Operations Within B-20

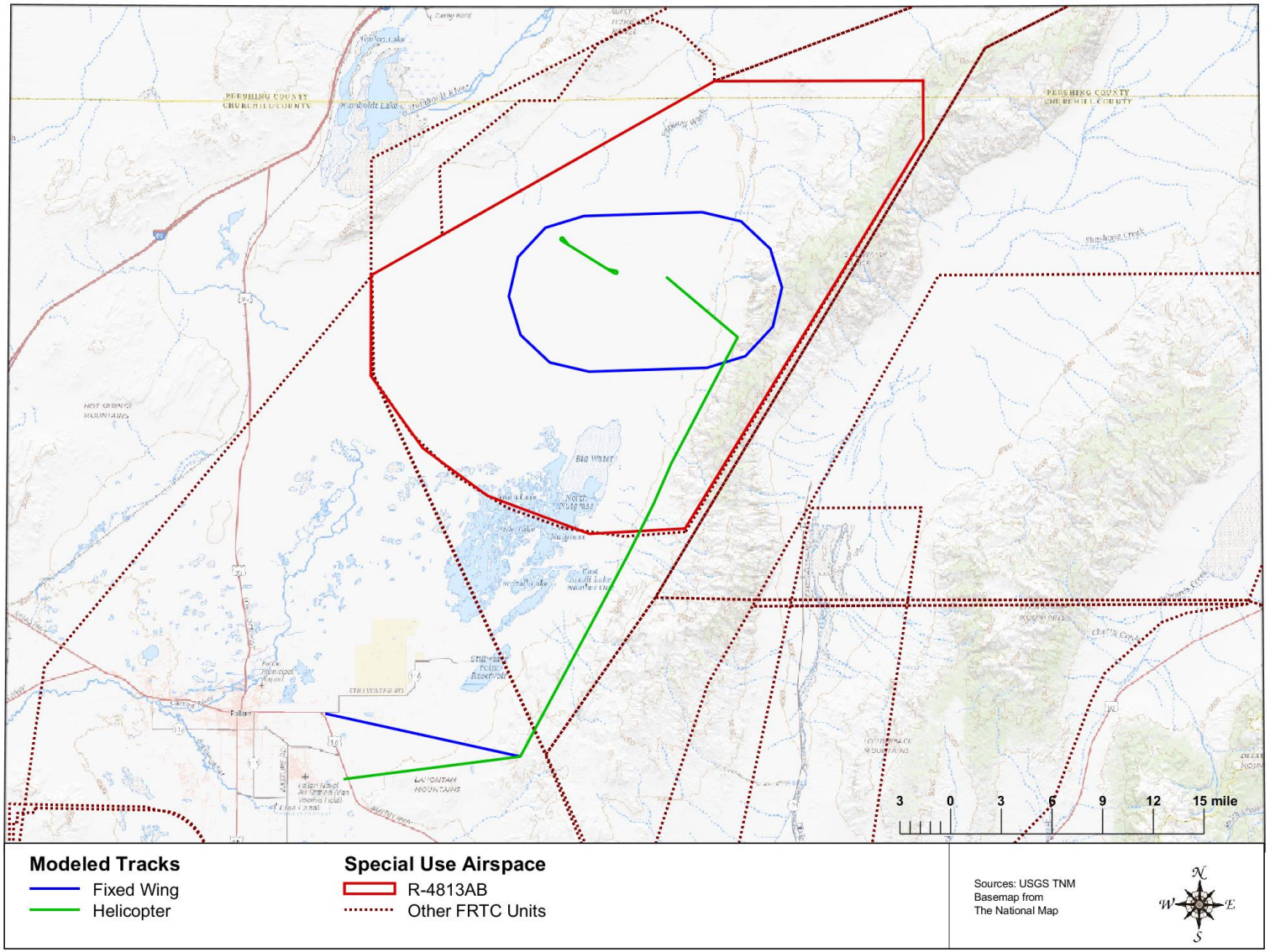

Figure 3-16. Proposed Fixed-wing and Helicopter Modeled Track Operations Within B-20

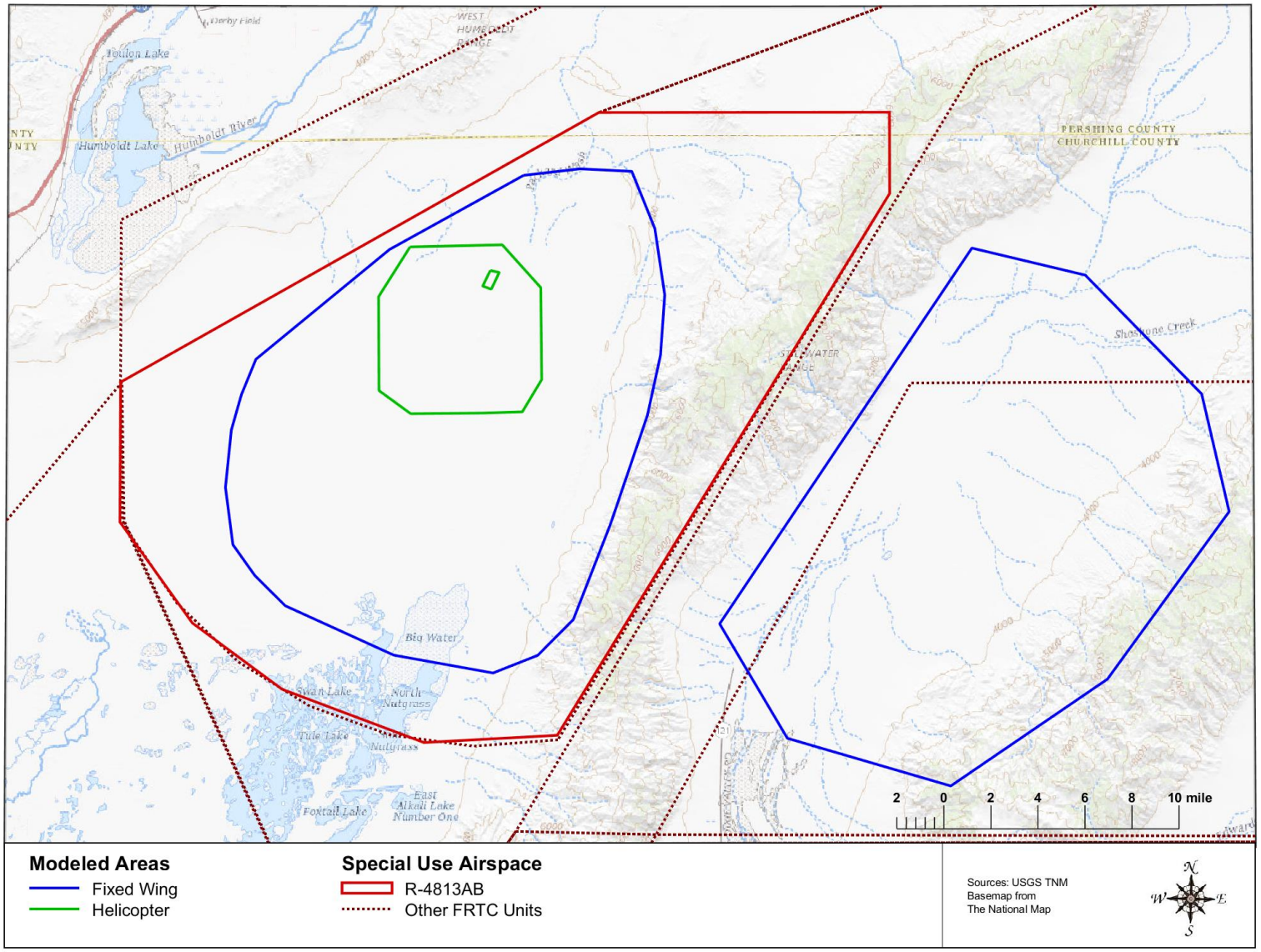

Figure 3-17. B-20 Baseline Modeled Operational Areas (including R-4813)

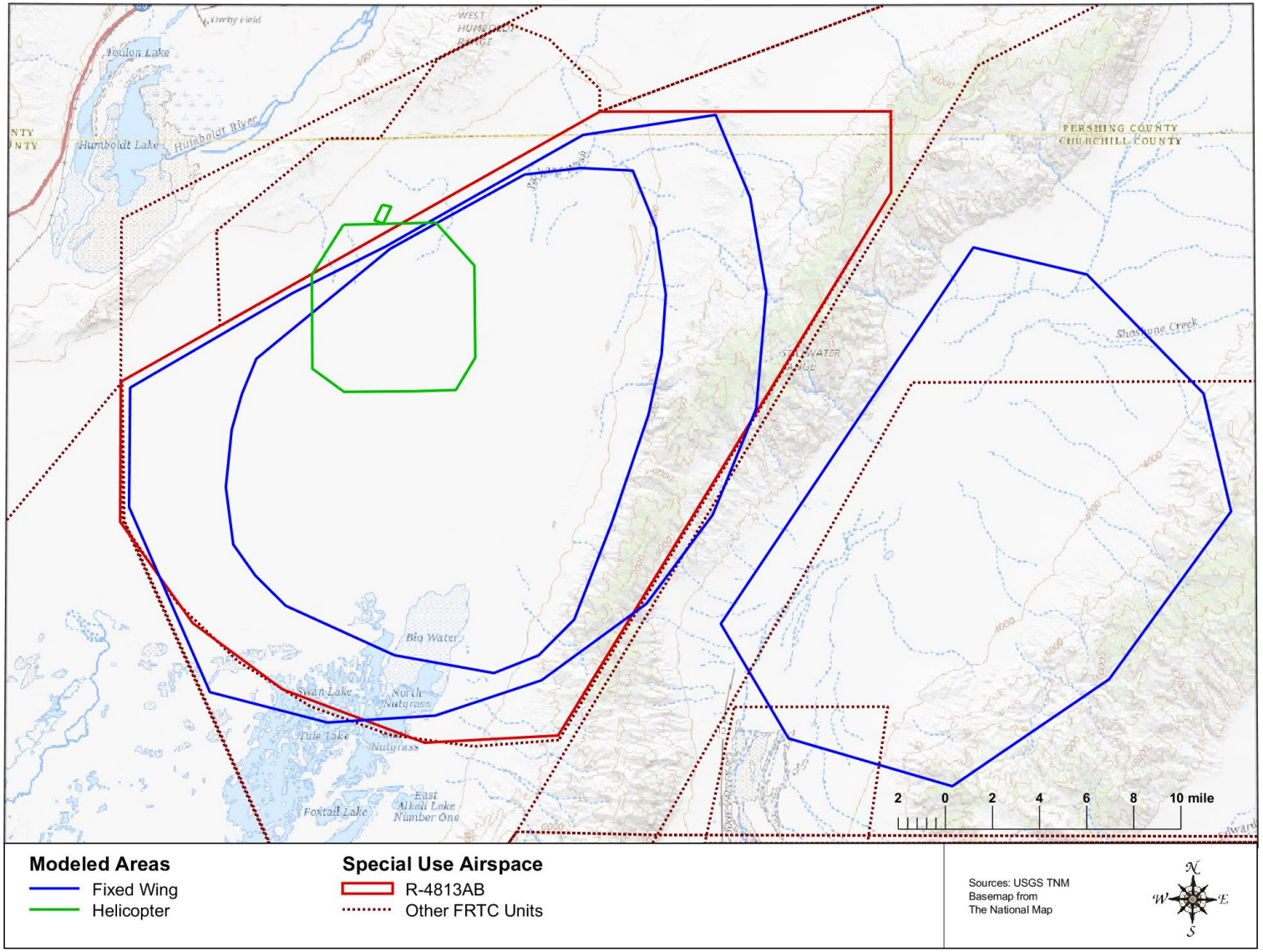

Figure 3-18. B-20 Proposed Modeled Operational Areas (including R-4813)

3.5 Commodore and Adversary Combat Training Range Flight Operations

The FRTC is the center for all Navy and some Marine graduate level aviation strike warfare training. This training is conducted under the cognizance of the Naval Aviation Warfighting Development Center (NAWDC). Analysis of aircraft operations in the previous sections focused on activity in and around the Bravo training ranges, which commonly utilized ground targets. A significant portion of range operations do not focus on the individual Bravo ranges, but instead utilize much larger portions of the FRTC. These operations use multiple contiguous areas as single flight areas. Table 3-7 displays the general tracked training missions and area missions conducted by each airframe within FRTC under Commodore and ACT, which extend beyond individual MOAs and ranges. The Proposed Action Alternatives expand the areas of ACT in the FRTC, and the No Action Alternative would be the same as the Baseline for these missions, since the individual ranges are not utilized. Alternatives 1 and 3 of the Proposed Action are identical for Commodore and ACT missions. The mission types and the associated profiles for each aircraft type are described in detail in the following sections.

Table 3-7. Mission Distribution for Commodore and ACT

Aircraft	Tracked Routes						Area Mission Locations			
	Commodore	Admiral	LFE Direct	Bandit	Tactical	Mountain Training	Commadore	NAWDC-1/ NAWDC-2	BFM/ ACCT	Helicopter Dixie/Fairview
F-35A	✦	✦	✦	✦	✦		✦	✦		
F/A-18E/F	✦	✦	✦	✦	✦		✦	✦		
F/A-18C/D	✦	✦	✦	✦	✦		✦	✦		
F-5E	✦	✦		✦			✦		✦	
F-16	✦	✦		✦			✦		✦	
EA-18G	✦	✦	✦		✦		✦	✦	✦	
H-60						✦	✦	✦	✦	✦

✦ Baseline & Proposed Action ✦ Baseline Only ✦ Proposed Action Only

3.5.1 Tracked Missions

For ACT exercises, the FRTC contains Commodore, Admiral, and Large Force Exercise (LFE) Direct Entry and Exit routes, as well as Bandit Exit routes for fixed-wing aircraft. For the missions, six (6) tactical corridors are modeled to represent the strike and support aircraft movements during an ACT exercise. Figure 3-19 and Figure 3-20 display the five fixed-wing exit/entry routes and the six tactical corridors for ACT for Baseline and Proposed Action, respectively. Fixed-wing aircraft travel along the Entry and Exit routes at 300 to 350 kts, between 2,000 ft AGL and 14,000 ft MSL. The width of the Entry and Exit routes were expanded relative to the 2012 noise study.[xxiii] This expansion results in the noise from these Entry and Exit routes being dispersed over a larger area and thereby reduces their contribution to the overall noise exposure. For the tactical corridors, the aircraft airspeed is modeled at 500 kts between 18,000 ft MSL and 30,000 ft MSL with a width of 16 nm.

3.5.2 Area Missions

Modeling of the Adversary Combat Training fixed-wing area missions include three (3) Holding, eight (8) Combat Air Patrol (CAP), and three (3) Fight for F-16, F-5, EA-18G, F-35B/C, F-18C/D and F-18E/F NAWDC-

1 (upper half of the FRTC) and NAWDC-2 (lower half of the FRTC) are used by the F-35B/C and F-18s (including EA-18G). MOAs N1, N2, S1, and S2 are used by F-5E, F-16, and EA-18G. The H-60 performs missions in all operating areas described above. Figure 3-21 outlines the Baseline operations of fixed-wing and helicopter operations for ACT. The Proposed Action (Figure 3-22) has the following impacts:

- The northern border of the FRTC, beginning with the Carson MOA to the west and extending to the Fallon North 4 MOA to the east, would be extended to the north and have a 200 ft floor and 50,000 ft MSL ceiling to increase airspace utilization/efficiencies for LFE.
- Ranch Low/High MOA would be modified to increase the ceiling of the airspace (from 13,000 to 17,999 ft MSL) and to combine the Ranch Low MOA and Ranch High MOA into a single airspace (Ranch MOA).
- The Duckwater ATCAA border would be modified horizontally to better align with local air traffic routes. A new Duckwater MOA would be established (200 ft AGL floor to 17,999 ft MSL ceiling) that aligns with the newly proposed Duckwater ATCAA.
- Diamond MOA would be established (1,200 ft AGL floor and 17,999 ft MSL ceiling) and would align with the existing boundaries of the Diamond ATCAA.
- Zircon ATCAA would be expanded to align with the Diamond ATCAA boundaries and would be divided into three subdivisions with the same floor (18,000 ft MSL) but differing ceilings (Ruby, 28,000 ft MSL; Zircon North, 50,000 ft MSL; and Zircon South, 50,000 ft MSL). The Zircon North plus Zircon South area would replace the Hold area for ACT.
- The Smokie ATCAA border would be modified and increased in altitude from 25,000 to 29,000 ft MSL. A new Smokie MOA would be established (200 ft AGL floor to 17,999 ft MSL ceiling) that aligns with the newly proposed Smokie ATCAA.
- The Fallon South 2 and 3 MOAs would be combined into a single MOA and be renamed as Fallon South 2 MOA.
- Likewise, the Fallon South 4 and 5 MOAs would be combined into a single MOA and renamed as Fallon South 3 MOA.

Flight altitudes range from 500 to 50,000 ft AGL for fixed-wing ACT missions. H-60 missions within NAWDC-1 and NAWDC-2 were modeled between 100 and 200 ft AGL, and Dixie/Fairview missions were modeled between 100 and 500 ft AGL. Fixed-wing airframes performing missions in NAWDC-1 and NAWDC-2 were modeled at 500 kts, and missions within Hold and Fight (including Zircon North and South) were modeled at either 350 kts or 500 kts. H-60 missions were modeled at 40 and 70 kts. The duration of these training missions is modeled as 2 hours.

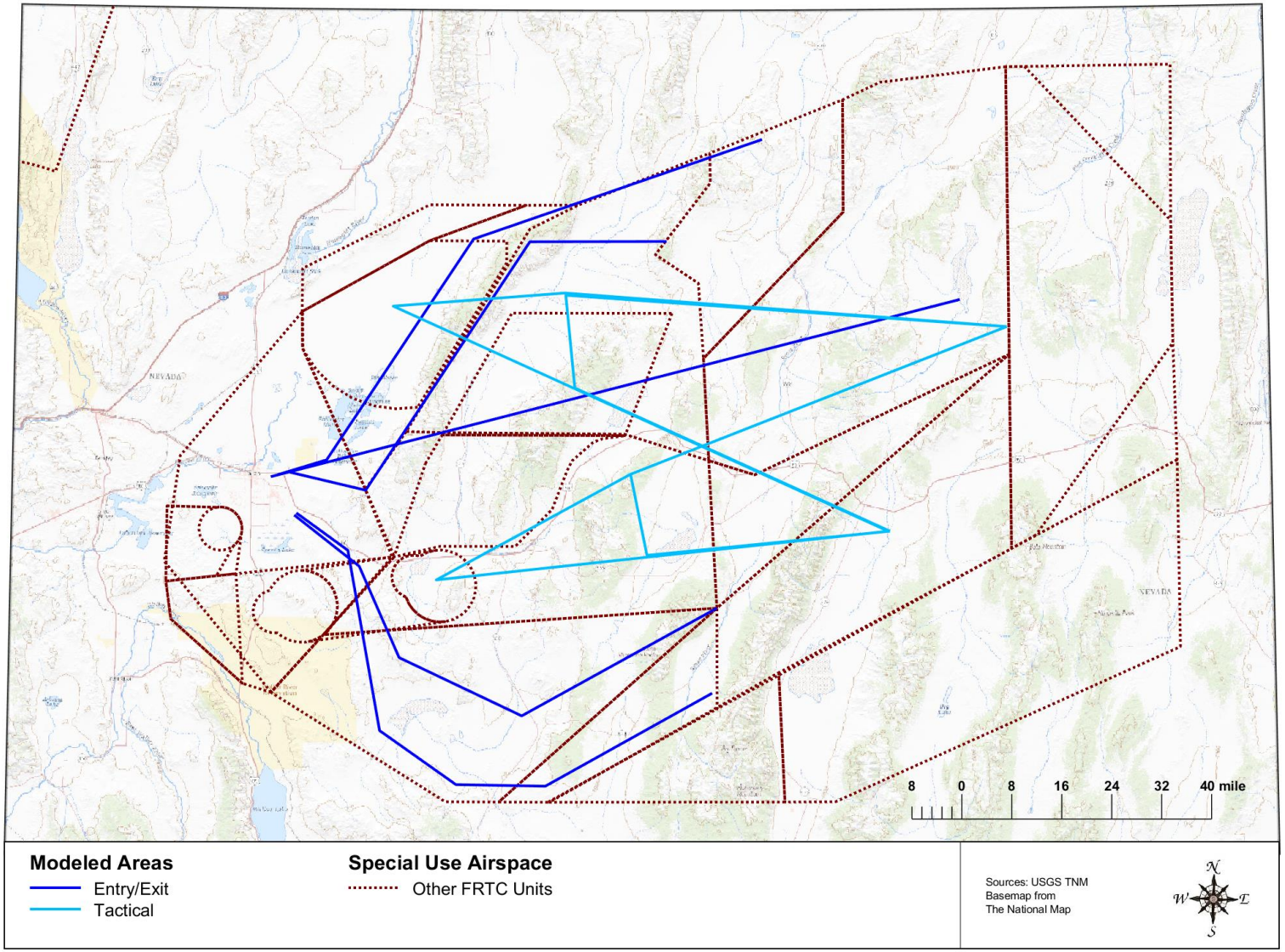

Figure 3-19. Fixed-wing and Helicopter Modeled Entry/Exit and Tactical Routes for ACT for Baseline

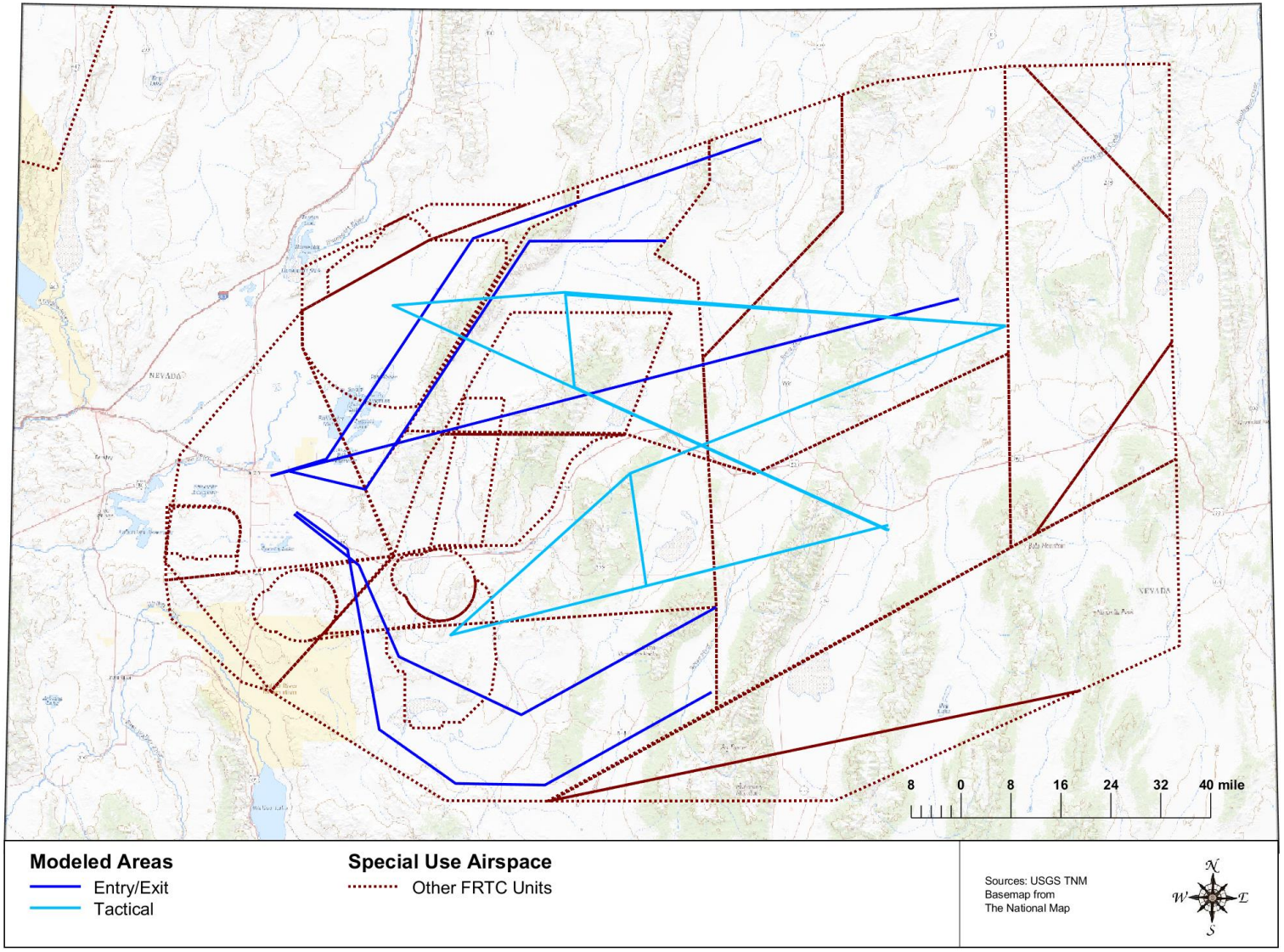

Figure 3-20. Fixed-wing and Helicopter Modeled Entry/Exit and Tactical Routes for ACT for Proposed Action

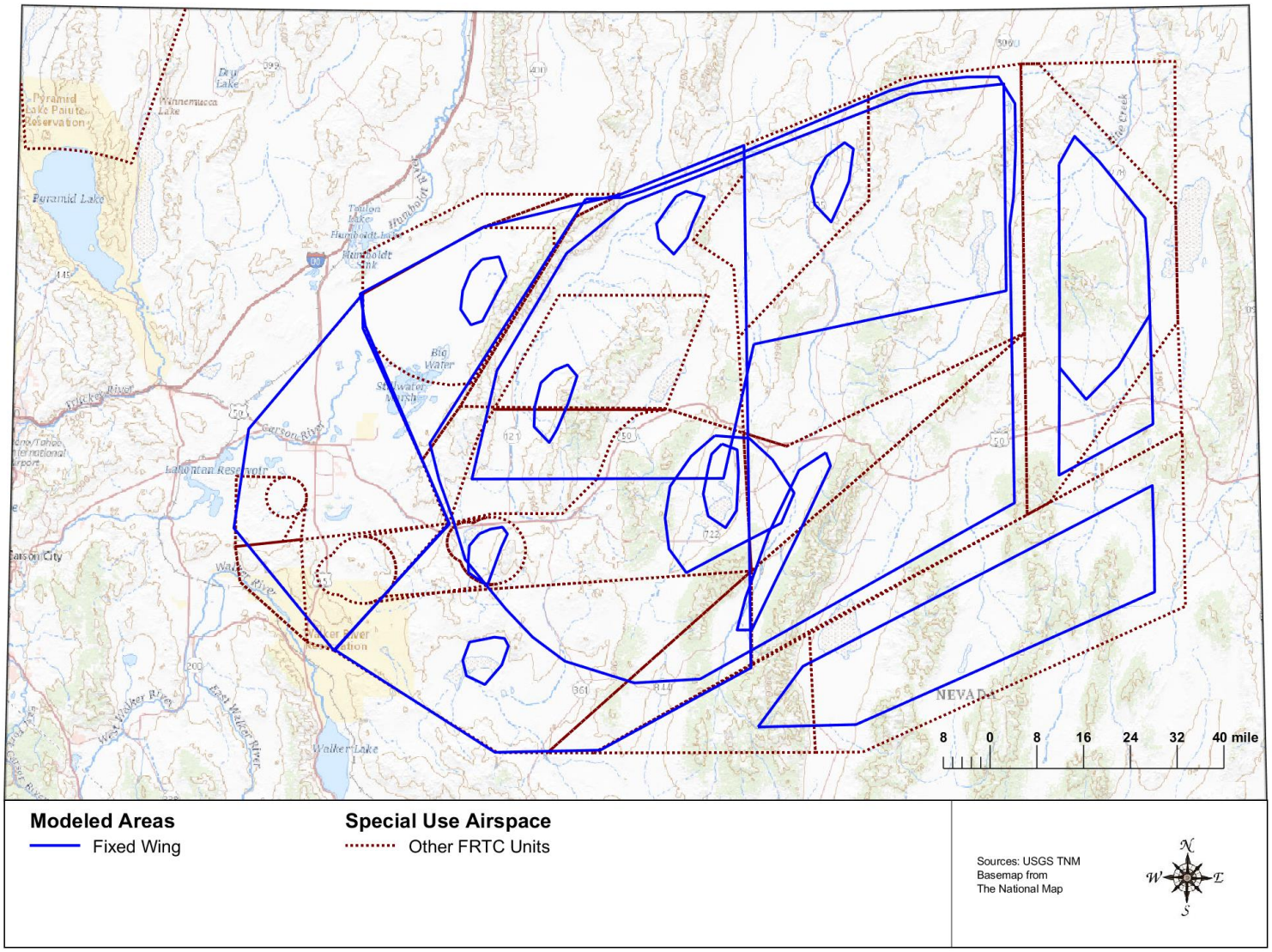

Figure 3-21. Baseline Modeled ACT Operational Areas

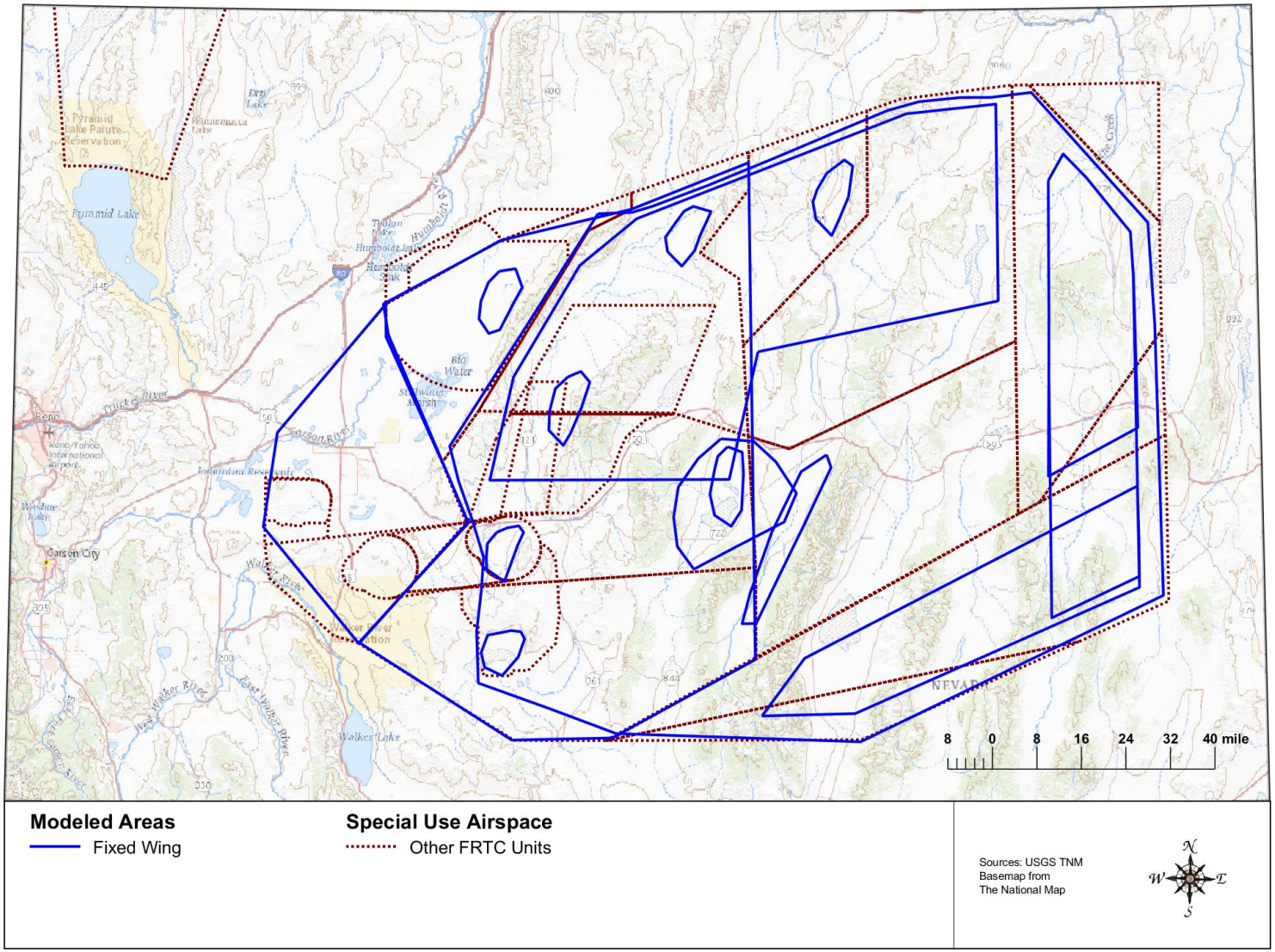

Figure 3-22. Proposed Modeled ACT Operational Areas

3.6 Reno MOA Flight Operations

Reno MOA/ATCAA lies north of Pyramid Lake (see Figure 1-1). Existing Operations of the MOA are 13,000 ft MSL up to but not including 18,000 ft MSL. For the Reno ATCAA, operations are 18,000 ft MSL to 31,000 ft MSL. For the Proposed Action, the MOA/ATCAA has a new floor of 1,500 ft AGL instead of 13,000 ft MSL, and both fleet and adversary squadrons would increase their utilization of the Reno MOA airspace for additional air combat maneuvering and adversary training missions. Table 3-2 shows the number of each aircraft that fly within the Reno MOA/ATCAA. For baseline, the annual operations are less than 1,100, and for the Proposed Action, the annual operations are estimated to be less than 1,600. These annual levels result in monthly averages of 92 and 132, respectively.

3.7 Mission Frequency and Distribution

With the various mission types defined, the next step in the noise modeling process is to develop the frequency of each training mission conducted throughout a normal training year. A component of this description includes annual sortie counts reconciled with information provided by aircrews. For this noise study, a sortie is defined as one aircraft flying from home base into FRTC via an applicable entry route, conducting various training operations, and returning to home base via an exit route. Table 3-9 lists the modeled area training operations for Proposed Action Alternative 1 conducted by each aircraft within each range. Table 3-10 lists the modeled area training operations for Proposed Action Alternative 3 conducted by each aircraft within each range. The F-35B/C operations are included in the Proposed Action Alternatives 1 and 3 based on information provided by the VFA-101 squadron currently based at Eglin Air Force Base. The No Action Alternative removes all range operations (B-16, B-17, B-19, and B-20), and keeps all FRTC non-range areas (FRTC Air-to-Air and BFM Mission Types).

Table 3-8. Baseline Aircraft Sorties Area Operations and Mission Types

Aircraft	Main SUA Unit	Area Model ID	Mission Profile ID	Supersonic Potential	Annual Sorties	% of Missions	Day 0700-2200	Night 2200-0700	% Acoustic Night 2200 to 700	% Sorties in Unit	Average Time (min)	Average Time (sec)	Primary Power Setting	Average Airspeed (KIAS)
F/A-18E/F	Commodore	Zircon Hold	F18EHold_B	No	1118	45%	428	75	15%	100%	30	1800	90% NC	350
		fightNew	F18EFgt_Hi	Yes						100%	40	2400	90.5% NC	500
		FightLow1	F18EFgt_Low1	No						100%	2.5	150	90.5% NC	500
		FightLow2	F18EFgt_Low2	No						100%	2.5	150	90.5% NC	500
		Bandit ATCAA	F18EREDHold_ATCAA	No		5%	9	2	15%	18.5%	30.0	1800	90% NC	350
		Bandit High Hold	F18EREDHold_High	No			39	7		81.5%	30.0	1800	90% NC	350
		fightNew	F18EREDFgt_Hi	Yes			48	8		100%	40	2400	90.5% NC	500
		FightLow1	F18EREDFgt_Low1	No			48	8		100%	2.5	150	90.5% NC	500
		FightLow2	F18EREDFgt_Low2	No			48	8		100%	2.5	150	90.5% NC	500
		Zircon Hold	F18EHold_BS	No		25%	238	42	15%	100%	40	2400	90% NC	350
		LFE_T1	F18E_Strike17	No			214	38		90%	NA		90.5% NC	500
		LFE_T1_b20	F18E_Strike20	No			24	4		10%	NA		90.5% NC	500
		Zircon Hold	F18EHold_S	No		25%	238	42	15%	100%	40	2400	90% NC	350
		LFE_T2	F18E_Support17	No			214	38		90%	NA		90.5% NC	500
		LFE_T2_b20	F18E_Support20	No			24	4		10%	NA		90.5% NC	500
	NAWDC-1	NAWDC1a	F18E_NAWDC1a	Yes	9344	100%	5957	1051	15%	75%	90	5400	90.5% NC	500
		NAWDC1_Fgt	F18E_NAWDC1_Fgt	Yes			1986	350	15%	25%	75	4500	90.5% NC	500
		NAWDC1_BHold	F18E_NAWDC1_B	No						12.5%	15	900	90% NC	350
		NAWDC1_RHold	F18E_NAWDC1_R	No						12.5%	15	900	90% NC	350
	NAWDC-2	NAWDC2a	F18E_NAWDC2a	Yes	9209	100%	5871	1036	15%	75%	90	5400	90.5% NC	500
		NAWDC2_Fgt	F18E_NAWDC2_Fgt	Yes			1957	345	15%	25%	75	4500	90.5% NC	500
		NAWDC2_BHold	F18E_NAWDC2_B	No						12.5%	15	900	90% NC	350
		NAWDC2_RHold	F18E_NAWDC2_R	No						12.5%	15	900	90% NC	350
	B-16	UrbanCAS	F18E_16CAS_2	No	636	60%	267	0	0%	70%	90	5400	85% NC	350
		R-4803	F18E_16CAS	No			109	6	5%	30%	90	5400	90.5% NC	500
	B-17	B17-CAS_N	F18E_17CAS_INN	No	1710	87.5%	199	10	5%	14%	90	5400	90% NC	400
		B17-CAS_SW	F18E_17CAS_INSW	No			199	10	5%	14%	90	5400	90% NC	400
		B17-CAS_Fgt	F18E_17CAS_Fgt	No			100	5	5%	7%	90	5400	90.5% NC	500
		BFM Fairview1	F18E_17BFM1	No			299	0	0%	20%	25	1500	96% NC	350
		BFM Fairview2	F18E_17BFM2	No			150	0	0%	10%	25	1500	96% NC	350
		BFM Gabbs	F18E_17BFM3	No			449	0	0%	30%	25	1500	96% NC	350
		B17-ConBmb	F18E_17Conv	No			71	4	5%	5%	60	3600	90.5% NC	500
	B-19	B19-ConBmb	F18E_19ConBmb	No	3194	80%	485	26	5%	20%	90	5400	90.5% NC	500
		B19-CAS_E	F18E_19INE	No			850	45	5%	35%	90	5400	90% NC	400
		B19-CAS_W	F18E_19INW	No			850	45	5%	35%	90	5400	90% NC	400
		B19-CAS_Fight	F18E_19Fgt	No			243	13	5%	10%	90	5400	90.5% NC	500
	B-20	BFM Lonerock	F18E_20BFM1	No	745	75%	279	0	0%	50%	25	1500	96% NC	350
		BFM Dixie	F18E_20BFM2	No			279	0	0%	50%	25	1500	96% NC	350
	Reno MOA	RenoBL1	F18E_RenoBL1	Yes	222	100%	105	6	5%	50%	60	3600	90.5% NC	500
		RenoBL2	F18E_RenoBL2	Yes			105	6	5%	50%	60	3600	90.5% NC	500

Aircraft	Main SUA Unit	Area Model ID	Mission Profile ID	Supersonic Potential	Annual Sorties	% of Missions	Day 0700-2200	Night 2200-0700	% Acoustic Night 2200 to 700	% Sorties in Unit	Average Time (min)	Average Time (sec)	Primary Power Setting	Average Airspeed (KIAS)
F/A-18C/D	Commodore	Zircon Hold	F18CHold_B	No	197	45%	75	13	15%	100%	30	1800	90% NC	350
		fightNew	F18CFgt_Hi	Yes						100%	40	2400	92% NC	500
		FightLow1	F18CFgt_Low1	No						100%	2.5	150	92% NC	500
		FightLow2	F18CFgt_Low2	No						100%	2.5	150	92% NC	500
		Bandit ATCAA	F18CREDHold_ATCAA	No		5%	2	0	15%	18.5%	5.6	333	90% NC	350
		Bandit High Hold	F18CREDHold_High	No			7	1		81.5%	24.5	1467	90% NC	350
		fightNew	F18CREDFgt_Hi	Yes			8	1		100%	40	2400	92% NC	500
		FightLow1	F18CREDFgt_Low1	No			8	1		100%	2.5	150	92% NC	500
		FightLow2	F18CREDFgt_Low2	No			8	1		100%	2.5	150	92% NC	500
		Zircon Hold	F18CHold_BS	No		25%	42	7	15%	100%	40	2400	90% NC	350
		LFE_T1	F18C_Strike17	Yes			38	7		90%	NA		92% NC	500
		LFE_T1_b20	F18C_Strike20	Yes			4	1		10%	NA		92% NC	500
		Zircon Hold	F18CHold_S	No		25%	42	7	15%	100%	40	2400	90% NC	350
		LFE_T2	F18C_Support17	No			38	7		90%	NA		92% NC	500
		LFE_T2_b20	F18C_Support20	No			4	1		10%	NA		92% NC	500
	NAWDC-1	NAWDC1a	F18C_NAWDC1a	Yes	1649	100%	1051	186	15%	75%	90	5400	92% NC	500
		NAWDC1_Fgt	F18C_NAWDC1_Fgt	Yes			350	62	15%	25%	75	4500	92% NC	500
		NAWDC1_BHold	F18C_NAWDC1_B	No						12.5%	15	900	90% NC	350
		NAWDC1_RHold	F18C_NAWDC1_R	No						12.5%	15	900	90% NC	350
	NAWDC-2	NAWDC2a	F18C_NAWDC2a	Yes	1625	100%	1036	183	15%	75%	90	5400	92% NC	500
		NAWDC2_Fgt	F18C_NAWDC2_Fgt	Yes			345	61	15%	25%	75	4500	92% NC	500
		NAWDC2_BHold	F18C_NAWDC2_B	No						12.5%	15	900	90% NC	350
		NAWDC2_RHold	F18C_NAWDC2_R	No						12.5%	15	900	90% NC	350
	B-16	UrbanCAS	F18C_16CAS_2	No	112	60%	47	0	0%	70%	90	5400	87% NC	350
		R-4803	F18C_16CAS	No			19	1	5%	30%	90	5400	92% NC	500
	B-17	B17-CAS_N	F18C_17CAS_INN	No	302	87.5%	35	2	5%	14%	90	5400	91% NC	400
		B17-CAS_SW	F18C_17CAS_INSW	No			35	2	5%	14%	90	5400	91% NC	400
		B17-CAS_Fgt	F18C_17CAS_Fgt	No			18	1	5%	7%	90	5400	92% NC	500
		BFM Fairview1	F18C_17BFM1	No			53	0	0%	20%	25	1500	96.5% NC	350
		BFM Fairview2	F18C_17BFM2	No			26	0	0%	10%	25	1500	96.5% NC	350
		BFM Gabbs	F18C_17BFM3	No			79	0	0%	30%	25	1500	96.5% NC	350
		B17-ConBmb	F18C_17Conv	No			13	1	5%	5%	60	3600	92% NC	500
	B-19	B19-ConBmb	F18C_19ConBmb	No	564	80%	86	5	5%	20%	90	5400	92% NC	500
		B19-CAS_E	F18C_19INE	No			150	8	5%	35%	90	5400	91% NC	400
		B19-CAS_W	F18C_19INW	No			150	8	5%	35%	90	5400	91% NC	400
		B19-CAS_Fight	F18C_19Fgt	No			43	2	5%	10%	90	5400	92% NC	500
	B-20	BFM Lonerock	F18C_20BFM1	No	132	75%	50	0	0%	50%	25	1500	96.5% NC	350
		BFM Dixie	F18C_20BFM2	No			50	0	0%	50%	60	3600	92% NC	500
	Reno MOA	RenoBL1	F18C_RenoBL1	Yes	39	100%	19	1	5%	50%	60	3600	92% NC	500
		RenoBL2	F18C_RenoBL2	Yes			19	1	5%	50%	60	3600	92% NC	500

1

Aircraft	Main SUA Unit	Area Model ID	Mission Profile ID	Supersonic Potential	Annual Sorties	% of Missions	Day 0700-2200	Night 2200-0700	% Acoustic Night 2200 to 700	% Sorties in Unit	Average Time (min)	Average Time (sec)	Primary Power Setting	Average Airspeed (KIAS)
F-5N	Commodore	Bandit ATCAA	F5HoldATCAA	No	580	100%	18	3	15%	3.7%	5.6	1800	90% RPM	350
		Bandit High Hold	F5HoldHigh	No			80	14		16.3%	24.5	1800	90% NC	350
		CAPs	F5CAP**	No			49	9		80%	30	1800	92% RPM	400
		fightNew	F5Fgt	Yes			493	87		100%	30	1800	90% RPM	350
		FightLow1	F5FgtLow1	No							2.5	150	90% RPM	350
		FightLow2	F5FgtLow2	No							2.5	150	90% RPM	350
	LoneRock	BFM Lonerock	F5_LoneRock_BFM	No	1508	100%	754	0	0%	50%	25	1500	90% RPM	350
	Dixie	BFM Dixie	F5_Dixie_BFM	No			754	0	0%	50%	25	1500	90% RPM	350
	Fairview1	BFM Fairview1	F5_BFMS1	No	1624	100%	406	0	0%	25%	25	1500	90% RPM	350
	Fairview 2	BFM Fairview2	F5_BFMS2	No			406	0	0%	25%	25	1500	90% RPM	350
	Gabbs BFM	BFM Gabbs	F5_BFMS3	No			812	0	0%	50%	25	1500	90% RPM	350
	Ranch BFM	Ranch		No			0	0	0%	0%	25	1500	90% RPM	350
	B-16	B16-SUP	F5_16SUP	No	35	100%	33	2	5%	100%	60	3600	90% RPM	350
	B-17	B17-SUP	F5_17SUP	No	195	100%	185	10	5%	100%	60	3600	90% RPM	350
	B-19	B19-SUP	F5_19SUP	No	37	100%	35	2	5%	100%	60	3600	90% RPM	350
	B-20	B20-SUP	F5_20SUP	No	529	100%	503	26	5%	100%	60	3600	90% RPM	350
	Reno MOA	RenoBL1	F5_RenoBL1	Yes	182	100%	86	5	5%	50%	60	3600	90% RPM	350
		RenoBL2	F5_RenoBL2	Yes			86	5		50%	60	3600	90% RPM	350
F-16C	Commodore	Bandit ATCAA	F16HoldATCAA	No	409	100%	61	11	15%	17.58%	30.0	1800	86% NC	350
		Bandit High Hold	F16HoldHigh	No			269	48		77.43%	30.0	1800	90% NC	350
		CAPs	F16CAP**				17	3		5.00%	30	1800	90% NC	450
		fightNew	F16Fgt	Yes			348	61		100.00%	90	5400	91% NC	500
		FightLow1	F16Fgt_Low1	No			348	61		100.00%	5	300	91% NC	500
		FightLow2	F16Fgt_Low2	No			348	61		100.00%	5	300	91% NC	500
	LoneRock	BFM Lonerock	F16_LoneRock_BFM	No	1827	100%	914	0	0%	50%	25	1500	91% NC	350
	Dixie	BFM Dixie	F16_Dixie_BFM	No			914	0	0%	50%	25	1500	91% NC	350
	Fairview1	BFM Fairview1	F16_BFMS1	No	1160	100%	290	0	0%	25%	25	1500	91% NC	350
	Fairview 2	BFM Fairview2	F16_BFMS2	No			290	0	0%	25%	25	1500	91% NC	350
	Gabbs BFM	BFM Gabbs	F16_BFMS3	No			580	0	0%	50%	25	1500	91% NC	350
	Ranch BFM	Ranch		No			0	0	0%	0%	25	1500	91% NC	350
	B-16	B16-SUP	F16_16SUP	No	38	100%	36	2	5%	100%	90	5400	91% NC	350
	B-17	B17-SUP	F16_17SUP	No	117	100%	111	6	5%	100%	90	5400	91% NC	350
	B-19	B19-SUP	F16_19SUP	No	0	100%	0	0	5%	100%	90	5400	91% NC	350
	B-20	B20-SUP	F16_20SUP	No	284	100%	270	14	5%	100%	90	5400	91% NC	350
	Reno MOA	RenoBL1	F16_RenoBL1	Yes	726	100%	345	18	5%	50%	60	3600	90% RPM	350
		RenoBL2	F16_RenoBL2	Yes			345	18	5%	50%	60	3600	90% RPM	350

1

Aircraft	Main SUA Unit	Area Model ID	Mission Profile ID	Supersonic Potential	Annual Sorties	% of Missions	Day 0700-2200	Night 2200-0700	% Acoustic Night 2200 to 700	% Sorties in Unit	Average Time (min)	Average Time (sec)	Primary Power Setting	Average Airspeed (KIAS)
F-5N	Commodore	Bandit ATCAA	F5HoldATCAA	No	580	100%	18	3	15%	3.7%	5.6	1800	90% RPM	350
		Bandit High Hold	F5HoldHigh	No			80	14		16.3%	24.5	1800	90% NC	350
		CAPs	F5CAP**	No			49	9		80%	30	1800	92% RPM	400
		fightNew	F5Fgt	Yes			493	87		100%	30	1800	90% RPM	350
		FightLow1	F5FgtLow1	No							2.5	150	90% RPM	350
EA-18G	Commodore	Zircon Hold	EA18Hold	No	139	100%	118	21	15%	100.00%	40	2400	90% NC	350
		LFE_T2	EA18Support17	No			106	19		90%	NA		90.5% NC	500
		LFE_T2_b20	EA18Support20	No			12	2		10.00%	NA		90.5% NC	500
	NAWDC-1	NAWDC1_Fgt	EA18_NTACINT	No	865	100%	735	130	15%	100%	90	5400	90% NC	350
	NAWDC-2	NAWDC2_Fgt	EA18_STACINT	No	1103	100%	938	165	15%	100%	90	5400	90% NC	350
	B-16	UrbanCAS	EA18G_16DT	No	30	100%	30	0	0%	100%	60	3600	90% NC	350
	B-17	BFM Fairview1	EA18_S1AACT	No	209	100%	105	0	0%	50%	60	3600	90% NC	350
		BFM Fairview2	EA18_S2AACT	No			105	0	0%	50%	60	3600	90% NC	350
	B-19	RanchLow	EA18_19_ACCT	No	177	100%	177	0	0%	100%	60	3600	90% NC	350
	B-20	BFM Lonerock	EA18_N1AACT1	No	128	100%	64	0	0%	50%	60	3600	90% NC	350
		BFM Dixie	EA18_N1AACT2	No			64	0	0%	50%	60	3600	90% NC	350
	Reno MOA	RenoBL1	EA18_RenoBL1	No	113	100%	54	3	5%	50%	60	3600	90% RPM	350
		RenoBL2	EA18_RenoBL2	No			54	3	5%	50%	60	3600	90% RPM	350
P-8	Commodore	Zircon LFE	P8_LFE_E	No	32	100%	14	2	15%	50.00%	40	2400	10,000 LBS	350
		SmkDck_LFE	P8_LFE_S	No			14	2		50.00%	40	2400	10,000 LBS	350
	NAWDC-1	NAWDC1a	P8_EW1	No	12	100%	10	2	15%	100%	90	5400	10,000 LBS	350
	NAWDC-2	NAWDC2a	P8_EW2	No	7	100%	6	1	15%	100%	90	5400	10,000 LBS	350
E-2C	Commodore	Zircon LFE	E2_LFE_E	No	94	100%	40	7	15%	50.00%	40	2400	2400 ISHP	250
		SmkDck_LFE	E2_LFE_S	No			40	7		50.00%	40	2400	2400 ISHP	250
	NAWDC-1	NAWDC1a	E2_EW1	No	354	100%	301	53	15%	100%	90	5400	2400 ISHP	250
	NAWDC-2	NAWDC2a	E2_EW2	No	347	100%	295	52	15%	100%	90	5400	2400 ISHP	250
	Reno MOA	RenoBL1	E2_RenoBL1	No	14	100%	7	0	5%	50%	60	3600	2400 ISHP	250
		RenoBL2	E2_RenoBL2	No			7	0	5%	50%	60	3600	2400 ISHP	250
H-60	Commodore	fightNew	H60_LFE_CSAR		116	100%	99	17	15%	100%	90	5400		
	NAWDC-1	NAWDC1a	H60_NCSAR		250	100%	213	38	15%	100%	210	12600		40
	NAWDC-2	NAWDC2a	H60_SCSAR		250	100%	213	38	15%	100%	210	12600		40
	Dixie LZ				97	100%	35	4	10%	40%	120	7200		40
	Gabbs LZ					100%	52	6	10%	60%	120	7200		40
	Dixie	Dixie_Helo	H60_N2TERF		373	100%	181	20	10%	54%	120	7200		40
		Dixie_Helo	H60_N2SOF			100%	60	7	10%	18%	120	7200		70
		Dixie_Helo	H60_N2MARS			100%	17	2	10%	5%	120	7200		70
		Dixie_Helo	H60_N2SACT		37	100%	86	0	0%	23%	120	7200		100
	Fairview	R-4816S	H60_S1TERF		75	0%	0	0	10%	0%	120	7200		40
		R-4816S	H60_S1SACT			100%	75	0	0%	100%	120	7200		100
		R-4816S	H60_S1SOF			0%	0	0	10%	0%	120	7200		70
		R-4816S	H60_S1MARS			0%	0	0	10%	0%	120	7200		70
	B-16	B16-Helo	H60_16TERF		130	79%	17	2	10%	18%	120	7200		40
		B16-Helo	H60_16CAS				28	3	10%	30%	120	7200		90
		B16-Helo	H60_16CSAR				17	2	10%	18%	120	7200		70
		HVBSS_H	H60_16HVBSSH				31	3	10%	34%	120	7200		40
	B-17	B17-Helo	H60_17CAS		264	83%	128	14	10%	65%	120	7200		90
		B17-Helo	H60_17MARS				22	2	10%	11%	120	7200		70
		B17_HF1	H60_17AG1				32	4	10%	16%	120	7200		70
		B17_HF2	H60_17AG2				16	2	10%	8%	120	7200		70
	B-19	B19_Helo	H60_19TERF		123	25%	1	0	10%	4%	120	7200		40
		B19_Helo	H60_19CAS				27	3	10%	96%	120	7200		90
	B-20	B20-HF	H60_20HF1		89	97%	2	0	10%	3%	120	7200		70
		B20-Harea	H60_20MARS				12	1	10%	16%	120	7200		70
		B20-Harea	H60_20FAC				63	7	10%	81%	120	7200		80

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Table 3-9. Proposed Action Alternative 1 Aircraft Sorties Area Operations and Mission Types

Aircraft	Main SUA Unit	Area Model ID	Mission Profile ID	Supersonic Potential	Annual Sorties	% of Missions	Day 0700-2200	Night 2200-0700	% Acoustic Night 2200 to 700	% Sorties in Unit	Average Time (min)	Average Time (sec)	Primary Power Setting	Average Airspeed (KIAS)
F/A-18E/F	Commodore	Zircon Hold_Alt	F18EHold_B	No	1118	45%	428	75	15%	100%	30	1800	90% NC	350
		fightNewAlt1&3	F18EFgt_Hi	Yes						100%	40	2400	90.5% NC	500
		FightLow1	F18EFgt_Low1	No						100%	2.5	150	90.5% NC	500
		FightLow2	F18EFgt_Low2	No						100%	2.5	150	90.5% NC	500
		Bandit ATCAA	F18EREDHold_ATCAA	No		5%	9	2	15%	18.5%	30	1800	90% NC	350
		Bandit High Hold	F18EREDHold_High				39	7		81.5%	30	1800	90% NC	350
		fightNewAlt1&3	F18EREDFgt_Hi	Yes			48	8		100%	40	2400	90.5% NC	500
		FightLow1	F18EREDFgt_Low1	No			48	8		100%	2.5	150	90.5% NC	500
		FightLow2	F18EREDFgt_Low2	No			48	8		100%	2.5	150	90.5% NC	500
		Zircon Hold_Alt	F18EHold_BS	No		25%	238	42	15%	100%	40	2400	90% NC	350
		LFE_T1_Alt	F18E_Strike17	No			214	38		90%	NA		90.5% NC	500
		LFE_T1_b20	F18E_Strike20	No			24	4		10%	NA		90.5% NC	500
		Zircon Hold_Alt	F18EHold_S	No		25%	238	42	15%	100%	40	2400	90% NC	350
		LFE_T2_Alt	F18E_Support17	No			214	38		90%	NA		90.5% NC	500
		LFE_T2_b20	F18E_Support20	No			24	4		10%	NA		90.5% NC	500
	NAWDC-1	NAWDC1a	F18E_NAWDC1a	Yes	9344	100%	5957	1051	15%	75%	90	5400	90.5% NC	500
		NAWDC1_FgtA	F18E_NAWDC1_Fgt	Yes			1986	350		25%	75	4500	90.5% NC	500
		NAWDC1_BHoldA	F18E_NAWDC1_B	No						12.5%	15	900	90% NC	350
		NAWDC1_RHold	F18E_NAWDC1_R	No						12.5%	15	900	90% NC	350
	NAWDC-2	NAWDC2a	F18E_NAWDC2a	Yes	9209	100%	5871	1036	15%	75%	90	5400	90.5% NC	500
		NAWDC2_FgtA	F18E_NAWDC2_Fgt	Yes			1957	345		25%	75	4500	90.5% NC	500
		NAWDC2_BHoldA	F18E_NAWDC2_B	No						12.5%	15	900	90% NC	350
		NAWDC2_RHold	F18E_NAWDC2_R	No						12.5%	15	900	90% NC	350
	B-16	UrbanCAS	F18E_16CAS_2	No	636	60%	267	0	0%	70%	90	5400	85% NC	350
		R-4803	F18E_16CAS	No			109	6	5%	30%	90	5400	90.5% NC	500
	B-17	B17-CAS_New1	F18E_17CAS_IN	No	1710	87.5%	398	21	5%	28%	90	5400	90% NC	400
		B17-CAS_Fgt_Alt1	F18E_17CAS_Fgt	No			100	5	5%	7%	90	5400	90.5% NC	500
		BFM Fairview1	F18E_17BFM1	No			299	0	0%	20%	25	1500	96% NC	350
		BFM Fairview2	F18E_17BFM2	No			150	0	0%	10%	25	1500	96% NC	350
		BFM Gabbs	F18E_17BFM3	No			449	0	0%	30%	25	1500	96% NC	350
		B17-ConBmb_BL	F18E_17Conv1	No			36	2	5%	2.5%	60	3600	90.5% NC	500
		B17-ConBmb_Alt1	F18E_17Conv2				36	2	5%	2.5%	60	3600	90.5% NC	500
	B-19	B19-ConBmb	F18E_19ConBmb	No	3194	80%	485	26	5%	20%	90	5400	90.5% NC	500
		B19-CAS_E	F18E_19INE	No			850	45	5%	35%	90	5400	90% NC	400
		B19-CAS_W	F18E_19INW	No			850	45	5%	35%	90	5400	90% NC	400
		B19-CAS_Fight	F18E_19Fgt	No			243	13	5%	10%	90	5400	90.5% NC	500
	B-20	BFM Lonerock	F18E_20BFM1	No	745	87.5%	228	0	0%	35%	25	1500	96% NC	350
		BFM Dixie	F18E_20BFM2	No			228	0	0%	35%	25	1500	96% NC	350
		B20-ConBmbAlt	F18E_20Conv	No			186	10	5%	30%	60	3600	90.5% NC	500
	Reno MOA	Reno Area1	F18E_RenoBFM1	No	222	100%	56	0	0%	25%	25	1500	96% NC	350
		Reno Area2	F18E_RenoBFM2	No			56	0	0%	25%	25	1500	96% NC	350
		Reno Area1	F18E_RenoFCF1	Yes			56	0	0%	25%	60	3600	96% NC	450
		Reno Area2	F18E_RenoFCF2	Yes			56	0	0%	25%	60	3600	96% NC	450

Aircraft	Main SUA Unit	Area Model ID	Mission Profile ID	Supersonic Potential	Annual Sorties	% of Missions	Day 0700-2200	Night 2200-0700	% Acoustic Night 2200 to 700	% Sorties in Unit	Average Time (min)	Average Time (sec)	Primary Power Setting	Average Airspeed (KIAS)
F/A-18C/D	Commodore	Zircon Hold_Alt	F18CHold_B	No	197	45%	75	13	15%	100%	30	1800	90% NC	350
		fightNewAlt1&3	F18CFgt_Hi	Yes						100%	40	2400	92% NC	500
		FightLow1	F18CFgt_Low1	No						100%	2.5	150	92% NC	500
		FightLow2	F18CFgt_Low2	No						100%	2.5	150	92% NC	500
		Bandit ATCAA	F18CREDHold_ATCAA	No		5%	2	0	15%	18.5%	30	1800	90% NC	350
		Bandit High Hold	F18CREDHold_High				7	1		81.5%	30	1800	90% NC	350
		fightNewAlt1&3	F18CREDFgt_Hi	Yes			8	1		100%	40	2400	92% NC	500
		FightLow1	F18CREDFgt_Low1	No			8	1		100%	2.5		92% NC	500
		FightLow2	F18CREDFgt_Low2	No			8	1		100%	2.5		92% NC	500
		Zircon Hold_Alt	F18CHold_BS	No		25%	42	7	15%	100%	40	2400	90% NC	350
		LFE_T1_Alt	F18C_Strike17	Yes			38	7		90%	NA		92% NC	500
		LFE_T1_b20	F18C_Strike20	Yes			4	1		10%	NA		92% NC	500
		Zircon Hold_Alt	F18CHold_S	No		25%	42	7	15%	100%	40	2400	90% NC	350
		LFE_T2_Alt	F18C_Support17	No			38	7		90%	NA		92% NC	500
		LFE_T2_b20	F18C_Support20	No			4	1		10%	NA		92% NC	500
	NAWDC-1	NAWDC1a	F18C_NAWDC1a	Yes	1649	100%	1051	186	15%	75%	90	5400	92% NC	500
		NAWDC1_FgtA	F18C_NAWDC1_Fgt	Yes			350	62		25%	75	4500	92% NC	500
		NAWDC1_BHoldA	F18C_NAWDC1_B	No						12.5%	15	900	90% NC	350
		NAWDC1_RHold	F18C_NAWDC1_R	No						12.5%	15	900	90% NC	350
	NAWDC-2	NAWDC2a	F18C_NAWDC2a	Yes	1625	100%	1036	183	15%	75%	90	5400	92% NC	500
		NAWDC2_FgtA	F18C_NAWDC2_Fgt	Yes			345	61		25%	75	4500	92% NC	500
		NAWDC2_BHoldA	F18C_NAWDC2_B	No						12.5%	15	900	90% NC	350
		NAWDC2_RHold	F18C_NAWDC2_R	No						12.5%	15	900	90% NC	350
	B-16	UrbanCAS	F18C_16CAS_2	No	112	60%	47	0	0%	70%	90	5400	87% NC	350
		R-4803	F18C_16CAS	No			19	1	5%	30%	90	5400	92% NC	500
	B-17	B17-CAS_New1	F18C_17CAS_IN	No	302	87.5%	70	4	5%	28%	90	5400	91% NC	400
		B17-CAS_Fgt_Alt1	F18C_17CAS_Fgt	No			18	1	5%	7%	90	5400	92% NC	500
		BFM Fairview1	F18C_17BFM1	No			53	0	0%	20%	25	1500	96.5% NC	350
		BFM Fairview2	F18C_17BFM2	No			26	0	0%	10%	25	1500	96.5% NC	350
		BFM Gabbs	F18C_17BFM3	No			79	0	0%	30%	25	1500	96.5% NC	350
		B17-ConBmb_BL	F18C_17Conv1	No			6	0	5%	2.5%	60	3600	92% NC	500
		B17-ConBmb_Alt1	F18C_17Conv2				6	0	5%	2.5%	60	3600	92% NC	500
	B-19	B19-ConBmb	F18C_19ConBmb	No	564	80%	86	5	5%	20%	90	5400	92% NC	500
		B19-CAS_E	F18C_19INE	No			150	8	5%	35%	90	5400	91% NC	400
		B19-CAS_W	F18C_19INW	No			150	8	5%	35%	90	5400	91% NC	400
		B19-CAS_Fight	F18C_19Fgt	No			43	2	5%	10%	90	5400	92% NC	500
	B-20	BFM Lonerock	F18C_20BFM1	No	132	87.5%	40	0	0%	35%	25	1500	96.5% NC	350
		BFM Dixie	F18C_20BFM2				40	0	0%	35%	25	1500	96.5% NC	350
		B20-ConBmbAlt	F18C_20ConBmb	No			33	2	5%	30%	60	3600	92% NC	500
	Reno MOA	Reno Area1	F18C_RenoBFM1	No	39	100%	10	0	0%	25%	25	1500	96.5% NC	350
		Reno Area2	F18C_RenoBFM2	No			10	0	0%	25%	25	1500	96.5% NC	350
		Reno Area1	F18C_RenoFCF1	Yes			10	0	0%	25%	60	3600	92% NC	500
		Reno Area2	F18C_RenoFCF2	Yes			10	0	0%	25%	60	3600	92% NC	500

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Aircraft	Main SUA Unit	Area Model ID	Mission Profile ID	Supersonic Potential	Annual Sorties	% of Missions	Day 0700-2200	Night 2200-0700	% Acoustic Night 2200 to 700	% Sorties in Unit	Average Time (min)	Average Time (sec)	Primary Power Setting	Average Airspeed (KIAS)
F-35B/C	Commodore	Zircon Hold_Alt	F35CHold_B	No	449	45%	172	30	15%	100%	30	1800	35% ETR	350
		fightNewAlt1&3	F35CFgt_Hi	Yes						100%	40	2400	90% ETR	350
		FightLow1	F35CFgt_Low1	No						100%	2.5	150	90% ETR	500
		FightLow2	F35CFgt_Low2	No						100%	2.5	150	90% ETR	500
		Bandit ATCAA	F35CREDHold_ATCAA	No		5%	19	3	15%	18.5%	6	333	35% ETR	350
		Bandit High Hold	F35CREDHold_High							81.5%	24	1467	35% ETR	350
		fightNewAlt1&3	F35CREDFgt_Hi	Yes						100%	40	2400	90% ETR	500
		FightLow1	F35CREDFgt_Low1	No						100%	2.5		90% ETR	500
		FightLow2	F35CREDFgt_Low2	No						100%	2.5		90% ETR	500
		Zircon Hold_Alt	F35CHold_BS	No		25%	95	17	15%	100%	40	2400	35% ETR	350
		LFE_T1_Alt	F35C_Strike17	Yes			86	15		90%	NA		90% ETR	500
		LFE_T1_b20	F35C_Strike20	Yes			10	2		10%	NA		90% ETR	500
		Zircon Hold_Alt	F35CHold_S	No		25%	95	17	15%	100%	40	2400	35% ETR	350
		LFE_T2_Alt	F35C_Support17	No			86	15		90%	NA		90% ETR	500
		LFE_T2_b20	F35C_Support20	No			10	2		10%	NA		90% ETR	500
	NAWDC-1	NAWDC1a	F35C_NAWDC1a	Yes	573	100%	365	64	15%	75%	90	5400	90% ETR	500
		NAWDC1_FgtA	F35C_NAWDC1_Fgt	Yes			122	21		25%	75	4500	90% ETR	500
		NAWDC1_BHoldA	F35C_NAWDC1_B	No			61	11		12.5%	15	900	35% ETR	350
		NAWDC1_RHold	F35C_NAWDC1_R	No			61	11		12.5%	15	900	35% ETR	350
	NAWDC-2	NAWDC2a	F35C_NAWDC2a	Yes	567	100%	361	64	15%	75%	90	5400	90% ETR	500
		NAWDC2_FgtA	F35C_NAWDC2_Fgt	Yes			120	21		25%	75	4500	90% ETR	500
		NAWDC2_BHoldA	F35C_NAWDC2_B	No			60	11		12.5%	15	900	35% ETR	350
		NAWDC2_RHold	F35C_NAWDC2_R	No			60	11		12.5%	15	900	35% ETR	350
	B-16	UrbanCAS	F35C_16CAS_2	No	25	60%	11	0	0%	70%	90	5400	40% ETR	400
		R-4803	F35C_16CAS	No			4	0	5%	30%	90	5400	90% ETR	500
	B-17	B17-CAS_New1	F35C_17CAS_IN	No	100	87.5%	23	1	5%	28%	90	5400	80% ETR	400
		B17-CAS_Fgt_Alt1	F35C_17CAS_Fgt	No			6	0	5%	7%	90	5400	90% ETR	500
		BFM Fairview1	F35C_17BFM1	No			18	0	0%	20%	25	1500	50% ETR	325
		BFM Fairview2	F35C_17BFM2	No			9	0	0%	10%	25	1500	50% ETR	325
		BFM Gabbs	F35C_17BFM3	No			26	0	0%	30%	25	1500	50% ETR	325
		B17-ConBmb_BL	F35C_17Conv1	No			2	0	5%	2.5%	60	3600	90% ETR	500
		B17-ConBmb_Alt1	F35C_17Conv2				2	0	5%	2.5%	60	3600	90% ETR	500
	B-19	B19-ConBmb	F35C_19ConBmb	No	25	80%	4	0	5%	20%	90	5400	90% ETR	500
		B19-CAS_E	F35C_19INE	No			7	0	5%	35%	90	5400	80% ETR	400
		B19-CAS_W	F35C_19INW	No			7	0	5%	35%	90	5400	80% ETR	400
		B19-CAS_Fight	F35C_19Fgt	No			2	0	5%	10%	90	5400	90% ETR	500
	B-20	BFM Lonerock	F35C_20BFM1	No	100	87.5%	31	0	0%	35%	25	1500	50% ETR	325
		BFM Dixie	F35C_20BFM2	No			31	0	0%	35%	25	1500	50% ETR	325
		B20-ConBmbAlt	F35C_20Conv	No			25	1	5%	30%	60	3600	90% ETR	500
	Reno MOA	Reno Area1	F35C_RenoBFM1	No	9	100%	2	0	0%	25%	25	1500	50% ETR	325
		Reno Area2	F35C_RenoBFM2	No			2	0	0%	25%	25	1500	50% ETR	325
		Reno Area1	F35C_RenoFCF1	Yes			2	0	0%	25%	60	3600	100% ETR	500
		Reno Area2	F35C_RenoFCF2	Yes			2	0	0%	25%	60	3600	100% ETR	500

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Aircraft	Main SUA Unit	Area Model ID	Mission Profile ID	Supersonic Potential	Annual Sorties	% of Missions	Day 0700-2200	Night 2200-0700	% Acoustic Night 2200 to 700	% Sorties in Unit	Average Time (min)	Average Time (sec)	Primary Power Setting	Average Airspeed (KIAS)
F-5N	Commodore	Bandit ATCAA	F5HoldATCAA	No	580	100%	18	3	15%	3.7%	30	1800	90% RPM	350
		Bandit High Hold	F5HoldHigh				80	14		16.3%	30	1800	90% RPM	350
		CAPs	(8)	No			394	70		80%	30	1800	92% RPM	400
		fightNewAlt1&3	F5Fgt	Yes			493	87		100%	30	1800	90% RPM	350
		FightLow1	F5FgtLow1	No							2.5	150	90% RPM	350
		FightLow2	F5FgtLow2	No							2.5	150	90% RPM	350
	LoneRock	BFM Lonerock	F5_LoneRock_BFM	No	1253	100%	626	0	0%	50%	25	1500	90% RPM	350
	Dixie	BFM Dixie	F5_Dixie_BFM	No			626	0	0%	50%	25	1500	90% RPM	350
	Fairview1	BFM Fairview1	F5_BFMS1	No	1879	100%	314	0	0%	16.7%	25	1500	90% RPM	350
	Fairview 2	BFM Fairview2	F5_BFMS2	No			314	0	0%	16.7%	25	1500	90% RPM	350
	Gabbs BFM	BFM Gabbs	F5_BFMS3	No			626	0	0%	33.3%	25	1500	90% RPM	350
	Ranch BFM	BFM Ranch	F5_BFMS4	No			626	0	0%	33.3%	25	1500	90% RPM	350
	B-16	B16-SUP	F5_16SUP	No	35	100%	33	2	5%	100%	60	3600	90% RPM	350
	B-17	B17-SUP	F5_17SUP	No	195	100%	93	5	5%	50%	60	3600	90% RPM	350
		B17-SUPn	F5_17SUPn	No			93	5	5%	50%	60	3600	90% RPM	350
	B-19	B19-SUP	F5_19SUP	No	37	100%	35	2	5%	100%	60	3600	90% RPM	350
	B-20	B20-SUP	F5_20SUP	No	529	100%	503	26	5%	100%	60	3600	90% RPM	350
	Reno MOA	Reno Area1	F5_RenoBFM1	No	182	100%	46	0	0%	25%	60	3600	90% RPM	350
		Reno Area2	F5_RenoBFM2	No			46	0	0%	25%	60	3600	90% RPM	350
		Reno Area1	F5_RenoFCF1	Yes			46	0	0%	25%	25	1500	92% RPM	450
		Reno Area2	F5_RenoFCF2	Yes			46	0	0%	25%	25	1500	92% RPM	450
F-16C	Commodore	Bandit ATCAA	F16HoldATCAA	No	409	100%	348	61	15%	100.00%	30	1800	86% NC	350
		Bandit High Hold	F16HoldHigh	No							30	1800	86% NC	350
		CAPs	174	No							30	1800	86% NC	350
		fightNewAlt1&3	F16Fgt	Yes							90	5400	91% NC	500
		FightLow1	F16Fgt_Low1	No							5	300	91% NC	500
		FightLow2	F16Fgt_Low2	No							5	300	91% NC	500
	LoneRock	BFM Lonerock	F16_LoneRock_BFM	No	1195	100%	597	0	0%	50%	25	1500	91% NC	350
	Dixie	BFM Dixie	F16_Dixie_BFM	No			597	0	0%	50%	25	1500	91% NC	350
	Fairview1	BFM Fairview1	F16_BFMS1	No	1792	100%	299	0	0%	16.7%	25	1500	91% NC	350
	Fairview 2	BFM Fairview2	F16_BFMS2	No			299	0	0%	16.7%	25	1500	91% NC	350
	Gabbs BFM	BFM Gabbs	F16_BFMS3	No			597	0	0%	33.3%	25	1500	91% NC	350
	Ranch BFM	BFM Ranch	F16_BFMS4	No			597	0	0%	33.3%	25	1500	91% NC	350
	B-16	B16-SUP	F16_16SUP	No	38	100%	36	2	5%	100%	90	5400	91% NC	350
	B-17	B17-SUP	F16_17SUP	No	117	100%	56	3	5%	50%	90	5400	91% NC	350
		B17-SUPn	F16_17SUPn	No			56	3	5%	50%	90	5400	91% NC	350
	B-19	B19-SUP	F16_19SUP	No	0	100%	0	0	5%	100%	90	5400	91% NC	350
	B-20	B20-SUP	F16_20SUP	No	284	100%	270	14	5%	100%	90	5400	91% NC	350
	Reno MOA	Reno Area1	F16_RenoBFM1	No	726	100%	182	0	0%	25%	60	3600	91% NC	350
		Reno Area2	F16_RenoBFM2	No			182	0	0%	25%	60	3600	91% NC	350
		Reno Area1	F16_RenoFCF1	No			182	0	0%	25%	60	3600	91% NC	500
		Reno Area2	F16_RenoFCF2	No			182	0	0%	25%	60	3600	91% NC	500

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Aircraft	Main SUA Unit	Area Model ID	Mission Profile ID	Supersonic Potential	Annual Sorties	% of Missions	Day 0700-2200	Night 2200-0700	% Acoustic Night 2200 to 700	% Sorties in Unit	Average Time (min)	Average Time (sec)	Primary Power Setting	Average Airspeed (KIAS)
EA-18G	Commodore	Zircon Hold_Alt	EA18Hold	No	139	100%	118	21	15%	100.00%	40	2400	90% NC	350
		LFE_T2	EA18Support17	No			106	19		90%	NA		90.5% NC	500
		LFE_T2_b20	EA18Support20	No			12	2		10.00%	NA		90.5% NC	500
	NAWDC-1	NAWDC1-Alt	EA18_NTACINT	No	865	100%	735	130	15%	100%	90	5400	90% NC	350
	NAWDC-2	NAWDC2-Alt	EA18_STACINT	No	1103	100%	938	165	15%	100%	90	5400	90% NC	350
	B-16	UrbanCAS	EA18G_16DT	No	30	100%	30	0	0%	100%	60	3600	90% NC	350
	B-17	BFM Fairview1	EA18_S1AACT	No	209	100%	105	0	0%	50%	60	3600	90% NC	350
		BFM Fairview2	EA18_S2AACT	No			105	0	0%	50%	60	3600	90% NC	350
	B-19	Ranch	EA18_19_ACCT	No	177	100%	177	0	0%	100%	60	3600	90% NC	350
	B-20	BFM Lonerock	EA18_N1AACT1	No	128	100%	64	0	0%	50%	60	3600	90% NC	350
		BFM Dixie	EA18_N1AACT2	No			64	0	0%	50%	60	3600	90% NC	350
	Reno MOA	Reno Area1	EA18_RenoACCT1	No	113	100%	28	0	0%	25%	60	3600	90% RPM	350
		Reno Area2	EA18_RenoACCT2	No			28	0	0%	25%	60	3600	90% RPM	350
		Reno Area1	EA18_RenoFCF1	No			28	0	0%	25%	60	3600	90% RPM	350
		Reno Area2	EA18_RenoFCF2	No			28	0	0%	25%	60	3600	90% RPM	350
P-8	Commodore	Zircon LFE	P8_LFE_E	No	32	100%	14	2	15%	50.00%	40	2400	10,000 LBS	350
		SmkDck_LFE	P8_LFE_S	No			14	2		50.00%	40		10,000 LBS	350
	NAWDC-1	NAWDC1a	P8_EW1	No	12	100%	10	2	15%	100%	90	5400	10,000 LBS	350
	NAWDC-2	NAWDC2a	P8_EW2	No	7	100%	6	1	15%	100%	90	5400	10,000 LBS	350
E-2C	Commodore	Zircon LFE	E2_LFE_E	No	94	100%	40	7	15%	50.00%	40	2400	2400 ISHP	250
		SmkDck_LFE	E2_LFE_S	No			40	7		50.00%	40	2400	2400 ISHP	250
	NAWDC-1	NAWDC1a	E2_EW1	No	354	100%	301	53	15%	100%	90	5400	2400 ISHP	250
	NAWDC-2	NAWDC2a	E2_EW2	No	347	100%	295	52	15%	100%	90	5400	2400 ISHP	250
	Reno MOA	Reno Area1	E2_Reno1	Yes	14	100%	7	0	5%	50%	60	3600	2400 ISHP	250
		Reno Area2	E2_Reno2	Yes			7	0	5%	50%	60	3600	2400 ISHP	250
H-60	Commodore	fightNewAlt1&3	H60_LFE_CSAR		116	100%	99	17	15%	100%	90	5400		
	NAWDC-1	NAWDC1a	H60_NCSAR		250	100%	213	38	15%	100%	210	12600		40
	NAWDC-2	NAWDC2a	H60_SCSAR		250	100%	213	38	15%	100%	210	12600		40
	Dixie LZ				97	100%	35	4	10%	40%	120	7200		40
	Gabbs LZ					100%	52	6	10%	60%	120	7200		40
	Dixie	Dixie_Helo	H60_N2TERF		373	100%	181	20	10%	54%	120	7200		40
		Dixie_Helo	H60_N2SOF			100%	60	7	10%	18%	120	7200		70
		Dixie_Helo	H60_N2MARS			100%	17	2	10%	5%	120	7200		70
		Dixie_Helo	H60_N2SACT		37	100%	86	0	0%	23%	120	7200		100
	Fairview	R-4816S	H60_S1TERF		75	0%	0	0	10%	0%	120	7200		40
		R-4816S	H60_S1SACT			100%	75	0	0%	100%	120	7200		100
		R-4816S	H60_S1SOF			0%	0	0	10%	0%	120	7200		70
		R-4816S	H60_S1MARS			0%	0	0	10%	0%	120	7200		70
	B-16	B16-Helo	H60_16TERF		130	79%	17	2	10%	18%	120	7200		40
		B16-Helo	H60_16CAS				28	3	10%	30%	120	7200		90
		B16-Helo	H60_16CSAR				17	2	10%	18%	120	7200		70
		HVBSS_H	H60_16HVBSSH				31	3	10%	34%	120	7200		40
	B-17	B17-Helo	H60_17CAS		264	83%	64	7	10%	32.5%	120	7200		90
		B17-HeloN	H60_17CASn				64	7	10%	32.5%	120	7200		90
		B17-Helo	H60_17MARS				11	1	10%	5.5%	120	7200		70
		B17-HeloN	H60_17MARSn				11	1	10%	5.5%	120	7200		70
		B17_HF1	H60_17AG1n				32	4	10%	16%	120	7200		70
		B17_HF2	H60_17AG2n				16	2	10%	8%	120	7200		70
	B-19	B19_Helo	H60_19TERF		123	25%	1	0	10%	4%	120	7200		40
		B19_Helo	H60_19CAS				27	3	10%	96%	120	7200		90
	B-20	B20-HF	H60_20HF1		89	97%	2	0	10%	3%	120	7200		70
		B20-Harea	H60_20MARS				12	1	10%	16%	120	7200		70
		B20-Harea	H60_20FAC				63	7	10%	81%	120	7200		80

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Table 3-10. Proposed Action Alternative 3 Aircraft Sorties Area Operations and Mission Types for B-17 only

Aircraft	Main SUA Unit	Area Model ID	Mission Profile ID	Supersonic Potential	Annual Sorties	% of Missions	Day 0700-2200	Night 2200-0700	% Acoustic Night 2200 to 700	% Sorties in Unit	Average Time (min)	Average Time (sec)	Primary Power Setting	Average Airspeed (KIAS)
F/A-18E/F	B-17	B17-CAS_New3	F18E_17CAS_IN	No	1710	87.5%	398	21	5%	28%	90	5400	90% NC	400
		B17-CAS_Fgt_Alt3	F18E_17CAS_Fgt	No			100	5	5%	7%	90	5400	90.5% NC	500
		BFM Fairview1	F18E_17BFM1	No			299	0	0%	20%	25	1500	96% NC	350
		BFM Fairview2	F18E_17BFM2	No			150	0	0%	10%	25	1500	96% NC	350
		BFM Gabbs	F18E_17BFM3	No			449	0	0%	30%	25	1500	96% NC	350
		B17-ConBmb_BL	F18E_17Conv1	No			36	2	5%	2.5%	60	3600	90.5% NC	500
		B17-ConBmb_Alt3	F18E_17Conv2				36	2	5%	2.5%	60	3600	90.5% NC	500
F/A-18C/D	B-17	B17-CAS_New3	F18C_17CAS_IN	No	302	87.5%	70	4	5%	28%	90	5400	91% NC	400
		B17-CAS_Fgt_Alt3	F18C_17CAS_Fgt	No			18	1	5%	7%	90	5400	92% NC	500
		BFM Fairview1	F18C_17BFM1	No			53	0	0%	20%	25	1500	96.5% NC	350
		BFM Fairview2	F18C_17BFM2	No			26	0	0%	10%	25	1500	96.5% NC	350
		BFM Gabbs	F18C_17BFM3	No			79	0	0%	30%	25	1500	96.5% NC	350
		B17-ConBmb_BL	F18C_17Conv1	No			6	0	5%	2.5%	60	3600	92% NC	500
		B17-ConBmb_Alt3	F18C_17Conv2				6	0	5%	2.5%	60	3600	92% NC	500
F-35B/C	B-17	B17-CAS_New3	F35C_17CAS_IN	No	100	87.5%	23	1	5%	28%	90	5400	80% ETR	400
		B17-CAS_Fgt_Alt3	F35C_17CAS_Fgt	No			6	0	5%	7%	90	5400	90% ETR	500
		BFM Fairview1	F35C_17BFM1	No			18	0	0%	20%	25	1500	50% ETR	325
		BFM Fairview2	F35C_17BFM2	No			9	0	0%	10%	25	1500	50% ETR	325
		BFM Gabbs	F35C_17BFM3	No			26	0	0%	30%	25	1500	50% ETR	325
		B17-ConBmb_BL	F35C_17Conv1	No			2	0	5%	2.5%	60	3600	90% ETR	500
		B17-ConBmb_Alt3	F35C_17Conv2				2	0	5%	2.5%	60	3600	90% ETR	500
F-5N	B-17	B17-SUP	F5_17SUP	No	195	100%	93	5	5%	50%	60	3600	90% RPM	350
		B17-SUP_Alt3	F5_17SUPn	No			93	5	5%	50%	60	3600	90% RPM	350
F-16C	B-17	B17-SUP	F16_17SUP	No	117	100%	56	3	5%	50%	90	5400	91% NC	350
		B17-SUP_Alt3	F16_17SUPn	No			56	3	5%	50%	90	5400	91% NC	350
EA-18G	B-17	BFM Fairview1	EA18_S1AACT	No	209	100%	105	0	0%	50%	60	3600	90% NC	350
		BFM Fairview2	EA18_S2AACT	No			105	0	0%	50%	60	3600	90% NC	350
H-60	B-17	B17-Helo	H60_17CAS		264	83%	64	7	10%	32.5%	120	7200		90
		B17-Helo_Alt3	H60_17CASn				64	7	10%	32.5%	120	7200		90
		B17-Helo	H60_17MARS				11	1	10%	5.5%	120	7200		70
		B17-Helo_Alt3	H60_17MARSn				11	1	10%	5.5%	120	7200		70
		B17_HF1	H60_17AG1n				16	2	10%	8%	120	7200		70
		B17_HF2	H60_17AG2n				16	2	10%	8%	120	7200		70
		B17_HF_Alt3	H60_17AG_alt3				16	2	10%	8%	120	7200		70

3.8 Tracked Operations

For tracked operations, the noise analysis utilizes fixed-wing entry routes (arrival flights), exit routes (departure flights), high dive/low dive, CAS, strafing, and level bombing tracks, as well as helicopter entry/exit routes and air gunnery routes. Tactical, irregularly repeated operations are modeled as area operations, not tracked operations. The modeled tracks are discussed in Sections 3.1.1, 3.2.1, 3.3.1, 3.4.1, and 3.5.1. Table 3-12 and Table 3-13 detail Proposed Alternative 1 and 3 fixed-wing and H-60 helicopter tracked operations within the FRTC. These tracked operations include entry/exit routes into the ranges, tactical gunnery tracks (high dive, low dive, pop-left, pop-right, strafing), CAS tracks, tactical intercept tracks, and helicopter air gunnery tracks. The distribution of modeled tracked operations is similar between Baseline scenario and Alternative 1 with the exception of F-35B/C operations and tracks moving to new proposed targets. The No Action Alternative contains no air-to-ground activity in B-16, B-17, B-19, and B-20.

Table 3-11. Baseline Aircraft Sorties Tracked Operations and Mission Types

Aircraft	Main SUA Unit	Mission Type	Modeled Track	Modeled Track ID	Mission Profile ID	Annual Sorties within Unit		Total Annual Passes	Acoustic Day Passes 700-2200	Acoustic Night Passes 2200-700	% Utilization	# of Passes per Sortie	% Acoustic Night 2200 to 700	Power Setting	Airspeed (KIAS)
						Total	% Track								
F/A-18E/F		Entry	B16_Ent	FW_B16_ent	F18E_B16IN	636	100%	636	618	18	100%	1	2.9%	85% NC	350
		Exit	B16_Ex	FW_B16_ex	F18E_B16EG	636	100%	636	618	18	100%	1	2.9%	84% NC	300
		Entry	B17_Ent	FW_B17_ent	F18E_B17IN	1,710	100%	1710	1669	41	100%	1	2.4%	85% NC	350
		Exit	B17_Ex	FW_B17_ex	F18E_B17EG	1,710	100%	1710	1669	41	100%	1	2.4%	84% NC	300
		Entry	B19_Ent	FW_B19_ent	F18E_B19IN	3,194	100%	3194	3034	160	100%	1	5.0%	85% NC	350
		Exit	B19_Ex	FW_B19_ex	F18E_B19EG	3,194	100%	3194	3034	160	100%	1	5.0%	84% NC	300
		Entry	B20_Ent	FW_B20_entex	F18E_B20EE	745	100%	1490	1471	19	100%	2	1.3%	85% NC	350
		Entry	LFE_Direct	LFE_Direct	F18E_IN	1,118	100%	1118	950	168	100%	1	15%	85% NC	350
		Entry	Commodore	Admiral	F18E_INGN	9,209	100%	9209	7828	1381	100%	1	15%	85% NC	350
		Entry	Admiral	Commodore	F18E_INGS	9,344	100%	9344	7942	1402	100%	1	15%	85% NC	350
		Exit	Commodore	Commodore	F18E_EGS	10215	100%	10215	8683	1532	100%	1	15%	84% NC	300
		Exit	Admiral	Admiral	F18E_EGN	9456	100%	9456	8038	1418	100%	1	15%	84% NC	300
	B-16	High Dive	B16-HDLD	B16_HD	F18E_16HD	636	40%	733	696	37	48%	6	5%	96% NC	450
		Low Dive	B16-HDLD	B16_LD	F18E_16LD			458	435	23	30%	6	5%	96% NC	450
		Strafing	B16_Strf	B16_Strf	F18E_16STRA			560	532	28	22%	10	5%	96% NC	450
	B-17	Conventional	B17-CONVa			1,710	13%	0	0	0	0%	10	5%	96% NC	450
		Strafing	B17-STRAa	B17-STRAa	F18E_17STRA			1069	1015	53	50%	10	5%	96% NC	450
	B-19	Strafing	East	B19-Strafe	F18E_19Strf1	3,194	20%	2875	2731	144	50%	9	5%	96% NC	450
		Strafing	West	B19-Strafe_2	F18E_19Strf2			2875	2731	144	50%	9	5%	96% NC	450
	B-20	Conventional	B20-SCONVa	B20-SCONVa	F18E_20Conv	745	25%	838	796	42	50%	9	5%	84.5% NC	400
		Strafing	B20-SSTRAa	B20-SSTRAa	F18E_20STRA			838	796	42	50%	9	5%	84.5% NC	400
F/A-18C/D		Entry	B16_ING	FW_B16_ent	F18C_B16IN	112	100%	112	109	3	100%	1	2.9%	85% NC	350
		Exit	B16_EG	FW_B16_ex	F18C_B16EG	112	100%	112	109	3	100%	1	2.9%	84% NC	300
		Entry	B17_Ent	FW_B17_ent	F18C_B17IN	302	100%	302	295	7	100%	1	2.4%	85% NC	350
		Exit	B17_Ex	FW_B17_ex	F18C_B17EG	302	100%	302	295	7	100%	1	2.4%	84% NC	300
		Entry	B19_Ent	FW_B19_ent	F18C_B19IN	564	100%	564	536	28	100%	1	5.0%	85% NC	350
		Exit	B19_Ex	FW_B19_ex	F18C_B19EG	564	100%	564	536	28	100%	1	5.0%	84% NC	300
		Entry	B20_Ent	FW_B20_entex	F18C_B20EE	132	100%	264	261	3	100%	2	1.3%	85% NC	350
		Entry	LFE_Direct	LFE_Direct	F18C_IN	197	100%	197	167	30	100%	1	15%	85% NC	350
		Entry	Commodore	Admiral	F18C_INGN	1,625	100%	1625	1381	244	100%	1	15%	85% NC	350
		Entry	Admiral	Commodore	F18C_INGS	1,649	100%	1649	1402	247	100%	1	15%	85% NC	350
		Exit	Commodore	Commodore	F18C_EGS	1802	100%	1802	1532	270	100%	1	15%	84% NC	300
		Exit	Admiral	Admiral	F18C_EGN	1669	100%	1669	1419	250	100%	1	15%	84% NC	300
	B-16	High Dive	B16-HDLD	B16_HD	F18C_16HD	112	40%	118	112	6	44%	6	5%	94%-96% NC	300-480
		Low Dive	B16-HDLD	B16_LD	F18C_16LD			75	72	4	28%	6	5%	94%-96% NC	350-480
		Strafing	B-16Strf	B16_Strf	F18C_16STRA			90	85	4	20%	10	5%	96.5% NC	450
	B-17	Conventional	B17-CONVa			302	12.5%	0	0	0	0%	10	5%	96.5% NC	450
		Strafing	B17-STRAa	B17-STRAa	F18C_17STRA			378	359	19	100%	10	5%	96.5% NC	450
	B-19	Strafing	East	B19-Strafe	F18C_19Strf1	564	20%	508	482	25	50.00%	9	5%	92% NC	500
		Strafing	West	B19-Strafe_2	F18C_19Strf2			508	482	25	50.0%	9	5%	96.5% NC	450
	B-20	Conventional	B20-SCONVa	B20-SCONVa	F18C_20Conv	132	25%	149	141	7	50%	9	5%	92% NC	500
		Strafing	B20-SSTRAa	B20-SSTRAa	F18C_20STRA			149	141	7	50%	9	5%	96.5%NC	450

Aircraft	Main SUA Unit	Mission Type	Modeled Track	Modeled Track ID	Mission Profile ID	Annual Sorties within Unit		Total Annual Passes	Acoustic Day Passes 700-2200	Acoustic Night Passes 2200-700	% Utilization	# of Passes per Sortie	% Acoustic Night 2200 to 700	Power Setting	Airspeed (KIAS)
						Total	% Track								
F-5N		Entry	B16_Ent	FW_B16_ent	F5_B16IN	35	100%	35	33	2	100%	1	5%	95% RPM	350
		Exit	B16_Ex	FW_B16_ex	F5_B16EG	35	100%	35	33	2	100%	1	5%	101% RPM	350
		Entry	B17_Ent	FW_B17_ent	F5_B17IN	195	100%	195	185	10	100%	1	5%	95% RPM	350
		Exit	B17_Ex	FW_B17_ex	F5_B17EG	195	100%	195	185	10	100%	1	5%	101% RPM	350
		Entry	B19_Ent	FW_B19_ent	F5_B19IN	37	100%	37	35	2	100%	1	5%	95% RPM	350
		Exit	B19_Ex	FW_B19_ex	F5_B19Ex	37	100%	37	35	2	100%	1	5%	101% RPM	350
		Entry	B20_Ent	FW_B20_entex	F5_B20EE	529	100%	1058	1005	53	100%	2	5%	95% RPM	350
		Entry	Commodore	Commodore	F5_EntS	1,624	100%	1624	1380	244	100%	1	15%	101% RPM	350
		Exit	BanditExitS	BanditExitS	F5_ExS	1798	100%	1798	1528	270	100%	1	15%	101% RPM	350
		Entry	Admiral	Admiral	F5_EntN	1,508	100%	1508	1282	226	100%	1	15%	101% RPM	350
		Exit	BanditExitN	BanditExitN	F5_ExN	1914	100%	1914	1627	287	100%	1	15%	101% RPM	350
F-16C		Entry	B16_Ent	FW_B16_ent	F16_B16Ent	38	100%	38	36	2	100%	1	5%	85% NC	300
		Exit	B16_Ex	FW_B16_ex	F16_B16Ex	38	100%	38	36	2	100%	1	5%	85% NC	300
		Entry	B17_Ent	FW_B17_ent	F16_B17Ent	117	100%	117	111	6	100%	1	5%	85% NC	300
		Exit	B17_Ex	FW_B17_ex	F16_B17Ex	117	100%	117	111	6	100%	1	5%	85% NC	300
		Entry	B19_Ent	FW_B19_ent	F16_B19IN	0	100%	0	0	0	100%	1	5%	85% NC	300
		Exit	B19_Ex	FW_B19_ex	F16_B19Ex	0	100%	0	0	0	100%	1	5%	85% NC	300
		Entry	B20_Ent	FW_B20_entex	F16_B20EE	284	100%	568	540	28	100%	2	5%	85% NC	300
		Entry	Commodore	Commodore	F16_EntS	1,160	100%	1160	986	174	100%	1	15%	85% NC	300
		Exit	BanditExitS	BanditExitS	F16_ExS	1282.7	100%	1283	1090	192	100%	1	15%	85% NC	300
		Entry	Admiral	Admiral	F16_EntN	1,827	100%	1827	1553	274	100%	1	15%	85% NC	300
		Exit	BanditExitN	BanditExitN	F16_ExN	2113.3	100%	2113	1796	317	100%	1	15%	85% NC	300
EA-18G		Entry	B16_Ent	FW_B16_ent	EA18G_B16IN	30	100%	30	30	0	100%	1	0.0%	85% NC	350
		Exit	B16_Ex	FW_B16_ex	EA18G_B16EG	30	100%	30	30	0	100%	1	0.0%	84% NC	300
		Entry	B17_Ent	FW_B17_ent	EA18G_B17IN	209	100%	209	209	0	100%	1	0.0%	85% NC	350
		Exit	B17_Ex	FW_B17_ex	EA18G_B17EG	209	100%	209	209	0	100%	1	0.0%	84% NC	300
		Entry	B19_Ent	FW_B19_ent	EA18G_B19IN	177	100%	177	177	0	100%	1	0.0%	85% NC	350
		Exit	B19_Ex	FW_B19_ex	EA18G_B19EG	177	100%	177	177	0	100%	1	0.0%	84% NC	300
		Entry	B20_Ent	FW_B20_entex	EA18G_B20EE	128	100%	256	256	0	100%	2	0.0%	85% NC	350
		Entry	LFE_Direct	LFE_Direct	EA18G_IN	139	100%	139	118	21	100%	1	15%	85% NC	350
		Entry	Commodore	Admiral	EA18G_INGN	865	100%	865	735	130	100%	1	15%	85% NC	350
		Entry	Admiral	Commodore	EA18G_INGS	1,103	100%	1103	938	165	100%	1	15%	85% NC	350
		Exit	Commodore	Commodore	EA18G_EGS	1228	100%	1228	1044	184	100%	1	15%	84% NC	300
		Exit	Admiral	Admiral	EA18G_EGN	879	100%	879	747	132	100%	1	15%	84% NC	300

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Aircraft	Main SUA Unit	Mission Type	Modeled Track	Modeled Track ID	Mission Profile ID	Annual Sorties within Unit		Total Annual Passes	Acoustic Day Passes 700-2200	Acoustic Night Passes 2200-700	% Utilization	# of Passes per Sortie	% Acoustic Night 2200 to 700	Power Setting	Airspeed (KIAS)
						Total	% Track								
P-8		Entry	LFE_Direct	LFE_Direct	P8_EE	32	100%	32	27	5	100%	1	15%	85% NC	350
		Entry	Commodore	Commodore	P8_EntS	7	100%	7	6	1	100%	1	15%	85% NC	350
		Entry	Admiral	Admiral	P8_EntN	12	100%	12	10	2	100%	1	15%	85% NC	350
		Exit	Commodore	Commodore	P8_ExS	36	100%	36	31	5	100%	1	15%	84% NC	300
		Exit	Admiral	Admiral	P8_ExN	15	100%	15	13	2	100%	1	15%	84% NC	300
E-2C		Entry	LFE_Direct	LFE_Direct	E2_EE	94	100%	94	80	14	100%	1	15%	85% NC	350
		Entry	Commodore	Commodore	E2_EntS	347	100%	347	295	52	100%	1	15%	85% NC	350
		Entry	Admiral	Admiral	E2_EntN	354	100%	354	301	53	100%	1	15%	85% NC	350
		Exit	Commodore	Commodore	E2_ExS	432	100%	432	367	65	100%	1	15%	84% NC	300
		Exit	Admiral	Admiral	E2_ExN	363	100%	363	309	54	100%	1	15%	84% NC	300
H-60		Entry/Exit	H_B16	H_B16	H60_16InOut	130	100%	260	234	26	100%	2	10%		110
		Entry/Exit	H_B17	H_B17	H60_17InOut	264	100%	528	475	53	100%	2	10%		110
		Entry/Exit	H_B19	H_B19	H60_19InOut	123	100%	246	221	25	100%	2	10%		110
		Entry/Exit	H_B20	H_B20	H60_20InOut	89	100%	178	160	18	100%	2	10%		110
		Entry/Exit	H60_MtnNa	H_DV_n	H60_MtnNa	797	100%	797	717	80	50%	2	10%		110
		Entry/Exit	H60_MtnNb	H_DV_s	H60_MtnNb			797	717	80	50%	2	10%		110
		Entry/Exit	H60_MtnS	H_SLZ	H60_MtnS	400	100%	800	720	80	100%	2	10%		110
	B-16	Air Gunnery	B16-HAG	B16_HAG	H60_16AG	130	21%	273	246	27	100%	10	10%		110
	B-17	Air Gunnery	B17-HAG	B17_HAG	H60_17AG	264	17%	449	404	45	100%	10	10%		110
	B-19	Air Gunnery	B19-HAG	B19-HAG	H60_19AG	123	75%	923	830	92	100%	10	10%		110
	B-20	Air Gunnery	B20-HAG	B20-HAG	H60_20AG	89	3%	27	24	3	100%	10	10%		110

Table 3-12. Proposed Action Alternative 1 Aircraft Sorties Tracked Operations and Mission Types

Aircraft	Main SUA Unit	Modeled Track ID	Mission Profile ID	Annual Sorties within Unit		Total Annual Passes	Acoustic Day Passes 700-2200	Acoustic Night Passes 2200-700	% Utilization	# of Passes per Sortie	% Acoustic Night 2200 to 700	Power Setting	Airspeed (KIAS)
				Total	% Track								
F/A-18E/F		FW_B16_ent	F18E_B16IN	636	100%	636	618	18	100%	1	2.9%	85% NC	350
		FW_B16_ex	F18E_B16EG	636	100%	636	618	18	100%	1	2.9%	84% NC	300
		FW_B17_ent	F18E_B17IN	1,710	100%	1710	1671	39	100%	1	2.3%	85% NC	350
		FW_B17_ex	F18E_B17EG	1,710	100%	1710	1671	39	100%	1	2.3%	84% NC	300
		FW_B19_ent	F18E_B19IN	3,194	100%	3194	3034	160	100%	1	5.0%	85% NC	350
		FW_B19_ex	F18E_B19EG	3,194	100%	3194	3034	160	100%	1	5.0%	84% NC	300
		FW_B20_entex	F18E_B20EE	745	100%	1490	1462	28	100%	2	1.9%	85% NC	350
		LFE_Direct	F18E_IN	1,118	100%	1118	950	168	100%	1	15%	85% NC	350
		Admiral	F18E_INGN	9,209	100%	9209	7828	1381	100%	1	15%	85% NC	350
		Commodore	F18E_INGS	9,344	100%	9344	7942	1402	100%	1	15%	85% NC	350
		Commodore	F18E_EGS	10215	100%	10215	8683	1532	100%	1	15%	84% NC	300
		Admiral	F18E_EGN	9456	100%	9456	8038	1418	100%	1	15%	84% NC	300
	B-16	B16_HD	F18E_16HD	636	40%	733	696	37	48%	6	5%	96% NC	450
		B16_LD	F18E_16LD			458	435	23	30%	6	5%	96% NC	450
		B16_Strf	F18E_16STRA			560	532	28	22%	10	5%	96% NC	450
	B-17	B17-STRAa	F18E_17STRA	1,710	12.5%	710	674	35	33.2%	10	5%	96% NC	450
		B17-StrfN1	F18E_17StrfN1			357	339	18	16.7%	10	5%	96% NC	450
		B17-StrfN1a	F18E_17StrfN1a			357	339	18	16.7%	10	5%	96% NC	450
		B17-StrfN2	F18E_17StrfN2			357	339	18	16.7%	10	5%	96% NC	450
		B17-StrfN2a	F18E_17StrfN2a			357	339	18	16.7%	10	5%	96% NC	450
	B-19	B19-Strafe	F18E_19Strf1	3,194	20%	2875	2731	144	50%	9	5%	96% NC	450
		B19-Strafe_2	F18E_19Strf2			2875	2731	144	50%	9	5%	96% NC	450
	B-20			745	12.5%	0	0	0	0%	9	5%	84.5% NC	400
		B20-SSTRAa	F18E_20STRA			838	796	42	100%	9	5%	84.5% NC	400
F/A-18C/D		FW_B16_ent	F18C_B16IN	112	100%	112	109	3	100%	1	2.9%	85% NC	350
		FW_B16_ex	F18C_B16EG	112	100%	112	109	3	100%	1	2.9%	84% NC	300
		FW_B17_ent	F18C_B17IN	302	100%	302	295	7	100%	1	2.3%	85% NC	350
		FW_B17_ex	F18C_B17EG	302	100%	302	295	7	100%	1	2.3%	84% NC	300
		FW_B19_ent	F18C_B19IN	564	100%	564	536	28	100%	1	5.0%	85% NC	350
		FW_B19_ex	F18C_B19EG	564	100%	564	536	28	100%	1	5.0%	84% NC	300
		FW_B20_entex	F18C_B20EE	132	100%	264	259	5	100%	2	1.9%	85% NC	350
		LFE_Direct	F18C_IN	197	100%	197	167	30	100%	1	15%	85% NC	350
		Admiral	F18C_INGN	1,625	100%	1625	1381	244	100%	1	15%	85% NC	350
		Commodore	F18C_INGS	1,649	100%	1649	1402	247	100%	1	15%	85% NC	350
		Commodore	F18C_EGS	1802	100%	1802	1532	270	100%	1	15%	84% NC	300
		Admiral	F18C_EGN	1669	100%	1669	1419	250	100%	1	15%	84% NC	300
	B-16	B16_HD	F18C_16HD	112	40%	118	112	6	44%	6	5%	94%-96% NC	300-480
		B16_LD	F18C_16LD			75	72	4	28%	6	5%	94%-96% NC	350-480
		B16_Strf	F18C_16STRA			90	85	4	20%	10	5%	96.5% NC	450
	B-17	B17-STRAa	F18C_17STRA	302	12.5%	125	119	6	33.2%	10	5%	96.5% NC	450
		B17-StrfN1	F18C_17StrfN1			63	60	3	16.7%	10	5%	96.5% NC	450
		B17-StrfN1a	F18C_17StrfN1a			63	60	3	16.7%	10	5%	96.5% NC	450
		B17-StrfN2	F18C_17StrfN2			63	60	3	16.7%	10	5%	96.5% NC	450
		B17-StrfN2a	F18C_17StrfN2a			63	60	3	16.7%	10	5%	96.5% NC	450
	B-19	B19-Strafe	F18C_19Strf1	564	20%	508	482	25	50%	9	5%	92% NC	500
		B19-Strafe_2	F18C_19Strf2			508	482	25	50%	9	5%	96.5% NC	450
	B-20			132	12.5%	0	0	0	0%	9	5%	92% NC	500
		B20-SSTRAa	F18C_20STRA			149	141	7	100%	9	5%	96.5%NC	450

Aircraft	Main SUA Unit	Modeled Track ID	Mission Profile ID	Annual Sorties within Unit		Total Annual Passes	Acoustic Day Passes 700-2200	Acoustic Night Passes 2200-700	% Utilization	# of Passes per Sortie	% Acoustic Night 2200 to 700	Power Setting	Airspeed (KIAS)
				Total	% Track								
F-35B/C		FW_B16_ent	F35C_B16IN	25	100%	25	24	1	100%	1	2.9%	35% ETR	350
		FW_B16_ex	F35C_B16EG	25	100%	25	24	1	100%	1	2.9%	35% ETR	350
		FW_B17_ent	F35C_B17IN	100	100%	100	99	1	100%	1	0.9%	35% ETR	350
		FW_B17_ex	F35C_B17EG	100	100%	100	99	1	100%	1	0.9%	35% ETR	350
		FW_B19_ent	F35C_B19IN	25	100%	25	24	1	100%	1	5.0%	35% ETR	350
		FW_B19_ex	F35C_B19EG	25	100%	25	24	1	100%	1	5.0%	35% ETR	350
		FW_B20_entex	F35C_B20EE	100	100%	200	199	1	100%	2	0.6%	35% ETR	350
		LFE_Direct	F35C_IN	449	100%	449	427	22	100%	1	5%	35% ETR	350
		Admiral	F35C_INGN	567	100%	567	539	28	100%	1	5%	35% ETR	350
		Commodore	F35C_INGS	573	100%	573	544	29	100%	1	5%	35% ETR	350
		Commodore	F35C_EGS	971	100%	971	922	49	100%	1	5%	35% ETR	350
		Admiral	F35C_EGN	618	100%	618	587	31	100%	1	5%	35% ETR	350
	B-16	B16_HD	F35C_16HD	25	40%	26	25	1	44%	6	5%	90% ETR	450
		B16_LD	F35C_16LD			17	16	1	28%	6	5%	90% ETR	450
		B16_Strf	F35C_16STRA			20	19	1	20%	10	5%	90% ETR	450
	B-17	B17-STRAa	F35C_17STRA	100	12.5%	42	39	2	33.2%	10	5%	90% ETR	450
		B17-StrfN1	F35C_17StrfN1			21	20	1	16.7%	10	5%	90% ETR	450
		B17-StrfN1a	F35C_17StrfN1a			21	20	1	16.7%	10	5%	90% ETR	450
		B17-StrfN2	F35C_17StrfN2			21	20	1	16.7%	10	5%	90% ETR	450
		B17-StrfN2a	F35C_17StrfN2a			21	20	1	16.7%	10	5%	90% ETR	450
	B-19	B19-Strafe	F35C_19Strf1	25	20%	23	21	1	50%	9	5%	90% ETR	450
		B19-Strafe_2	F35C_19Strf2			23	21	1	50%	9	5%	90% ETR	450
	B-20			100	12.5%	0	0	0	0%	9	5%	90% ETR	450
		B20-SSTRAa	F35C_20STRA			113	107	6	100%	9	5%	90% ETR	450
F-5N		FW_B16_ent	F5_B16IN	35	100%	35	33	2	100%	1	5%	95% RPM	350
		FW_B16_ex	F5_B16EG	35	100%	35	33	2	100%	1	5%	101% RPM	350
		FW_B17_ent	F5_B17IN	195	100%	195	185	10	100%	1	5%	95% RPM	350
		FW_B17_ex	F5_B17EG	195	100%	195	185	10	100%	1	5%	101% RPM	350
		FW_B19_ent	F5_B19IN	37	100%	37	35	2	100%	1	5%	95% RPM	350
		FW_B19_ex	F5_B19EG	37	100%	37	35	2	100%	1	5%	101% RPM	350
		FW_B20_entex	F5_B20EE	529	100%	1058	1005	53	100%	2	5%	95% RPM	350
		Commodore	F5_EntS	1,879	100%	1879	1597	282	100%	1	15%	101% RPM	350
		BanditExitS	F5_ExS	2053.2	100%	2053	1745	308	100%	1	15%	101% RPM	350
		Admiral	F5_EntN	1,253	100%	1253	1065	188	100%	1	15%	101% RPM	350
		BanditExitN	F5_ExN	1658.8	100%	1659	1410	249	100%	1	15%	101% RPM	350
F-16C		FW_B16_ent	F16_B16Ent	38	100%	38	36	2	100%	1	5%	85% NC	300
		FW_B16_ex	F16_B16Ex	38	100%	38	36	2	100%	1	5%	85% NC	300
		FW_B17_ent	F16_B17Ent	117	100%	117	111	6	100%	1	5%	85% NC	300
		FW_B17_ex	F16_B17Ex	117	100%	117	111	6	100%	1	5%	85% NC	300
		FW_B19_ent	F16_B19IN	0	100%	0	0	0	100%	1	5%	85% NC	300
		FW_B19_ex	F16_B19Ex	0	100%	0	0	0	100%	1	5%	85% NC	300
		FW_B20_entex	F16_B20EE	284	100%	568	540	28	100%	2	5%	85% NC	300
		Commodore	F16_EntS	1,792	100%	1792	1523	269	100%	1	15%	85% NC	300
		BanditExitS	F16_ExS	1914.9	100%	1915	1628	287	100%	1	15%	85% NC	300
		Admiral	F16_EntN	1,195	100%	1195	1016	179	100%	1	15%	85% NC	300
		BanditExitN	F16_ExN	1481.1	100%	1481	1259	222	100%	1	15%	85% NC	300

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Aircraft	Main SUA Unit	Modeled Track ID	Mission Profile ID	Annual Sorties within Unit		Total Annual Passes	Acoustic Day Passes 700-2200	Acoustic Night Passes 2200-700	% Utilization	# of Passes per Sortie	% Acoustic Night 2200 to 700	Power Setting	Airspeed (KIAS)
				Total	% Track								
EA-18G		FW_B16_ent	EA18G_B16IN	30	100%	30	30	0	100%	1	0.0%	85% NC	350
		FW_B16_ex	EA18G_B16EG	30	100%	30	30	0	100%	1	0.0%	84% NC	300
		FW_B17_ent	EA18G_B17IN	209	100%	209	209	0	100%	1	0.0%	85% NC	350
		FW_B17_ex	EA18G_B17EG	209	100%	209	209	0	100%	1	0.0%	84% NC	300
		FW_B19_ent	EA18G_B19IN	177	100%	177	177	0	100%	1	0.0%	85% NC	350
		FW_B19_ex	EA18G_B19EG	177	100%	177	177	0	100%	1	0.0%	84% NC	300
		FW_B20_entex	EA18G_B20EE	128	100%	256	256	0	100%	2	0.0%	85% NC	350
		LFE_Direct	EA18G_IN	139	100%	139	118	21	100%	1	15%	85% NC	350
		Admiral	EA18G_INGN	1,103	100%	1103	938	165	100%	1	15%	85% NC	350
		Commodore	EA18G_INGS	865	100%	865	735	130	100%	1	15%	85% NC	350
		Commodore	EA18G_EGS	1228	100%	1228	1044	184	100%	1	15%	84% NC	300
		Admiral	EA18G_EGN	879	100%	879	747	132	100%	1	15%	84% NC	300
P-8		LFE_Direct	P8_EE	32	100%	32	27	5	100%	1	15%	85% NC	350
		Commodore	P8_EntS	7	100%	7	6	1	100%	1	15%	85% NC	350
		Admiral	P8_EntN	12	100%	12	10	2	100%	1	15%	85% NC	350
		Commodore	P8_ExS	36	100%	36	31	5	100%	1	15%	84% NC	300
		Admiral	P8_ExN	15	100%	15	13	2	100%	1	15%	84% NC	300
E-2C		LFE_Direct	E2_EE	94	100%	94	80	14	100%	1	15%	85% NC	350
		Commodore	E2_EntS	347	100%	347	295	52	100%	1	15%	85% NC	350
		Admiral	E2_EntN	354	100%	354	301	53	100%	1	15%	85% NC	350
		Commodore	E2_ExS	432	100%	432	367	65	100%	1	15%	84% NC	300
		Admiral	E2_ExN	363	100%	363	309	54	100%	1	15%	84% NC	300
H-60		H_B16	H60_16InOut	130	100%	260	234	26	100%	2	10%		110
		H_B17	H60_17InOut	264	100%	528	475	53	100%	2	10%		110
		H_B19	H60_19InOut	123	100%	246	221	25	100%	2	10%		110
		H_B20	H60_20InOut	89	100%	178	160	18	100%	2	10%		110
		H_DV_n	H60_MtnNa	797	100%	797	717	80	50%	2	10%		110
		H_DV_s	H60_MtnNb			797	717	80	50%	2	10%		110
		H_SLZ	H60_MtnS	400	100%	800	720	80	100%	2	10%		110
	B-16	B16_HAG	H60_16AG	130	21%	273	246	27	100%	10	10%		110
	B-17	B17_HAG	H60_17AG	264	17%	224	202	22	50%	10	10%		110
		B17_HAGN	H60_17AGN			224	202	22	50%	10	10%		110
	B-19	B19-HAG	H60_19AG	123	75%	923	830	92	100%	10	10%		110
	B-20	B20-HAG	H60_20AG	89	3%	27	24	3	100%	10	10%		110

1
2

Table 3-13. Proposed Action Alternative 3 Aircraft Sorties Tracked Operations and Mission Types for B-17 only

Aircraft	Main SUA Unit	Modeled Track ID	Mission Profile ID	Annual Sorties within Unit		Total Annual Passes	Acoustic Day Passes 700-2200	Acoustic Night Passes 2200-700	% Utilization	# of Passes per Sortie	% Acoustic Night 2200 to 700	Power Setting	Airspeed (KIAS)
				Total	% Track								
F/A-18E/F	B-17	B17-STRAa	F18E_17STRA	1,710	12.5%	534	508	27	25%	10	5%	96% NC	450
		B17-StrfN1	F18E_17StrfN1			267	254	13	12.5%	10	5%	96% NC	450
		B17-StrfN1a	F18E_17StrfN1a			267	254	13	12.5%	10	5%	96% NC	450
		B17-StrfN2	F18E_17StrfN2			267	254	13	12.5%	10	5%	96% NC	450
		B17-StrfN2a	F18E_17StrfN2a			267	254	13	12.5%	10	5%	96% NC	450
		B17-StrfN3	F18E_17StrfN3			267	254	13	12.5%	10	5%	96% NC	450
		B17-StrfN3a	F18E_17StrfN3a			267	254	13	12.5%	10	5%	96% NC	450
F/A-18C/D	B-17	B17-STRAa	F18C_17STRA	302	12.5%	94	90	5	25%	10	5%	96.5% NC	450
		B17-StrfN1	F18C_17StrfN1			47	45	2	12.5%	10	5%	96.5% NC	450
		B17-StrfN1a	F18C_17StrfN1a			47	45	2	12.5%	10	5%	96.5% NC	450
		B17-StrfN2	F18C_17StrfN2			47	45	2	12.5%	10	5%	96.5% NC	450
		B17-StrfN2a	F18C_17StrfN2a			47	45	2	12.5%	10	5%	96.5% NC	450
		B17-StrfN3	F18C_17StrfN3			47	45	2	12.5%	10	5%	96.5% NC	450
		B17-StrfN3a	F18C_17StrfN3a			47	45	2	12.5%	10	5%	96.5% NC	450
F-35B/C	B-17	B17-STRAa	F35C_17STRA	100	12.5%	31	30	2	25%	10	5%	90% ETR	450
		B17-StrfN1	F35C_17StrfN1			16	15	1	12.5%	10	5%	90% ETR	450
		B17-StrfN1a	F35C_17StrfN1a			16	15	1	12.5%	10	5%	90% ETR	450
		B17-StrfN2	F35C_17StrfN2			16	15	1	12.5%	10	5%	90% ETR	450
		B17-StrfN2a	F35C_17StrfN2a			16	15	1	12.5%	10	5%	90% ETR	450
		B17-StrfN3	F35C_17StrfN3			16	15	1	12.5%	10	5%	90% ETR	450
		B17-StrfN3a	F35C_17StrfN3a			16	15	1	12.5%	10	5%	90% ETR	450

3.9 Subsonic Aircraft Noise Results

Aircraft noise is represented by Annual Average L_{dnmr} noise contours. These contours were developed from MR_NMap, as described in Section 2. The resulting L_{dnmr} contours for FRTC are drawn from 50 to 85 dBA where applicable. Tactical missions consist of (1) a combination of repeated, tracked flight patterns and (2) areas of flying in an unrepeated fashion where flight operations are modeled as occurring throughout the applicable boundaries of the restricted airspace. As a result, the modeled noise contours will align with the perimeters of the modeled restricted airspace (often with an offset due to aircraft flight preferences away from the airspace boundary).

For the FRTC, the noise is concentrated over B-16, B-17, and B-20 for Baseline versus Alternative 1 scenarios (Figure 3-23) and for Baseline versus Alternative 3 (Figure 3-24) . The expansions in the contours for Alternatives 1 and 3 scenarios are due to the addition of F-35B/C area operations and additional area extents of training operations in the expanded MOAs and Ranges. The reductions in the contours for Alternatives 1 and 3 scenarios are due to higher altitude ceilings for many of the airspace units. Another way to look at the changes in the subsonic aircraft noise is provided in Figure 3-25 and Figure 3-26, which show the changes in modeled noise levels from baseline to the proposed actions Alternative 1 and 3, respectively. Overall, the increase is around 1.5 dB, but there are larger increases where the ranges and airspaces are proposed to be expanded.

No noise exposure is shown under the Reno MOA/ATCAA, because even with an increase in sorties, the still relatively few operations result in L_{dnmr} levels below 50 dBA for both the Baseline and Alternatives 1 and 3 scenarios.

The noise contours of 50 dBA L_{dnmr} in the eastern part of FRTC align with the perimeter of Fallon N4 and Fallon S3 under Alternative 1 and 3, but Fallon N4 and Fallon S3 are under 50 dB for the Baseline. The 50 dBA DNL contour in both the Baseline and Alternatives 1 and 3 in the west portion of the FRTC includes a circular area within B-19. Correspondingly, the operations are modeled as spread equally and thus, the resultant noise occupies the space in which the flight activity occurs. Noise contours of 60 dBA are similar between Baseline and Alternative 1 except for the expansion of B-17. Noise contours from 65 dBA to 80 dBA in the Baseline and Alternatives 1 and 3 are from a tracked bombing patterns in B-16, a strafing route in B-17, and an oval air-to-ground area in B-20. In addition, specific helicopter Landing Zones (LZs) concentrate noise in discrete locations within FRTC. For locations centered on these LZs, the noise levels are predicted to reach at least 65 dBA DNL for the Baseline and Alternatives 1 and 3.

For the No Action Alternative, the noise contours are aligned with the Baseline for the primary airspace units as shown in Figure 3-27. However, the noise associated with air-to-ground training at the Bravo training areas are removed. Figure 3-28 provides the change in the noise levels between the Baseline and No Action Alternative, which shows an overall reduction in the noise levels because of the removal of air-to-ground training operations.

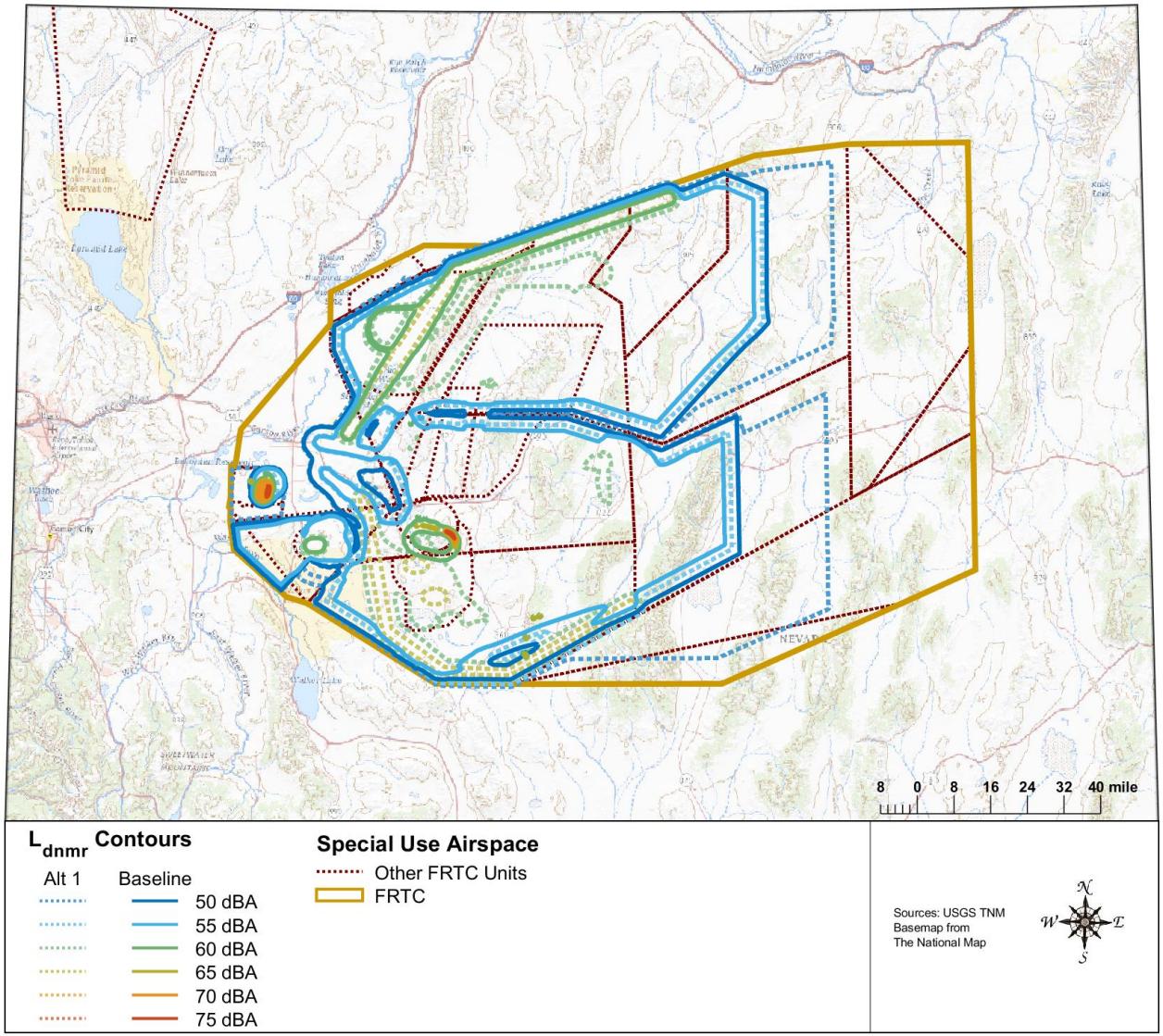


Figure 3-23. FRTC Baseline and Proposed Action Alternative 1 Results for Subsonic Aircraft Noise (L_{dnmr})

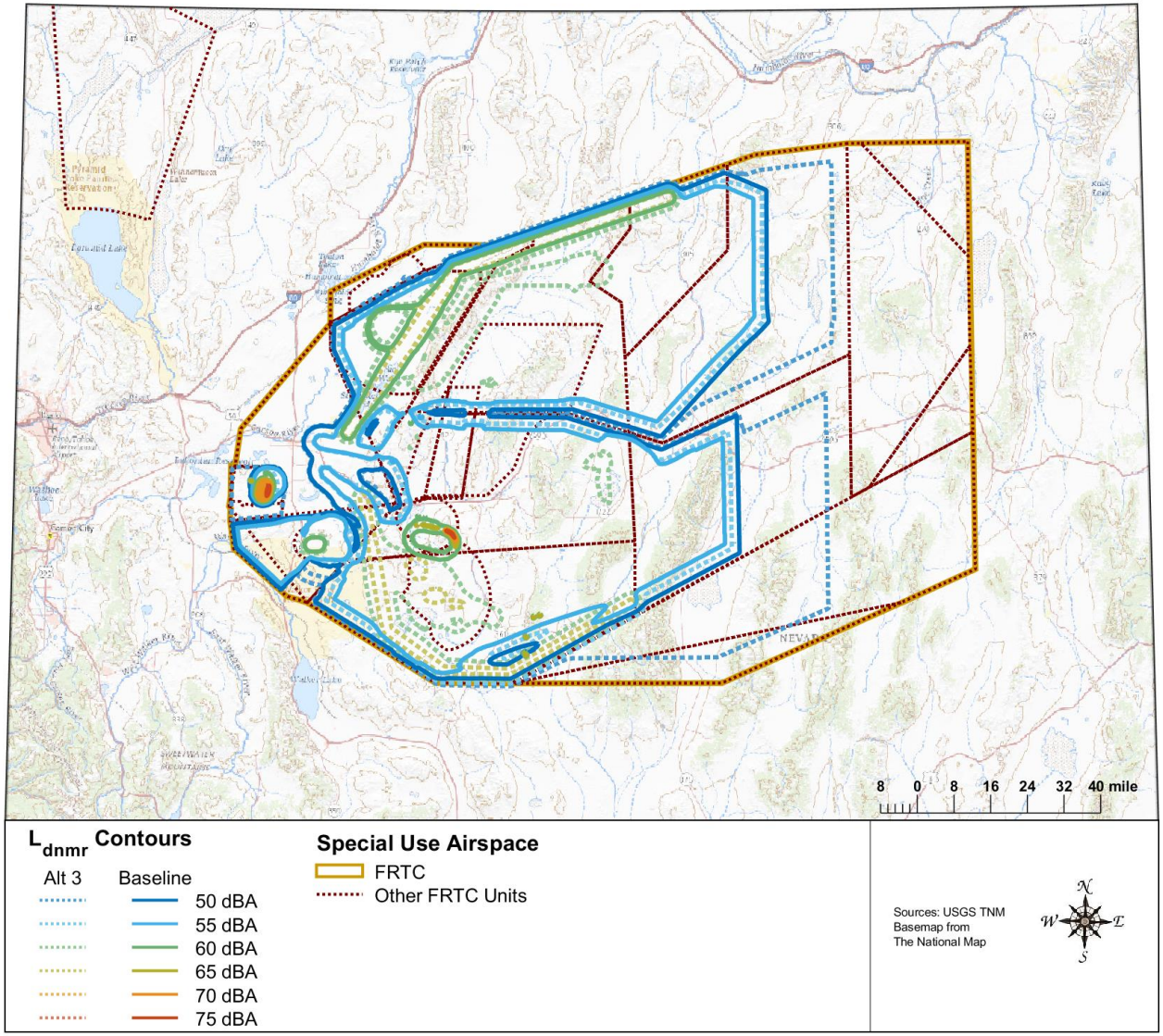


Figure 3-24. FRTC Baseline and Proposed Action Alternative 3 Results for Subsonic Aircraft Noise (L_{dnmr})

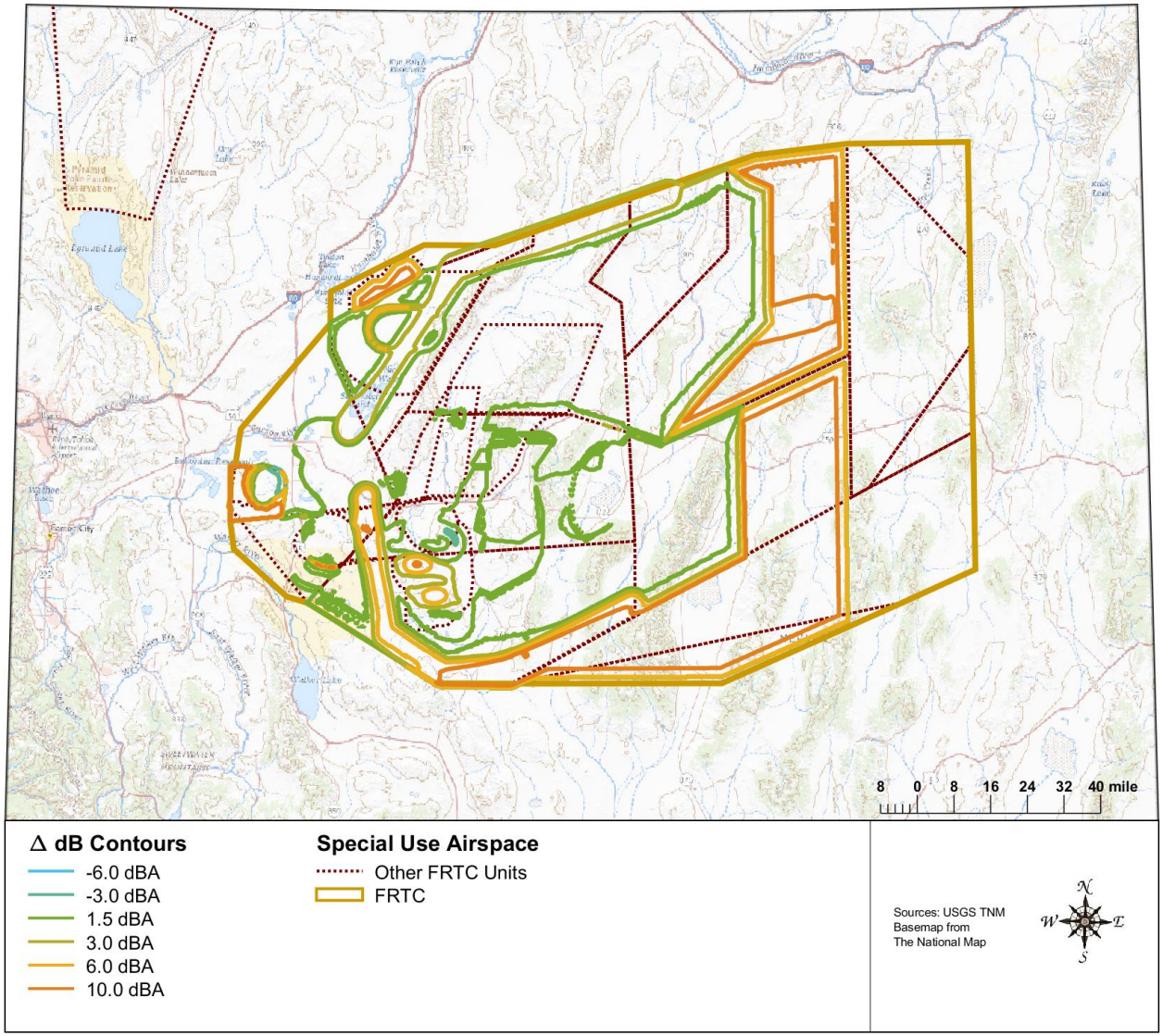


Figure 3-25. Change in L_{dnmr} for FRTC Baseline and Proposed Action Alternative 1 Results for Subsonic Aircraft Noise

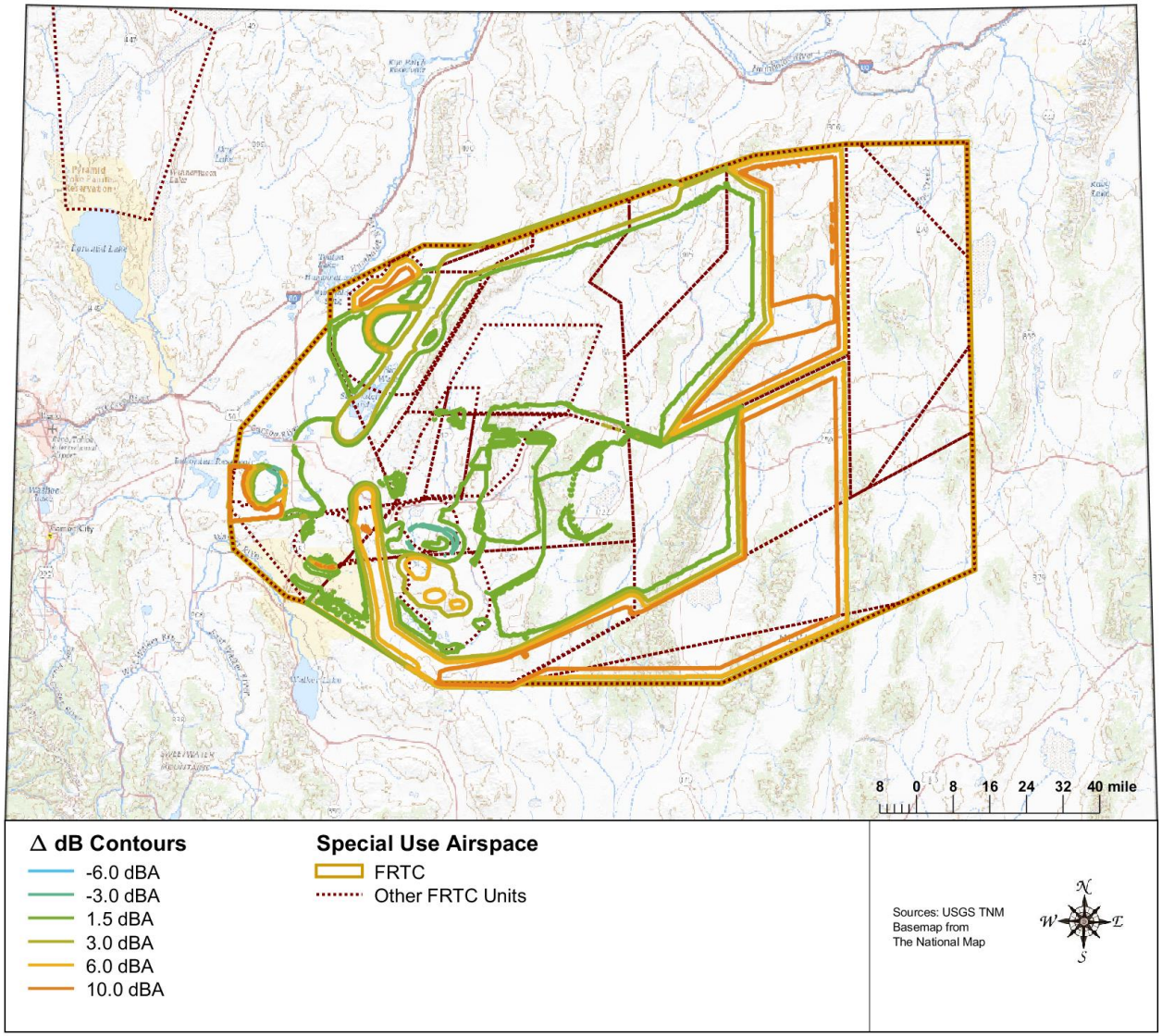


Figure 3-26. Change in L_{dnmr} for FRTC Baseline and Proposed Action Alternative 3 Results for Subsonic Aircraft Noise

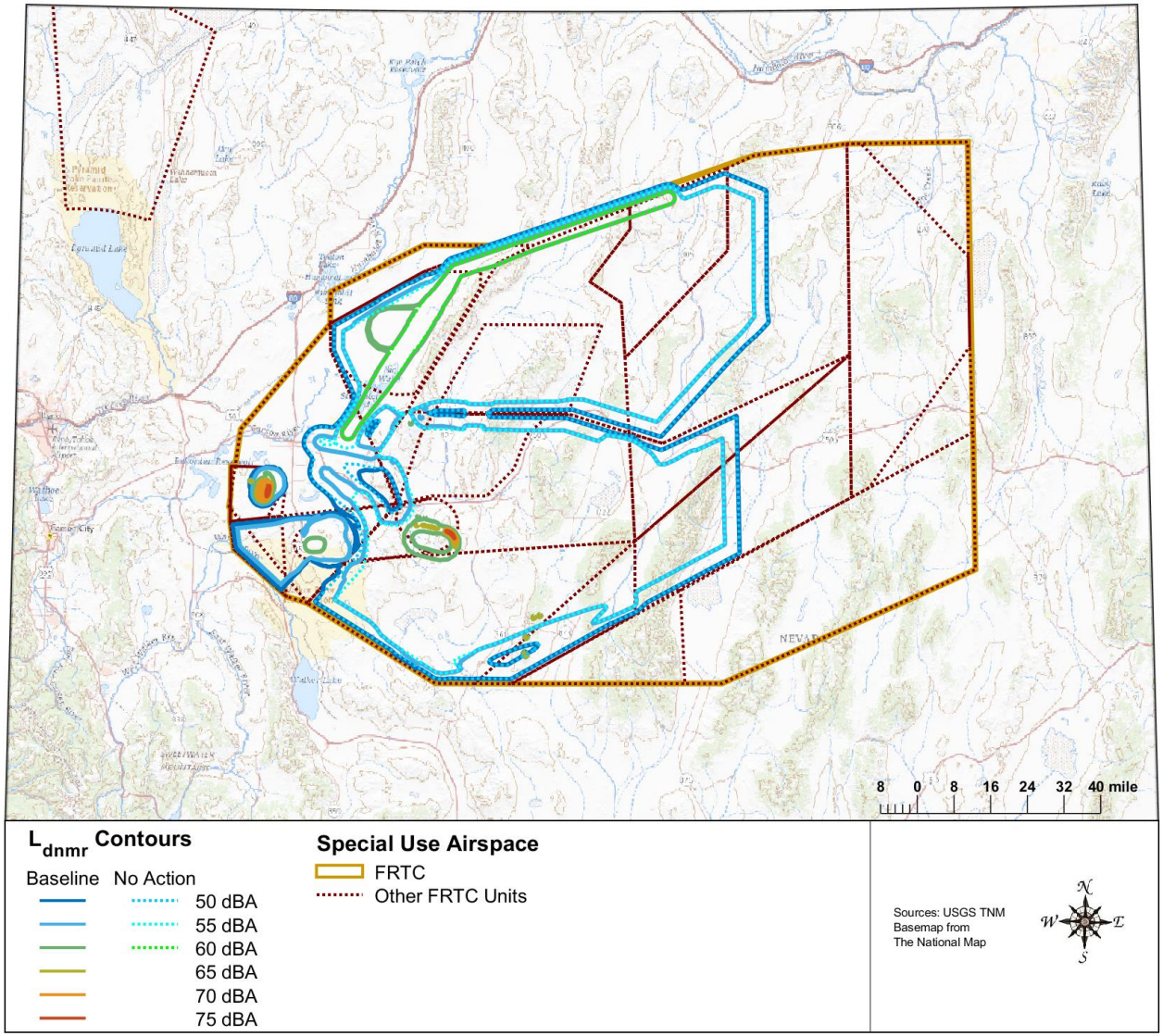


Figure 3-27. FRTC No Action Results for Subsonic Aircraft Noise (L_{dnmr})

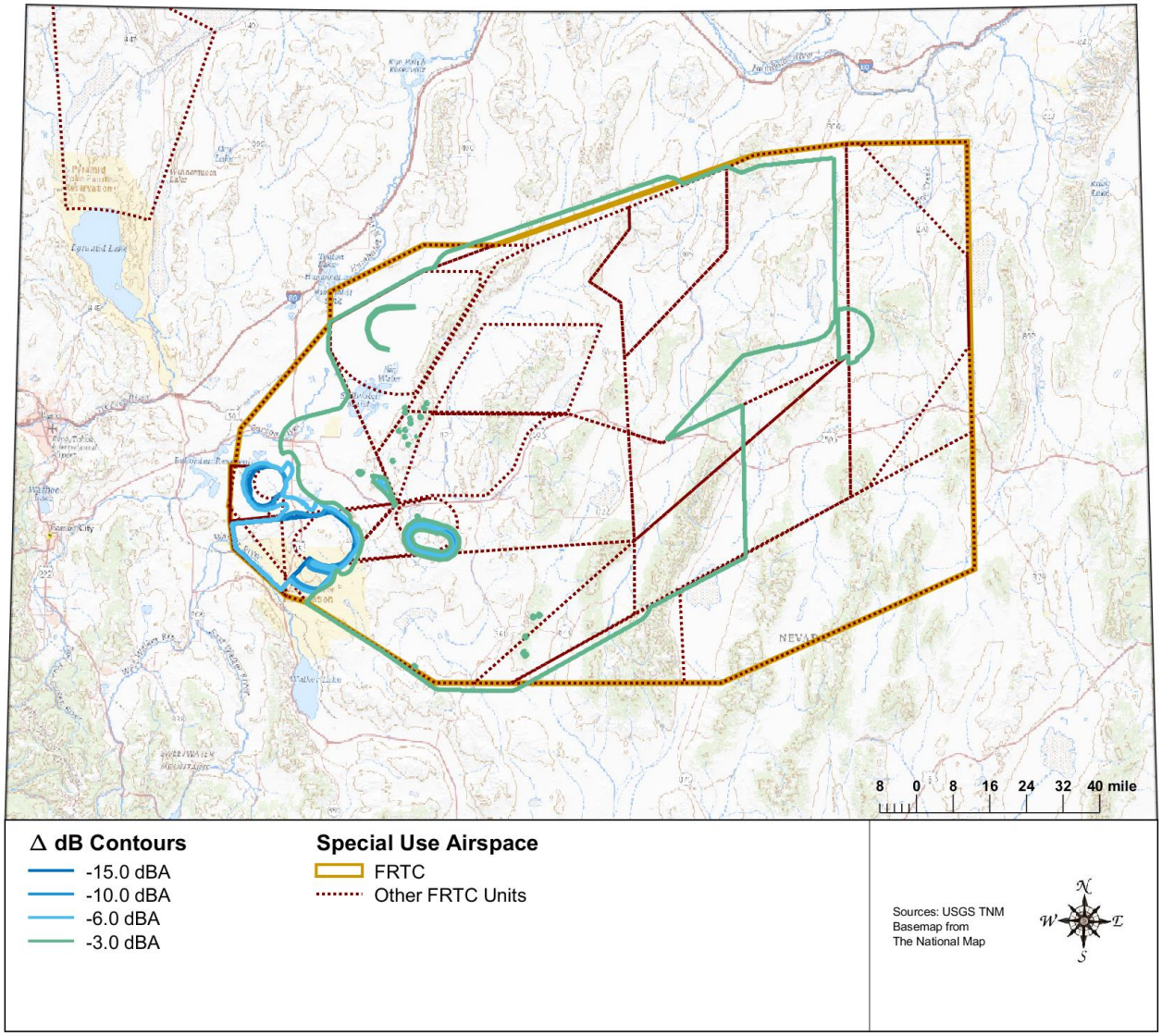


Figure 3-28. Change in L_{dnmr} for FRTC Baseline and No Action Alternative Results for Subsonic Aircraft Noise

3.10 Supplemental Subsonic Aircraft Noise Analysis for Selected Points of Interest

To supplement the standard subsonic aircraft noise analysis, specific noise levels are provided at select points of interest in and around the FRTC (as shown in Figure 3-29 and listed in Table 3-14). Table 3-15 provides the changes in the calculated L_{dnmr} values for the Baseline and Proposed Alternatives 1 and 3, along with the change in L_{dnmr} values for the Alternatives compared to the Baseline values. The largest increase occurs at Red Mountain (P11), which is calculated to receive an increase of over 16 dBA because of the westerly expansion of training operations at B-16. For the No Action Alternative, most L_{dnmr} values are the same as the Baseline except for locations P10 and P15 where the No Action Alternative results in L_{dnmr} values of less than 35 dBA.

In addition to L_{dnmr} values at the points of interest, the maximum calculated SEL_R values for the F/A-18E/F, F-35B/C, and HH-60 are provided in Table 3-16 at each location for the scenarios. Most of the values remain similar across the scenarios. However, an increase in F/A-18E/F SEL_R values is seen at Fairview Slate (P14) because of the bombing track shift in the proposed expanded target areas for Alternative 1.

Table 3-14. Selected Points of Interest Locations for FRTC

Point of Interest Number	Point of Interest Name	Latitude	Longitude
P01	School/Fallon	39.468437°	-118.780554°
P02	Lovelock / B-20	40.170688°	-118.469302°
P03	Eureka	39.507937°	-115.963915°
P04	Walker River Paiute Tribe	38.964808°	-118.675765°
P05	Middlegate	39.286745°	-118.032740°
P06	Gabbs	38.868731°	-117.924581°
P07	Yomba	38.992858°	-117.470551°
P08	Austin	39.493241°	-117.068927°
P09	Fallon National Wildlife Refuge / B-20	39.743624°	-118.586843°
P10	Fallon / B-16	39.401863°	-118.842552°
P11	Red Mountain / B-16	39.387597°	-118.975990°
P12a	Upland Scrub Community (Buffalo Hills)	39.253146°	-117.862601°
P12b	Upland Scrub Community (Silver Creek 4)	39.739822°	-117.136492°
P13	Stillwater National Wildlife Refuge	39.609669°	-118.453406°
P14	Potential Bighorn Sheep Lambing (Fairview Slate - Winter Lambing)	39.113711°	-118.207967°
P15	Fairview Peak	39.215341°	-118.158786°
P16	Potential Bighorn Sheep Lambing Area	39.590836°	-117.855985°
P17	Fallon Paiute Shoshone Tribe	39.481877°	-118.756933°
P18	Schurz / B-19	38.949806°	-118.810466°
P19	North DVTA	39.724335°	-118.060177°
P20	Crescent Valley	40.413965°	-116.582000°
P21	Reno MOA - Pyramid Lake	40.264719°	-119.699274°
P22	Gerlach	40.651781°	-119.357071°
P23	Kingston	39.209330°	-117.102070°
P24	Reese River	39.363080°	-117.384521°

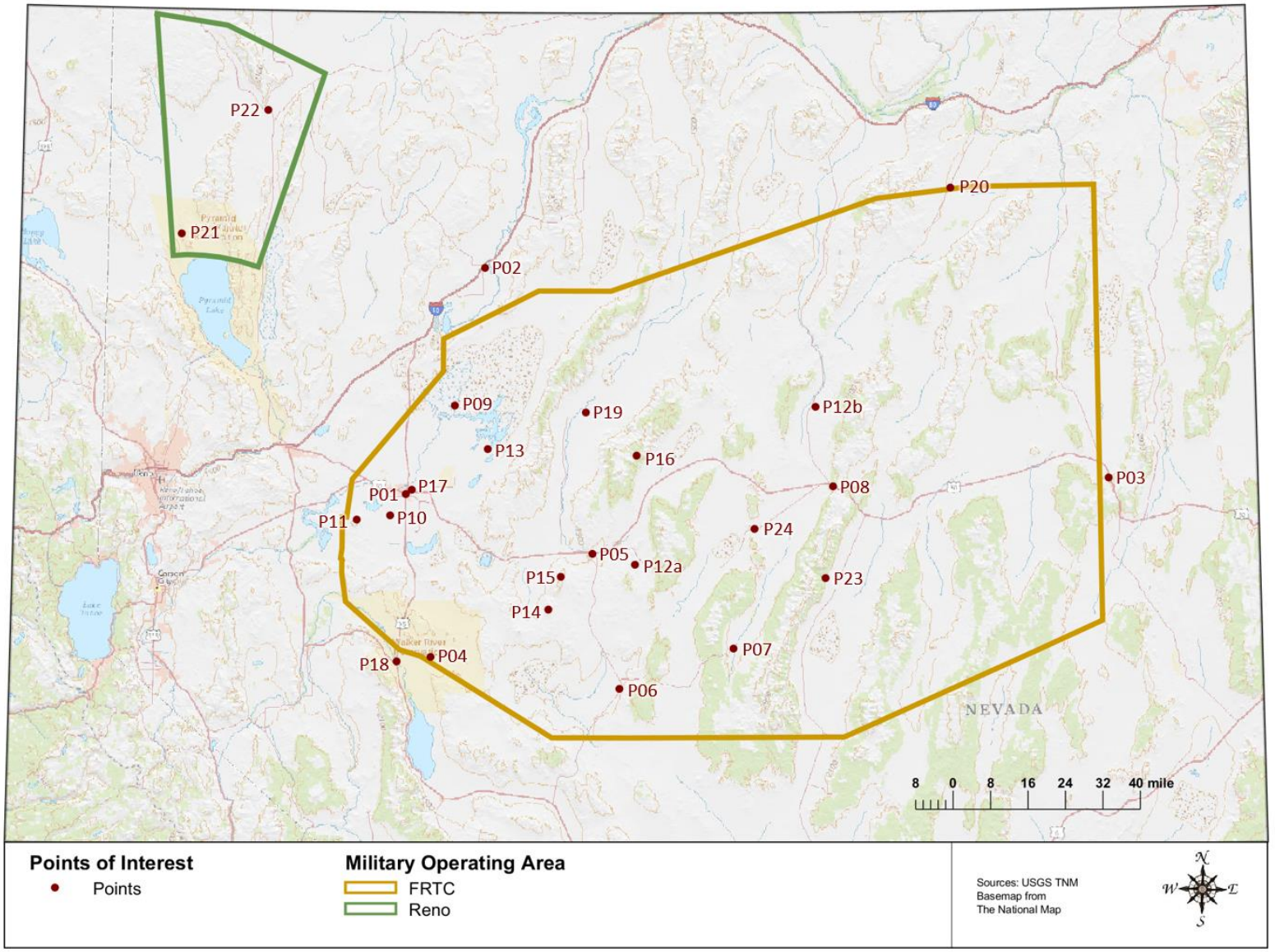


Figure 3-29. Locations of Selected Points of Interests for FRTC

Table 3-15. Modeled L_{dnmr} Values at the Selected Points of Interest

Point of Interest Number	Point of Interest Name	Baseline	No Action	Proposed Alt 1	Difference in L_{dnmr} (Alt 1 - Baseline)	Proposed Alt 3	Difference in L_{dnmr} (Alt 3 - Baseline)
P01	School/Fallon	42.5	40.3	44.0	1.5	44.0	1.5
P02	Lovelock / B-20	<35	<35	41.0	6+	41.0	6+
P03	Eureka	<35	<35	41.0	6+	41.0	6+
P04	Walker River Paiute Tribe	48.6	48.4	50.3	1.7	50.3	1.7
P05	Middlegate	56.8	56.7	58.5	1.7	58.5	1.7
P06	Gabbs	56.3	56.3	57.8	1.5	57.9	1.6
P07	Yomba	55.7	55.7	57.4	1.7	57.4	1.7
P08	Austin	54.0	53.9	54.9	0.9	54.9	0.9
P09	Fallon National Wildlife Refuge / B-20	52.2	52.1	53.7	1.5	53.7	1.5
P10	Fallon / B-16	38.5	<35	41.7	3.2	41.7	3.2
P11	Red Mountain / B-16	<35	<35	50.9	15.9+	50.9	15.9+
P12a	Upland Scrub Community (Buffalo Hills)	57.0	56.8	58.5	1.5	58.5	1.5
P12b	Upland Scrub Community (Silver Creek 4)	56.6	56.6	57.6	1.0	57.6	1.0
P13	Stillwater National Wildlife Refuge	62.8	62.8	66.7	3.9	66.7	3.9
P14	Potential Bighorn Sheep Lambing (Fairview Slate - Winter Lambing)	61.4	56.7	62.5	1.1	61.8	0.4
P15	Fairview Peak	59.0	56.7	59.5	0.5	59.2	0.2
P16	Potential Bighorn Sheep Lambing Area	51.8	51.7	53.3	1.5	53.3	1.5
P17	Fallon Paiute Shoshone Tribe	46.8	46.1	47.4	0.6	47.4	0.6
P18	Schurz / B-19	<35	<35	41.0	6+	41.0	6+
P19	North DVTA	58.4	58.2	59.6	1.2	59.6	1.2
P20	Crescent Valley	<35	<35	41.0	6+	41.0	6+
P21	Reno MOA - Pyramid Lake	<35	<35	<35	NA	<35	NA
P22	Gerlach	45.4	45.4	46.9	1.5	46.9	1.5
P23	Kingston	56.1	56.1	57.1	1.0	57.1	1.0
P24	Reese River	58.0	58.0	59.2	1.2	59.2	1.2

Table 3-16. Modeled Maximum SEL_R Values for the Selected Points of Interests

Point of Interest Number	Point of Interest Name	Baseline		Proposed Alternative 1			Proposed Alternative 3		
		F/A-18E/F	HH-60	F/A-18E/F	F-35A	HH-60	F/A-18E/F	F-35A	HH-60
P01	School/Fallon	81.0	<35	81.0	76.8	<35	81.0	76.8	<35
P02	Lovelock / B-20	<35	<35	<35	<35	<35	<35	<35	<35
P03	Eureka	<35	<35	<35	<35	<35	<35	<35	<35
P04	Walker River Paiute Tribe	42.8	<35	46.5	41.9	<35	42.8	38.2	<35
P05	Middlegate	71.7	<35	71.7	79.8	<35	71.7	79.8	<35
P06	Gabbs	78.2	79.2	78.2	67.8	79.2	91.9	95.1	79.2
P07	Yomba	51.3	<35	55.0	49.8	<35	51.3	46.1	<35
P08	Austin	66.8	<35	66.8	80.4	<35	66.8	80.4	<35
P09	Fallon National Wildlife Refuge / B-20	46.2	<35	49.9	44.7	<35	46.2	41.0	<35
P10	Fallon / B-16	79.9	64.6	79.9	76.5	64.6	79.9	76.5	64.6
P11	Red Mountain / B-16	<35	<35	49.5	42.5	<35	47.8	42.5	<35
P12a	Upland Scrub Community (Buffalo Hills)	72.6	<35	72.6	81.2	<35	72.6	81.2	<35
P12b	Upland Scrub Community (Silver Creek 4)	81.4	<35	81.4	76.2	<35	81.4	76.2	<35
P13	Stillwater National Wildlife Refuge	50.6	<35	54.3	49.3	<35	50.6	45.7	<35
P14	Potential Bighorn Sheep Lambing (Fairview Slate - Winter Lambing)	99.5	<35	104.5	108.5	<35	104.5	108.5	<35
P15	Fairview Peak	94.7	40.1	94.7	98.0	37.7	94.7	98.0	37.7
P16	Potential Bighorn Sheep Lambing Area	79.8	<35	79.8	77.7	<35	79.8	77.7	<35
P17	Fallon Paiute Shoshone Tribe	83.5	<35	83.5	73.2	<35	83.5	73.2	<35
P18	Schurz / B-19	<35	<35	<35	<35	<35	<35	<35	<35
P19	North DVTA	70.3	75.5	70.3	83.6	75.5	70.3	83.6	75.5
P20	Crescent Valley	<35	<35	<35	<35	<35	<35	<35	<35
P21	Reno MOA - Pyramid Lake	<35	N/A	<35	<35	N/A	<35	<35	N/A
P22	Gerlach	42.2	N/A	42.2	<35	N/A	42.2	<35	N/A
P23	Kingston	58.9	<35	58.9	76.9	<35	58.9	76.9	<35
P24	Reese River	68.1	<35	68.1	76.2	<35	68.1	76.2	<35

4 Supersonic Flight Operations

4.1 Operational Parameters

In addition to the ranges discussed in the previous sections, the FRTC includes a Supersonic Operating Area (SSOA and SSOB) to support high speed training activities and maneuvers in excess of Mach 1. The SSOB is located across several areas (Fallon S1, Fallon N2, Fallon N3, and Fallon N4) and is shown as the green stripe pattern area in Figure 1-1 with a minimum altitude of 11,000 ft MSL for supersonic flight. For Alternatives 1 and 3, the SSOB is expanded to the east as shown in Figure 4-1. For the rest of FRTC, supersonic flight can occur above 30,000 ft MSL, and this area is referred to as SSOA. For Alternative 1 and 3, the SSOA is expanded to the east and the south as show in Figure 4-1. Aircraft operations from Table 3-8 and Table 3-9 in Section 3.6 that have supersonic potential were modeled using BooMap. Table 4-2 presents the modeled Proposed Action supersonic operations. The Baseline consists of the Proposed Action minus the F-35B/C. The No Action Alternative is identical to the Baseline for supersonic operations since all supersonic operations occur in the Commodore, NAWDC-1, or NAWDC-2 areas, and not the ranges. The modeled supersonic operations in SSOA are scaled due to supersonic flight restrictions below 30,000 ft MSL. The scaling factor is -6.2 dB. Night operations are multiplied by 10 and added to daytime operations to account for the 10-dB adjustment (for operations occurring between 2200 and 0700).

4.2 Sonic Boom Exposure Results

BooMap was used to calculate the L_{Cdn} contours, for the Baseline and both Alternatives (i.e. the addition of F-35B/C operations). For the Baseline, the L_{Cdn} does not exceed 60 dB, and for the Alternatives, the L_{Cdn} does not exceed 61 dB. Thus, the 57 dB L_{Cdn} contour is slightly expanded and shifted eastward for the Alternatives as shown in Figure 4-2. The No Action Alternative is identical to the Baseline for supersonic flights. Table 4-1 provides the resulting CDNL values at the selected points of interest shown in Figure 3-29. The Fairview Slate location (P14) experiences the highest CDNL of 55 dBC for both Baseline and proposed Alternatives (a slight decrease of 0.3 dBC is calculated, but this decrease would not be noticeable to humans). Yomba (P07) would see the largest increase of about 4 dBC, but the overall level would remain below a CDNL of 50 dBC.

In addition to the cumulative sonic boom exposure, representative individual supersonic trajectories were analyzed to provide the resulting sonic booms from flights from ACT events. Figure 4-3 provides a sample of supersonic trajectories from adversary aircraft engagements within FRTC. These trajectories extend from the west to the east as adversary aircraft accelerate to supersonic speeds and engage. The end of their supersonic dash involves a high-G decelerating turn. Figure 4-4 and Figure 4-5 provide the resulting sonic boom footprints from these supersonic trajectories for baseline and proposed action scenarios, respectively. These figures show the contours of the sonic boom overpressure as well as the isopemps, which indicate where the sonic booms will intercept the ground. These samples demonstrate that even though the supersonic trajectories will remain well within the supersonic airspace limits, their resulting sonic booms will propagate outside of the boundaries and may be experienced outside of FRTC boundaries. The sonic boom heard outside of the boundaries will generally be less than 2 psf, which is below the potential structural damage threshold for sonic booms.

Table 4-1. Cumulative Sonic Boom Exposure Results and Comparisons at the Selected Points of Interest for FRTC.

Point of Interest Number	Point of Interest Name	Baseline & No Action	Proposed Alt 1 & Alt 3	Difference
		dB L_{Cdn}		dB L_{Cdn}
P01	School/Fallon	< 35	< 35	N/A
P02	Lovelock / B-20	< 35	< 35	N/A
P03	Eureka	< 35	< 35	N/A
P04	Walker River Paiute Tribe	41.4	39.8	-1.6
P05	Middlegate	50.0	49.8	-0.2
P06	Gabbs	46.7	49.2	2.5
P07	Yomba	44.9	48.7	3.8
P08	Austin	40.9	43.4	2.5
P09	Fallon National Wildlife Refuge / B-20	< 35	< 35	N/A
P10	Fallon / B-16	< 35	< 35	N/A
P11	Red Mountain / B-16	< 35	< 35	N/A
P12a	Upland Scrub Community (Buffalo Hills)	51.3	50.9	-0.4
P12b	Upland Scrub Community (Silver Creek 4)	48.4	53.6	5.2
P13	Stillwater National Wildlife Refuge	43.4	44.1	0.7
P14	Potential Bighorn Sheep Lambing (Fairview Slate - Winter Lambing)	50.1	49.2	-0.9
P15	Fairview Peak	49.6	49.0	-0.6
P16	Potential Bighorn Sheep Lambing Area	55.0	54.7	-0.3
P17	Fallon Paiute Shoshone Tribe	< 35	< 35	N/A
P18	Schurz / B-19	38.2	37.2	-1.0
P19	North DVTA	53.9	54.1	0.2
P20	Crescent Valley	42.7	45.1	2.4
P21	Reno MOA - Pyramid Lake	< 35	< 35	N/A
P22	Gerlach	< 35	< 35	N/A
P23	Kingston	45.9	46.5	0.6
P24	Reese River	46.9	46.1	-0.8

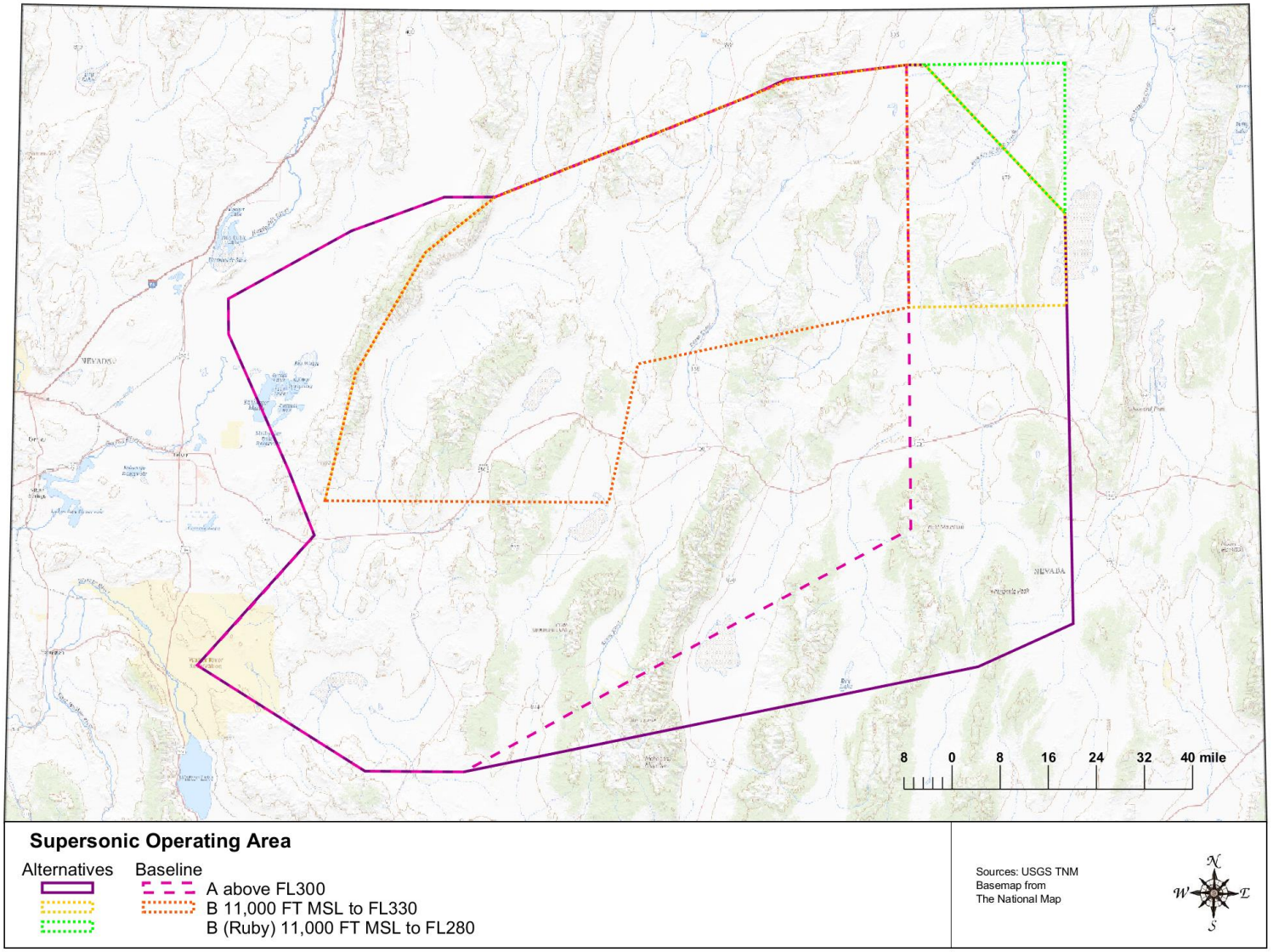


Figure 4-1. Baseline and Proposed Supersonic Areas for FRTC

Table 4-2. Proposed Action BooMap Supersonic Aircraft Modeling at FRTC

Aircraft	Main SUA Unit	Mission Type	Modeled Area	Supersonic Potential	Annual Sorties	Day 0700-2200	Night 2200-0700	% Acoustic Night 2200 to 0700	% Sorties in Unit	Modeled Supersonic Operations
F/A-18E/F	Commodore	Air-to-Air	Fight (most of FRTC)	Yes	1118	950	168	15%	75%	239
	NAWDC-1	Air-to-Air	NAWDC-1a	Yes	9344	7942	1402	15%	75%	1996
			NAWDC-1	Yes	9344	7942	1402	15%	25%	1996
	NAWDC-2	Air-to-Air	NAWDC-2a	Yes	9209	7828	1381	15%	75%	1967
			NAWDC-2	Yes	9209	7828	1381	15%	25%	1967
F/A-18C/D	Commodore	Air-to-Air	Fight (most of FRTC)	Yes	197	167	30	15%	100%	42
	NAWDC-1	Air-to-Air	NAWDC-1a	Yes	1649	1402	247	15%	75%	352
			NAWDC-1	Yes	1649	1402	247	15%	25%	352
	NAWDC-2	Air-to-Air	NAWDC-2a	Yes	1625	1381	244	15%	75%	347
			NAWDC-2	Yes	1625	1381	244	15%	25%	347
F-5N	Commodore	Air-to-Air	Fight (most of FRTC)	Yes	580	493	87	15%	100%	124
F-16A	Commodore	Air-to-Air	Fight (most of FRTC)	Yes	409	348	61	15%	100%	87
F-35C			Fight (most of FRTC)	Yes	449	382	67	15%	75%	96
	NAWDC-1	Air-to-Air	NAWDC-1a	Yes	573	487	86	15%	75%	122
			NAWDC-1	Yes	573	487	86	15%	25%	122
	NAWDC-2	Air-to-Air	NAWDC-2a	Yes	567	482	85	15%	75%	121
			NAWDC-2	Yes	567	482	85	15%	25%	121

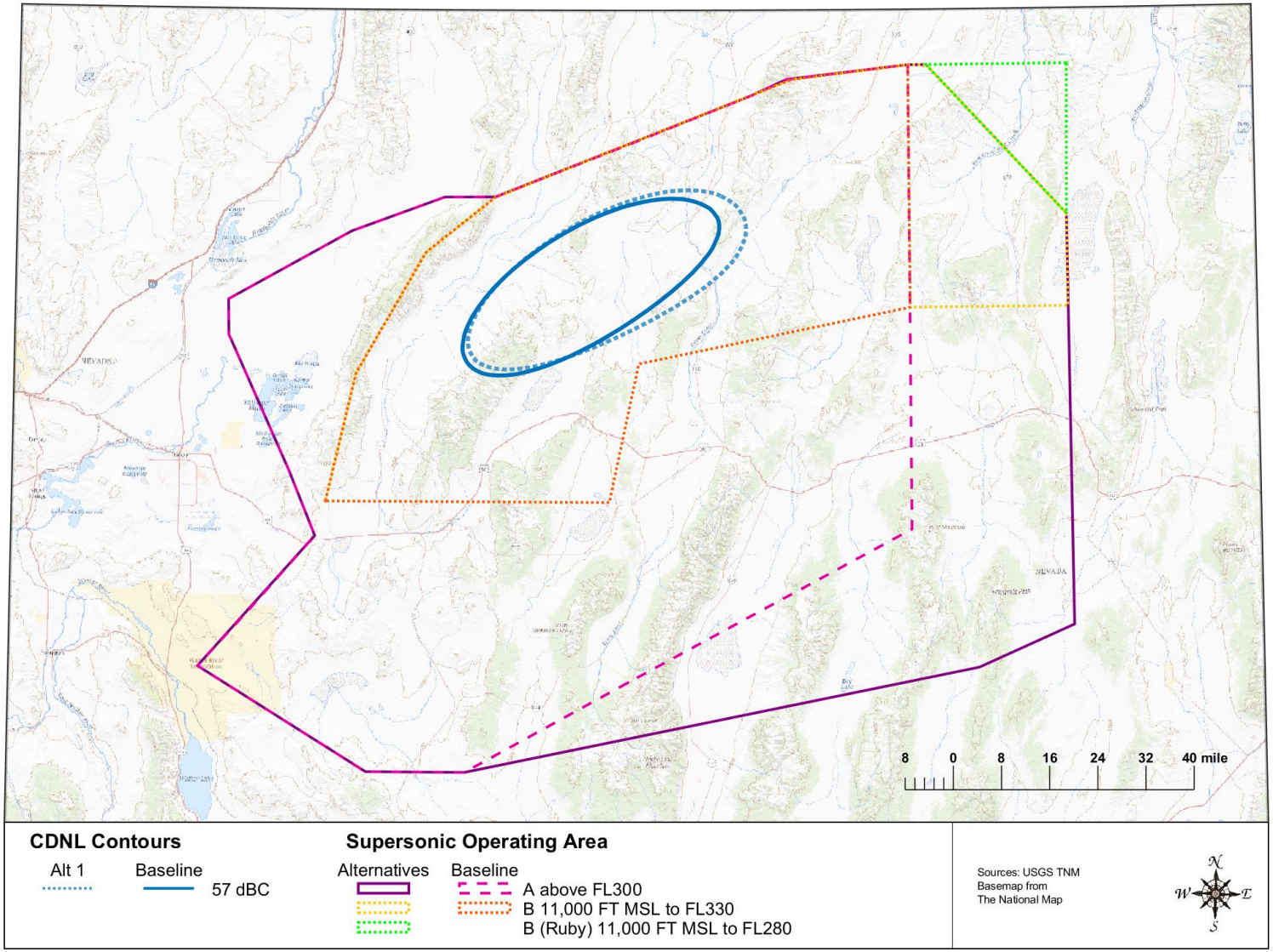


Figure 4-2. FRTC Baseline and Proposed Action Results for Supersonic Aircraft Noise (L_{Cdn})

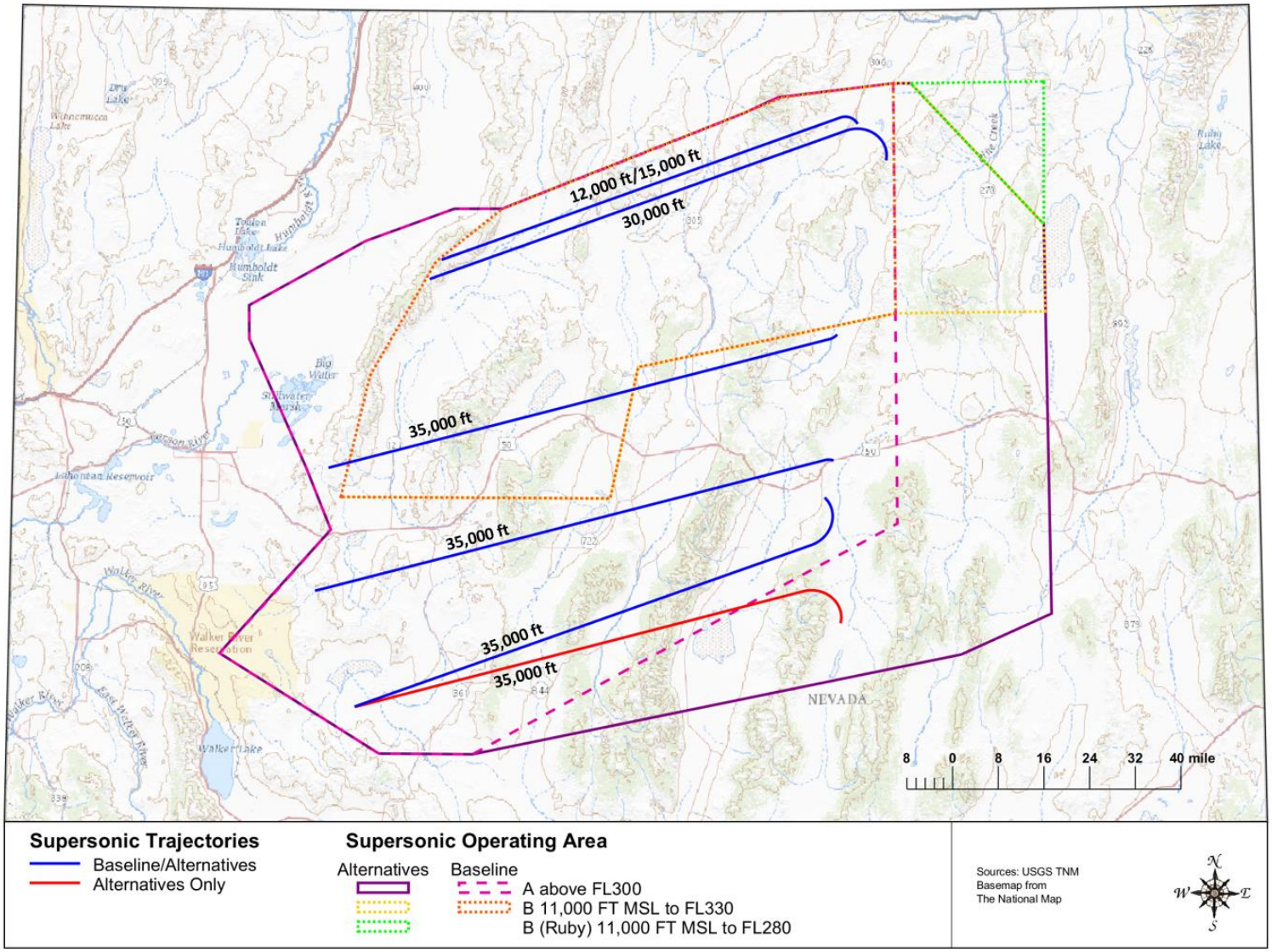


Figure 4-3. Representative Supersonic Trajectories for ACT Adversary Engagement

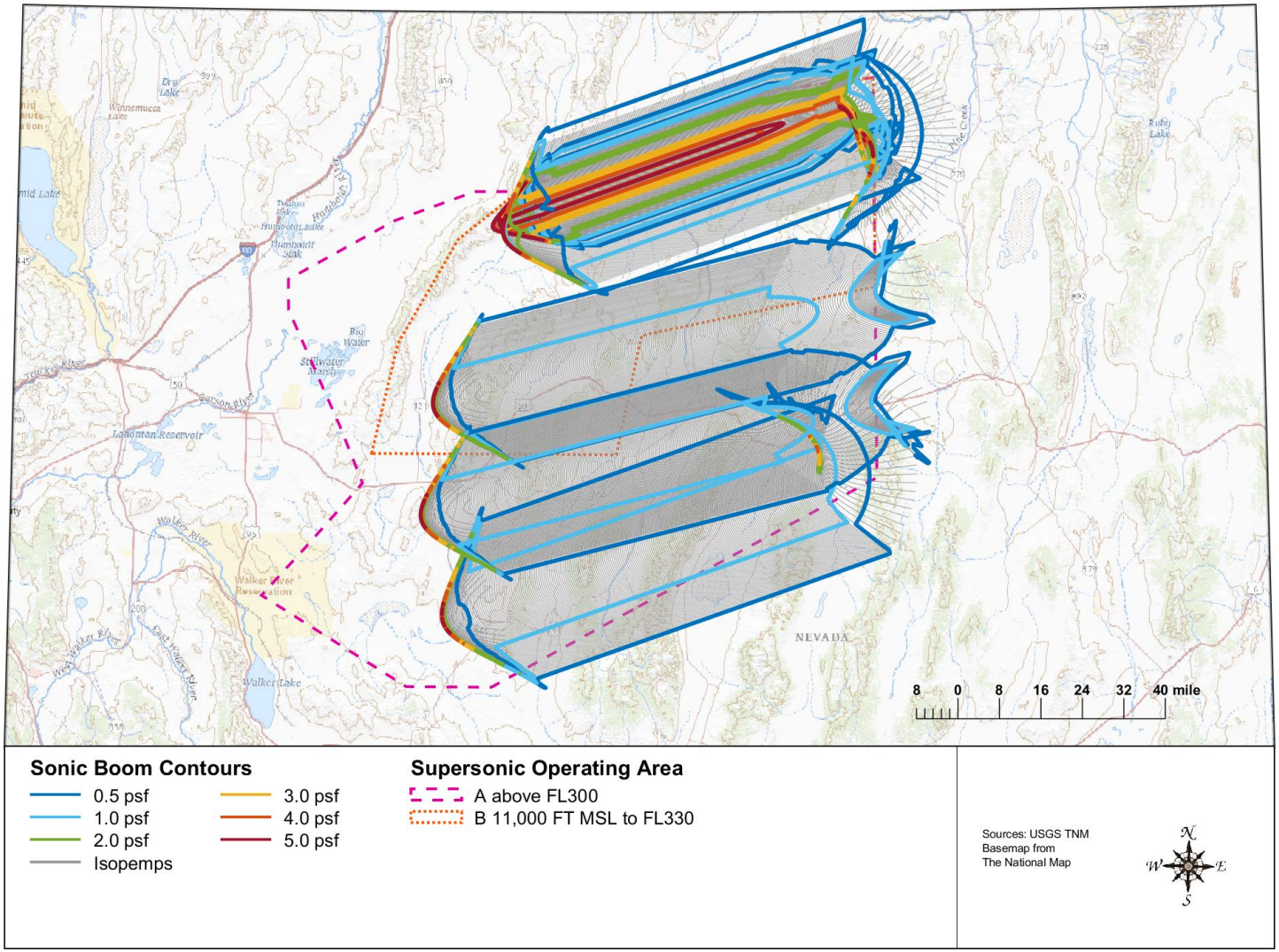


Figure 4-4. Sonic Boom Footprints from Representative Supersonic Adversary Trajectories for Baseline

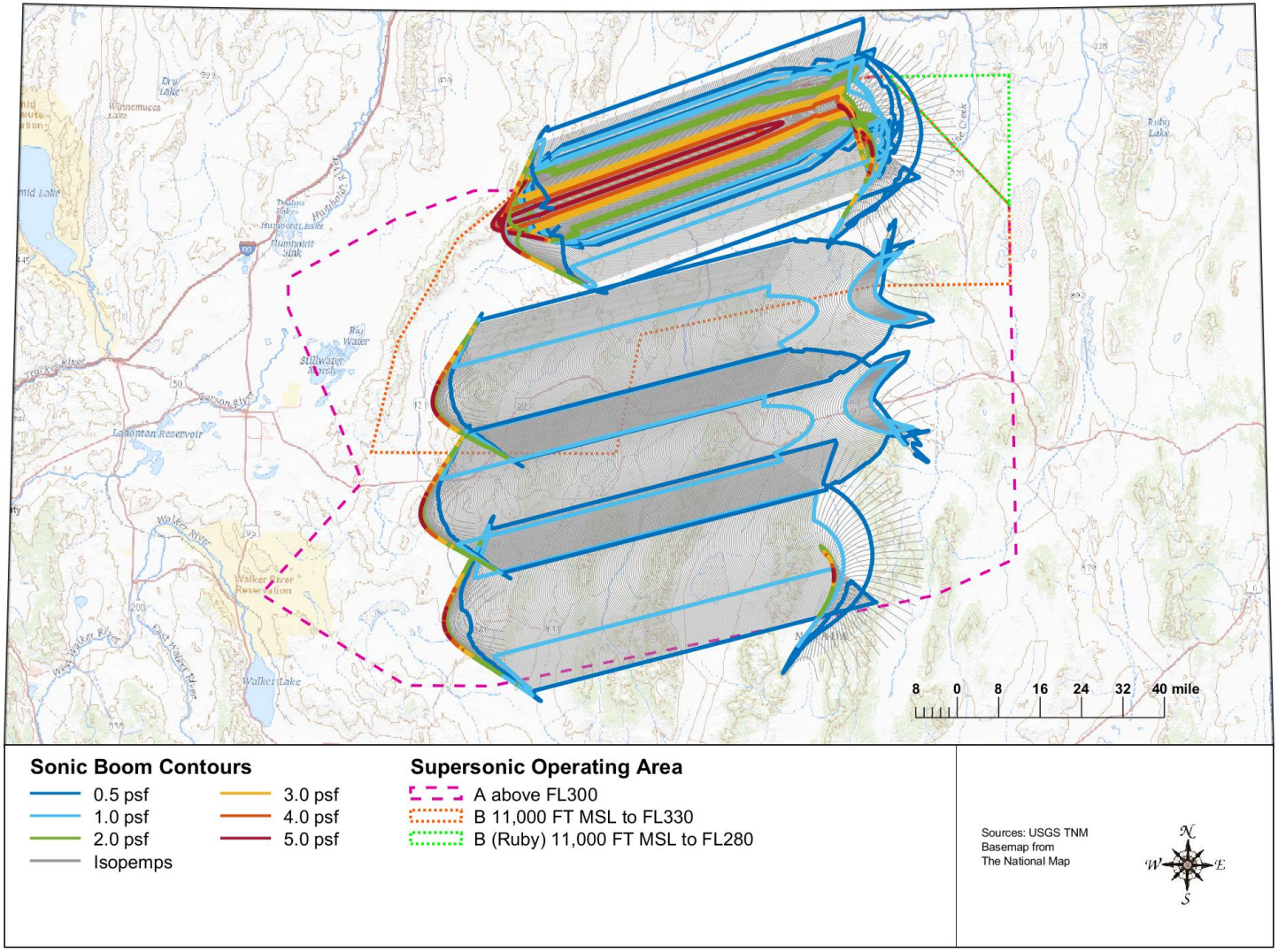


Figure 4-5. Sonic Boom Footprints from Representative Supersonic Adversary Trajectories for Proposed Action

5 Air Gunnery Noise Modeling

5.1 Air Gunnery Operations

For air gunnery noise modeling calculations, additional parameters are required beyond the flight patterns and mission types described in Sections 3.1 through 3.6. These additional parameters include the gunnery type, target locations, firing distances and bounds, munition type, and firing data as well as the annual ordnance expenditure and acoustical day/night activity. To account for the generally lower background sound levels and greater community sensitivity to noise during nighttime hours, a 10-dB adjustment is applied to acoustical nighttime events, defined as noise occurring between the hours of 2200 and 0700. Not every possible aircraft, weapon, and event combination are represented because only the loudest such combinations are relevant to the noise analysis. The AGNM was used for 0.50 caliber, 20 mm, 25 mm munitions, as well as 2.75 rocket and Hellfire propulsion and sonic boom. The explosions of the HE bombs and Hellfire munitions were modeled using BNoise and are presented in Section 5. For Proposed Action Alternative 1, proposed new targets in B-16, B-17, and B-20 were modeled. Alternative 3 includes the same proposed new targets at B-16 and B-20, but it includes a different set of new targets for B-17. For the No Action Alternative, these training missions would not be conducted. The percent-utilizations of acoustic day and night operations for air gunnery training by each airframe, along with the other FRTC air gunnery parameters, are listed in Table 5-1 for Baseline. For Proposed Action Alternative 1, the complete air gunnery operations for FRTC are provided in Table 5-2. For Proposed Action Alternative 3, only the revised air gunnery operations for B-17 are listed in Table 5-3, since air gunnery operations in B-16, B-19, and B-20 are the same as Alternative 1. The new target locations are highlighted in Table 5-2 and Table 5-3.

Table 5-1. Air Gunnery Parameters at FRTC for Baseline Scenarios

Airframe	SUA	Scenario	-- Gunnery Type --			- Start & End Fire at Target -			- Firing Bounds -			-Munition-		Events	# Passes			Rounds	
			Door Gun.	Fwrd Fire	Rocket/ Missile	Start Fire to Target	End Fire to Target	Target ID	Primary Firing Angle	R & L Bounds	Altitude	Type	Rounds Fired Per Pass	After 2200	Per Sortie	Annual Day	Annual Night	Annual	Per Target
						ft	ft		° Mag N	±Δ°	ft AGL		Rds	%	#	#	#	#	#
H-60	B-16	Baseline	✓			3,000	500	B16-2, B16-4,	90	45	200	.50 cal	480	10%	10	123	14	65,520	32,760
				✓		6,562	984	B16-5	90	90	100-1500	20mm	60	10%	10	123	14	8,190	4,095
	B-17	Baseline	✓			3,000	500	B17-CAS	90	45	200	.50 cal	480	10%	10	202	22	107,712	53,856
				✓		6,562	984		90	180	100-1500	20mm	60	10%	10	202	22	13,464	6,732
					✓	6,684	4861	17-33	90	180	500-600	2.75" FFAR	1	10%	1	33	4	37	37
					✓	16,405	4861	17-33	345	20	10-1000	2.75"APKWS	1	10%	1	17	2	19	19
					✓	16800	13200	B17_Hellfire	90	17	616	Hellfire	2	10%	2	32	4	70	70
					✓	19800	15000	B17_Hellfire	117.5	0.5	32	Hellfire	2	10%	2	16	2	35	35
	B-19	All	✓			3,000	500	B-19-4, B19-3,	90	45	200	.50 cal	480	10%	10	415	46	221,400	55,350
				✓		6,562	984	B19_Bull, B-19	90	180	100-1500	20mm	60	10%	10	415	46	27,675	6,919
	B-20	Baseline	✓			3000	500	B20-25	215	45	200	.50 cal	480	10%	10	12	1	6,408	6,408
				✓		6562	984	B20-25	360	90	100-1500	20mm	1	10%	10	12	1	13	13
					✓	6,684	4861	20-33	90	180	500-600	2.75" FFAR	1	10%	1	25	3	28	28
					✓	16,405	4861	20-33	28	5	10-1000	2.75"APKWS	1	10%	1	13	1	14	14
					✓	18000	15000	B20_Hellfire	212	4	335	Hellfire	2	10%	1	2	0	5	5
F/A-18	B-16	All		✓		6562	984	B16-4, B16-5	360	10	100-1500	20mm	90	5%	10	617	32	58,435	29,218
	B-17	Baseline		✓		6562	984	multiple	270	90	100-1500	20mm	90	5%	10	1,374	72	130,163	65,082
					✓	5468	1823	17-21, 17-23, 17-	270	180	1400-2000	2.75" FFAR	1	10%	1	50	6	56	14
					✓	9114	3038	17-33	350	20	500-2000	2.75" APKWS	1	10%	1	25	3	28	28
					✓	13367	4253	17-21, 17-23, 17-24, 17-33	270	180	1400-2000	5" Zuni	1	10%	1	4	1	5	5
	B-19	All		✓		6562	984	strafe	75	5	100-1500	20mm	90	5%	10	3,213	169	304,398	304,398
				✓		6562	984	Bull	80	10	100-1500	20mm	90	10%	10	3,213	169	304,398	304,398
					✓	5468	1823	19-3, 19-4	270	180	1400-2000	2.75" FFAR	1	10%	1	18	2	20	10
					✓	13367	4253	19-3, 19-4	270	180	500-1500	5" Zuni	1	10%	1	9	1	10	5
	B-20	Baseline		✓		3000	500	20-25	180	45	1000	20mm	90	5%	10	937	49	88,796	88,796
					✓	5468	1823	20-6, 20-33	270	180	1400-2000	2.75" FFAR	1	10%	1	25	3	28	14
					✓	9114	3038	20-33	28	13	500-2000	2.75" APKWS	1	10%	1	13	1	14	14
					✓	13367	4253	20-6	270	180	1400-2000	5" Zuni	1	10%	1	2	-	2	2

Table 5-2. Air Gunnery Parameters at FRTC for Proposed Alternative 1

Airframe	SUA	Scenario	-- Gunnery Type --			- Start & End Fire at Target -			- Firing Bounds -			-Munition-		Events	# Passes			Rounds	
			Door Gun.	Fwrd Fire	Rocket/ Missile	Start Fire to Target	End Fire to Target	Target ID	Primary Firing Angle	R & L Bounds	Altitude	Type	Rounds Fired Per Pass	After 2200	Per Sortie	Annual Day	Annual Night	Annual	Per Target
						ft	ft		° Mag N	±Δ°	ft AGL		Rds	%	#	#	#	#	#
H-60	B-16	Alt 1 & 3	✓			3,000	500	B16-CAS	90	180	200	.50 cal	480	10%	10	123	14	65,760	65,760
				✓		6,562	984		90	180	100-1500	20mm	60	10%	10	123	14	8,220	8,220
	B-17	Alt 1	✓			3,000	500	HEI-1, HEI-2, HIA	90	180	200	.50 cal	480	10%	10	101	11	53,760	17,920
				✓		6,562	984		90	180	100-1500	20mm	60	10%	10	101	11	6,720	2,240
					✓	6,684	4861	HEI_2	90	180	500-600	2.75" FFAR	1	10%	1	34	4	38	38
					✓	16,405	4861	B17_3HF1	165	20	10-1000	2.75"APKWS	1	10%	1	25	3	28	28
					✓	16,405	4861	B17_3HF2	345	20	10-1000	2.75"APKWS	1	10%	1	4	1	5	5
					✓	26088	2430	Hellfire 1	270	90	616	Hellfire	2	10%	1	32	4	72	72
					✓	26088	2430	Hellfire 2	270	180	616	Hellfire	2	10%	1	16	2	36	36
	B-19	All	✓			3,000	500	B-19-4, B19-3, B19_Bull, B-19	90	45	200	.50 cal	480	10%	10	415	46	221,280	55,320
				✓		6,562	984		90	180	100-1500	20mm	60	10%	10	415	46	27,660	6,915
	B-20	Alt 1 & 3	✓			3,000	500	Helo Strafe 1,2,&3	300	180	200	.50 cal	60	10%	7	24	3	1,620	540
				✓		6,562	984	Helo Strafe 1,2,&3	300	180	100-1500	20mm	480	10%	3	24	3	12,960	4,320
					✓	6,684	4861	20-33	90	180	500-600	2.75" FFAR	1	10%	1	42	5	47	47
					✓	16,405	4861	20-33	28	5	10-1000	2.75"APKWS	1	10%	1	22	2	24	24
					✓	26,088	2430.4	HEI_4	300	90	616	Hellfire	2	10%	2	1	-	2	2
					✓	26,088	2430.4	HEI_5	300	180	616	Hellfire	2	10%	2	1	-	2	2
F/A-18	B-16	All		✓		6562	984	B16-4, B16-5	360	10	100-1500	20mm	90	5%	10	617	32	58,435	29,218
	B-17	Alt 1		✓		6562	984	HEI-1, HEI-2, HIA	270	90	100-1500	20mm	90	5%	10	399	21	37,800	9,450
					✓	5468	1823	HEI	270	180	1400-2000	2.75" FFAR	1	10%	1	50	6	56	56
					✓	9114	3038	B17-3HF1	170	20	500-2000	2.75" APKWS	1	10%	1	13	1	14	14
					✓	9114	3038	B17-3HF2	350	20	500-2000	2.75" APKWS	1	10%	1	13	1	14	14
					✓	13367	4253	HEI	270	180	1400-2000	5" Zuni	1	10%	1	4	1	5	5
	B-19	All		✓		6562	984	strafe	90	15	100-1500	20mm	90	5%	9	3,213	169	304,398	304,398
				✓		6562	984	strafe	270	15	100-1500	20mm	90	5%	9	3,213	169	304,398	304,398
					✓	5468	1823	19-3, 19-4	270	180	1400-2000	2.75" FFAR	1	10%	1	18	2	20	10
					✓	13367	4253	19-3, 19-4	270	180	500-1500	5" Zuni	1	10%	1	4	1	5	2.5
	B-20	Alt 1 & 3		✓		3000	500	HEI-1, HEI-2, HIA	180	45	1000	20mm	90	5%	9	937	49	88,796	88,796
					✓	5468	1823	20-6, 20-33	270	180	1400-2000	2.75" FFAR	1	10%	1	27	3	30	30
					✓	9114	3038	20-33	28	13	500-2000	2.75" APKWS	1	10%	1	13	1	14	14
					✓	13367	4253	20-6	270	180	1400-2000	5" Zuni	1	10%	1	1	-	1	1
F-35C	B-16	Alt 1 & 3		✓		6562	984	B16-4, B16-5	360	10	100-1500	25mm	90	5%	10	19	1	1,800	1,800
	B-17	Alt 1		✓		6562	984	HEI-1, HEI-2, HIA	270	90	100-1500	25mm	90	5%	10	20	1	1,879	470
	B-19	Alt 1 & 3		✓		6562	984	strafe	90	15	100-1500	25mm	90	5%	9	21	1	2,025	2,025
				✓		6562	984	strafe	270	15	100-1500	25mm	90	5%	9	21	1	2,025	2,025
	B-20	Alt 1 & 3		✓		3000	500	HEI-1, HEI-2, HIA	180	45	1000	25mm	90	5%	9	107	6	10,125	10,125

Table 5-3. Air Gunnery Parameters at FRTC for Proposed Alternative 3

Airframe	SUA	Scenario	-- Gunnery Type --				- Start & End Fire at Target -			- Firing			-Munition-		Events	# Passes			Rounds	
			Door Gun.	Fwrd Fire	Dive Fire	Rocket/ Missile	Start Fire to Target	End Fire to Target	Target ID	Primary Firing Angle	R & L Bounds	Altitude	Type	Rounds Fired Per Pass	After 2200	Per Sortie	Annual Day	Annual Night	Annual	Per Target
							ft	ft		° TN	±Δ°	ft AGL		Rds	%	#	#	#	#	#
H-60	B-16	Alt 1 & 3	✓				3,000	500	B16-CAS	90	180	200	.50 cal	480	10%	10	123	14	65,760	32,880
				✓			6,562	984		90	180	100-1500	20mm	60	10%	10	123	14	8,220	4,110
	B-17	Alt 3	✓				3,000	500	HEI-1, HEI-2, HIA	90	180	200	.50 cal	480	10%	10	101	11	53,856	17,952
				✓			6,562	984		90	180	100-1500	20mm	60	10%	10	101	11	6,732	2,244
							6,684	4861	East & West HEI	90	180	500-600	2.75" FFAR	1	10%	1	34	4	38	19
							16,405	4861	East & West HEI	345	20	10-1000	2.75"APKWS	1	10%	1	9	1	10	5
						✓	26088	2430	Hellfire 1	270	90	616	Hellfire	2	10%	1	16	2	36	36
						✓	26088	2430	Hellfire 2	270	180	616	Hellfire	2	10%	1	16	2	36	36
	B-19	All	✓				3,000	500	B-19-4, B19-3,	90	45	200	.50 cal	480	10%	10	415	46	221,280	55,320
				✓			6,562	984	B-19 Strafe	90	180	100-1500	20mm	60	10%	10	415	46	27,660	6,915
	B-20	Alt 1 & 3	✓				3,000	500	Helo Strafe 1,2,&3	300	180	200	.50 cal	60	10%	7	24	3	1,620	540
				✓			6,562	984	Helo Strafe	300	180	100-1500	20mm	480	10%	3	24	3	12,960	4,320
						✓	6,684	4861	20-33	90	180	500-600	2.75" FFAR	1	10%	1	42	5	47	47
						✓	16,405	4861	20-33	28	5	10-1000	2.75"APKWS	1	10%	1	22	2	24	24
						✓	26,088	2430.4	HEI_4	300	90	616	Hellfire	2	10%	2	1	-	2	2
						✓	26,088	2430.4	HEI_5	300	180	616	Hellfire	2	10%	2	1	-	2	2
F/A-18	B-16	All		✓			6562	984	B16-4, B16-5	360	10	100-1500	20mm	90	5%	10	617	32	58,435	58,435
	B-17	Alt 3					6562	984	HEI-1, HEI-2, HIA, MVT	270	90	100-1500	20mm	90	5%	10	299	16	28,294	7,074
							5468	1823	E&W HEI	270	180	1400-2000	2.75" FFAR	1	10%	1	50	6	56	28
							9114	3038	E&W HEI	350	20	500-2000	2.75" APKWS	1	10%	1	25	3	28	14
							13367	4253	E&W HEI	270	180	1400-2000	5" Zuni	1	10%	1	3	-	3	2
	B-19	All		✓			6562	984	strafe	90	15	100-1500	20mm	90	5%	10	3,213	169	304,398	304,398
				✓			6562	984	strafe	270	15	100-1500	20mm	90	5%	10	3,213	169	304,398	304,398
						✓	5468	1823	19-3, 19-4	270	180	1400-2000	2.75" FFAR	1	10%	1	18	2	20	10
						✓	13367	4253	19-3, 19-4	270	180	500-1500	5" Zuni	1	10%	1	4	1	5	2.5
	B-20	Alt 1 & 3		✓			3000	500	HEI-1, HEI-2, HIA	180	45	1000	20mm	90	5%	9	937	49	88,796	88,796
						✓	5468	1823	20-6, 20-33	270	180	1400-2000	2.75" FFAR	1	10%	1	27	3	30	30
						✓	9114	3038	20-33	28	13	500-2000	2.75" APKWS	1	10%	1	13	1	14	14
						✓	13367	4253	20-6	270	180	1400-2000	5" Zuni	1	10%	1	1	-	1	1
F-35C	B-16	Alt 1 & 3		✓			6562	984	B16-4, B16-5	360	10	100-1500	25mm	90	5%	10	19	1	1,800	1,800
	B-17	Alt 3		✓			6562	984	HEI-1, HEI-2, HIA, MVT	270	90	100-1500	25mm	90	5%	10	15	1	1,406	234
	B-19	Alt 1 & 3		✓			6562	984	strafe	90	15	100-1500	25mm	90	5%	9	21	1	2,025	2,025
							6562	984	strafe	270	15	100-1500	25mm	90	5%	9	21	1	2,025	2,025
	B-20	Alt 1 & 3		✓			3000	500	HEI-1, HEI-2, HIA	180	45	1000	25mm	90	5%	9	107	6	10,125	10,125

5.2 Air Gunnery Noise Results

AGNM was used to compute the noise levels generated by the air gunnery operations. Figure 5-1 through Figure 5-9 provide the CDNL and L_{Pk} noise levels from air gunnery operations at the four Bravo bombing ranges (B-16, B-17, B-19, and B-20) for Baseline and the Proposed Action Alternative 1. For B16 (Figure 5-1 and Figure 5-2), the contours are reduced over the current targets and shift westward for the new helicopter gunnery target areas. The contour lines remain within the R-4803 restricted area.

For B-17, the CDNL and L_{Pk} contours are shifted to the south and are greatly expanded compared to the current contours. For Alternative 1 (Figure 5-3 and Figure 5-4), the CDNL and L_{Pk} contours remain within the proposed expanded R-4804 restricted area. For Baseline conditions, the contours stay within the current R-4804 restricted area. For Alternative 3 (Figure 5-5 and Figure 5-6), the only proposed changes occur at B-17 as described in Section 3.2. The Alternatives generate two distinct set of contours over each of these target areas in expanded R-4804 restricted area. The CDNL contours for Alternative 3 are slightly smaller because the operations are split between the two target areas, but the L_{P}k 115 dBPk contour does go outside of the range boundary to the west.

For B-19 (Figure 5-7), the results for CDNL are similar for both the Baseline and Alternative 1, as expected, since B-19 does not have any proposed changes. The Alternative 1 results are slightly expanded by the addition of F-35B/C proposed operations. The CDNL 57 dBC contours lie just outside the restricted area to the south for both scenarios.

For B-20 (Figure 5-9), the peak and CDNL contours are shifted to the north with the expansion of B-20. The peak and CDNL contours are expanded because of fewer restrictions on firing headings at the new target locations. For both scenarios, the contours remain with the current and expanded restricted areas.

The No Action Alternative would result in no noise from Air Gunnery operations since no range operations would occur.

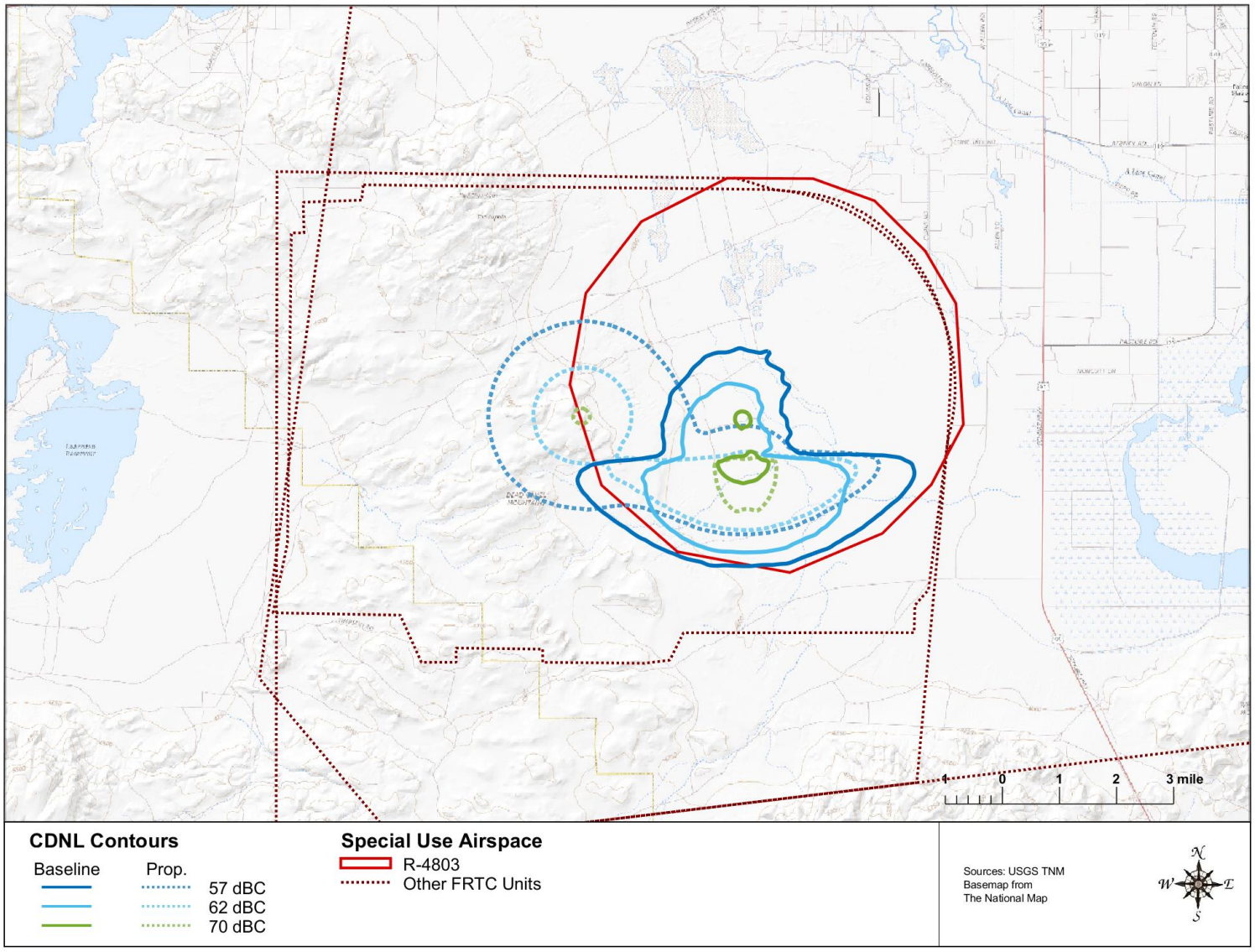


Figure 5-1. FRTC B-16 Range Results for Air Gunnery Operations (L_{Cdn})

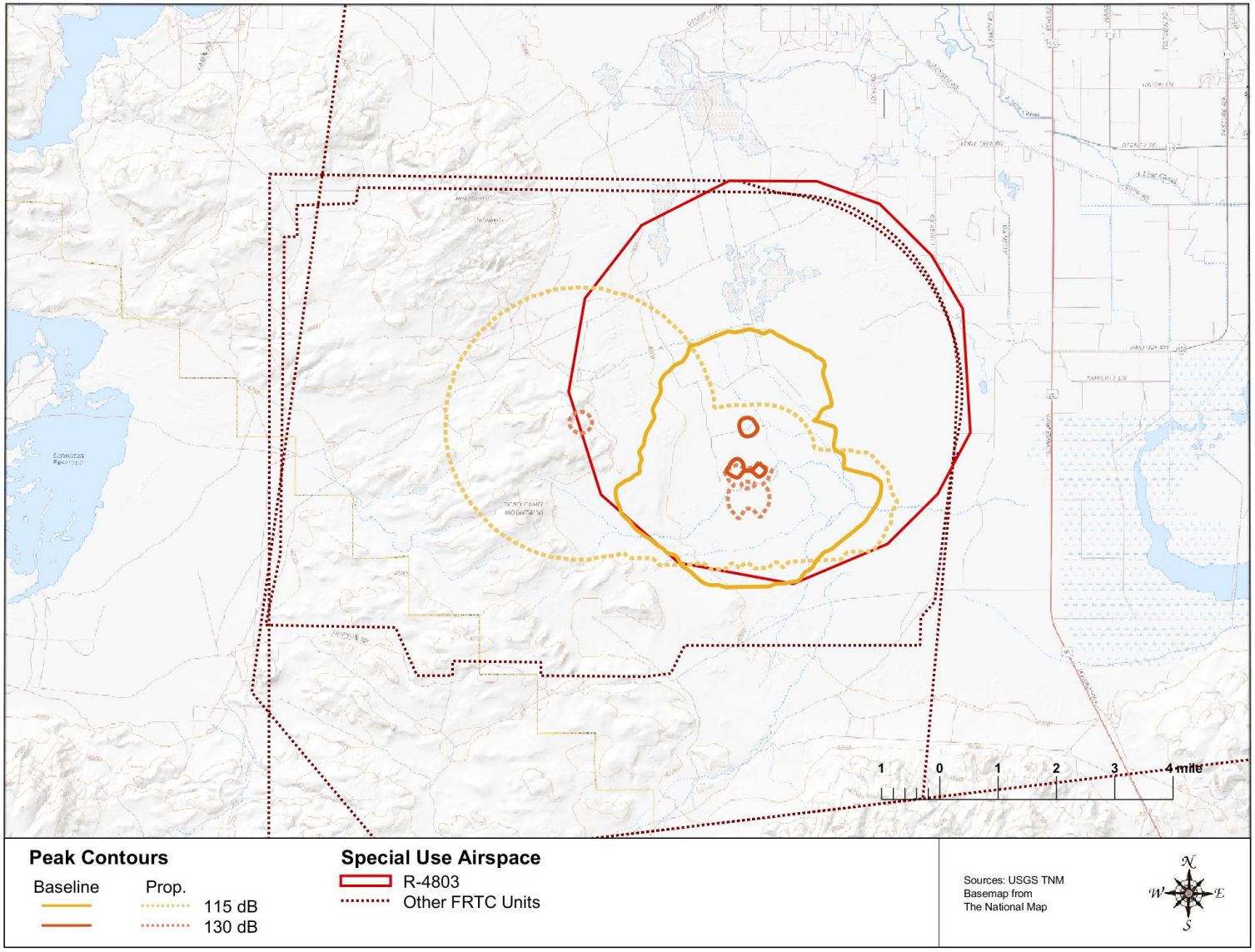


Figure 5-2. FRTC B-16 Range Results for Air Gunnery Operations (L_{Pk})

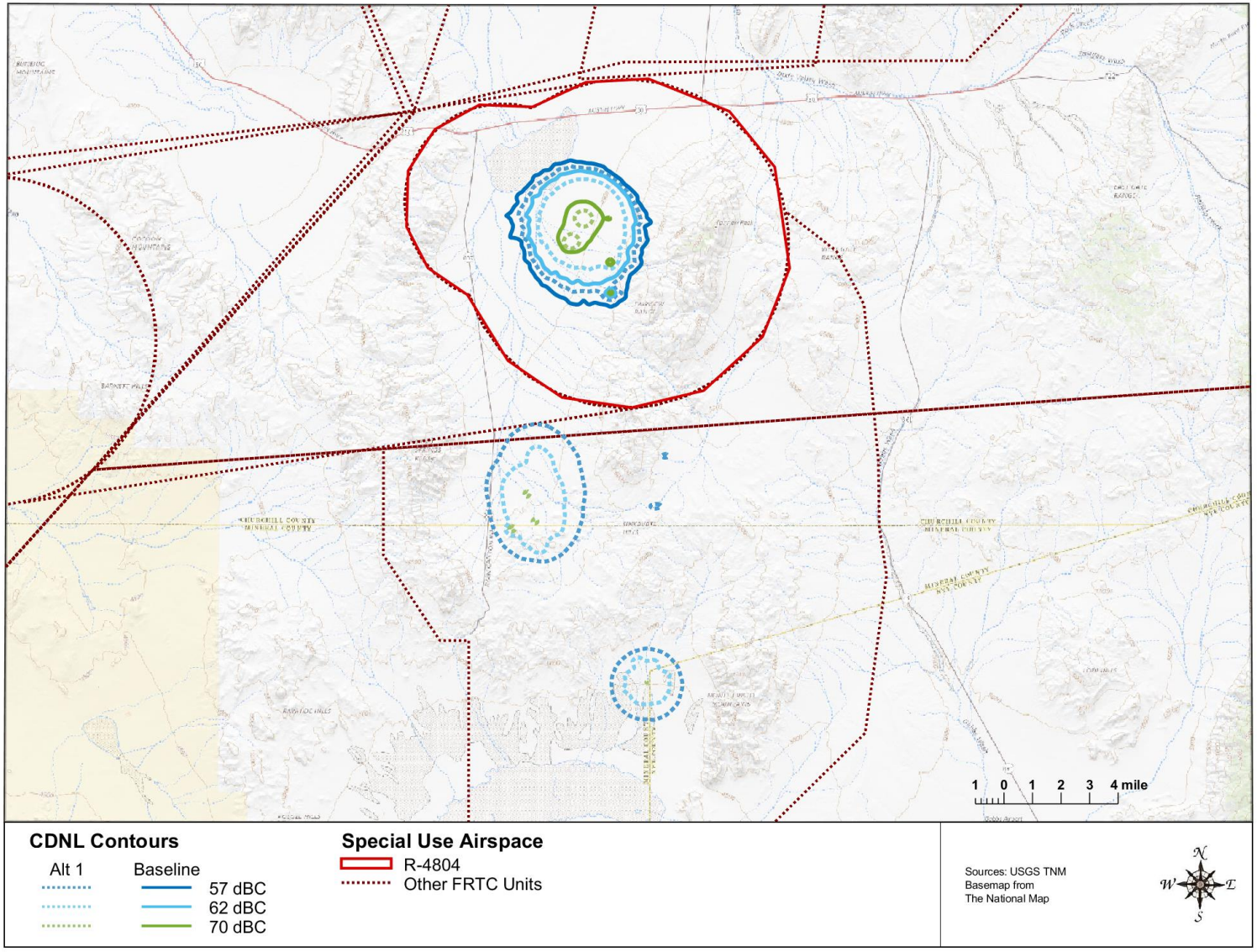


Figure 5-3. FRTC B-17 Range Results for Air Gunnery Operations for Baseline and Alternative 1 (L_{Cdn})

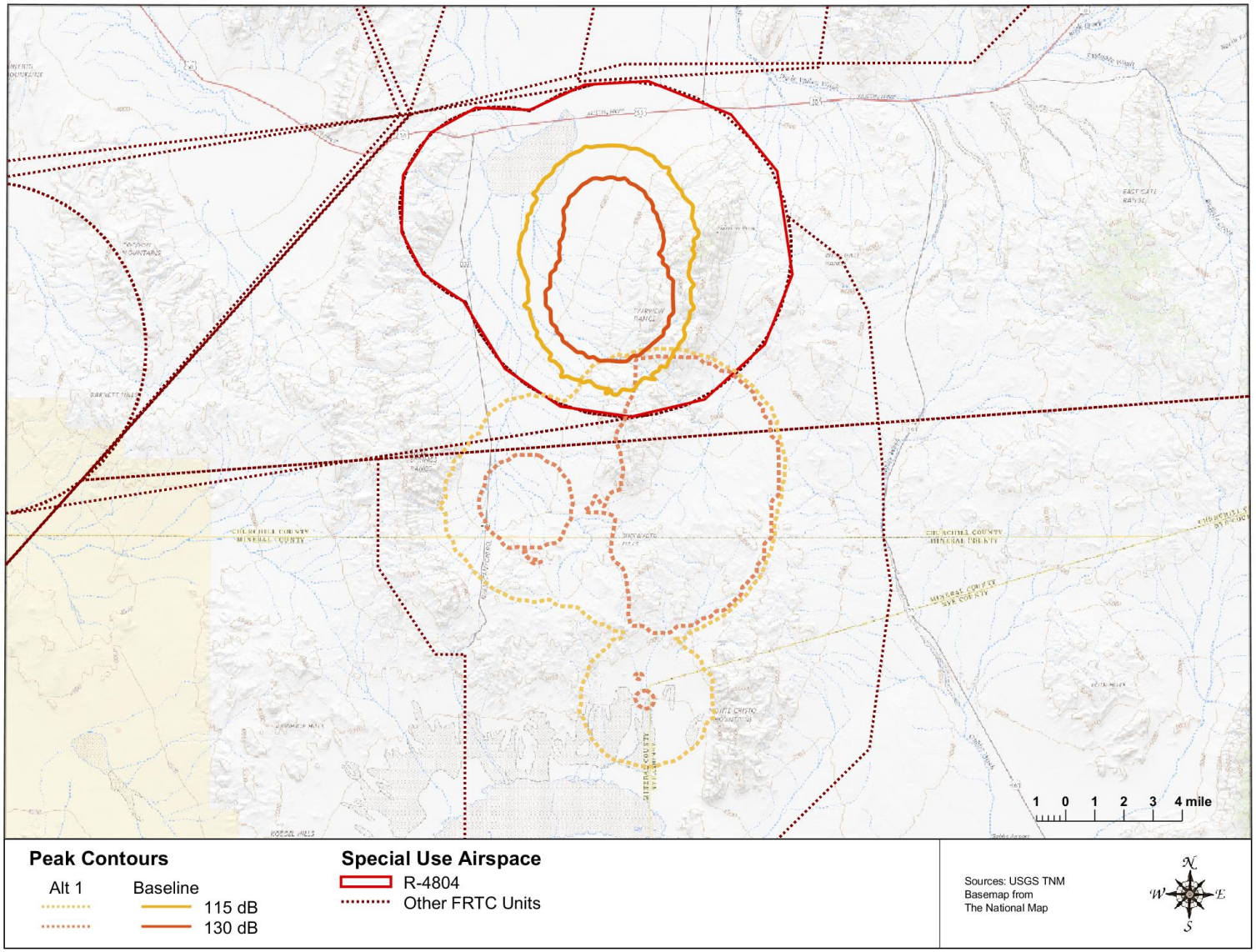


Figure 5-4. FRTC B-17 Range Results for Air Gunnery Operations for Baseline and Alternative 1 (L_{Pk})

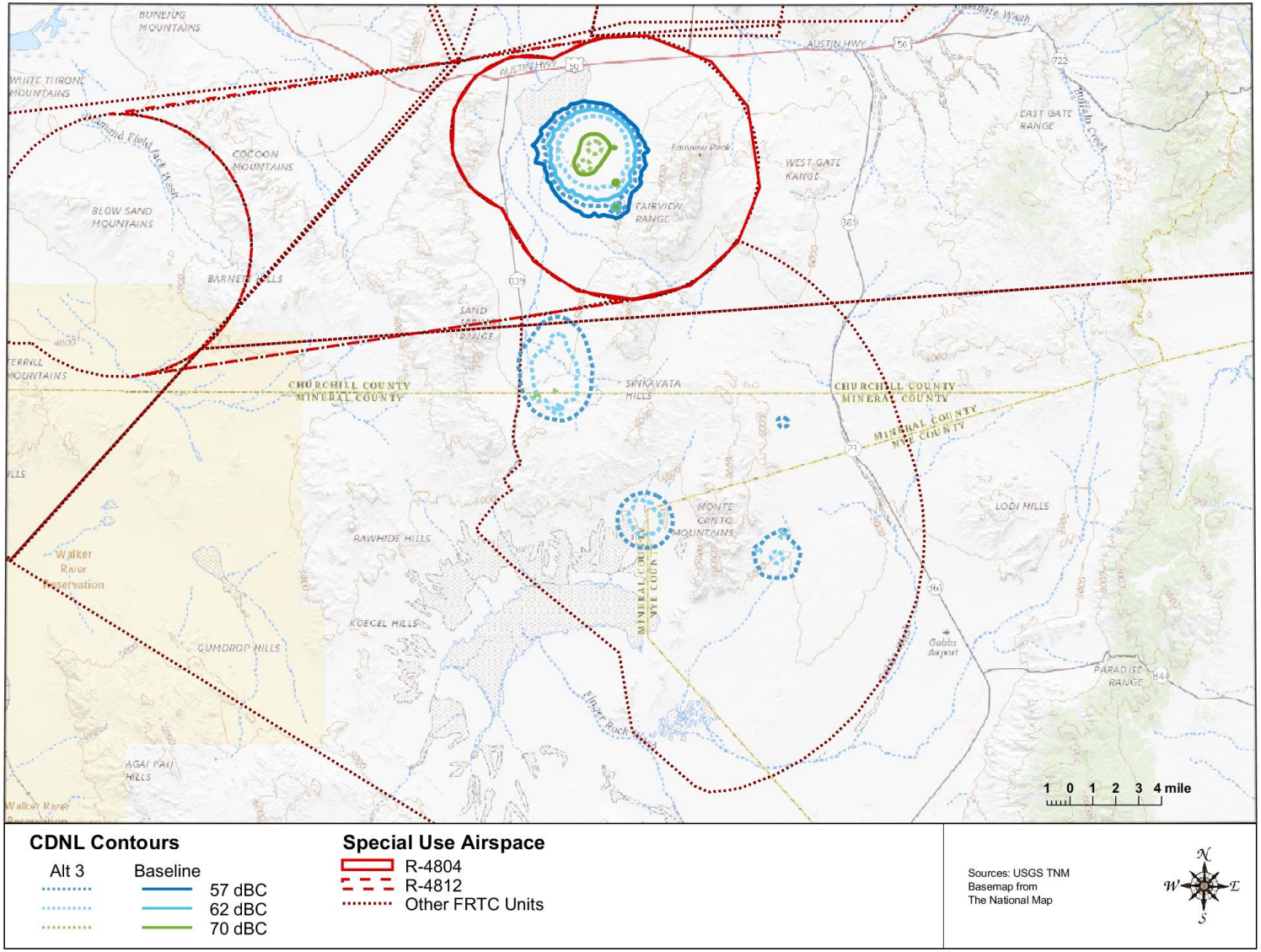


Figure 5-5. FRTC B-17 Range Results for Air Gunnery Operations for Baseline and Alternative 3 (L_{Cdn})

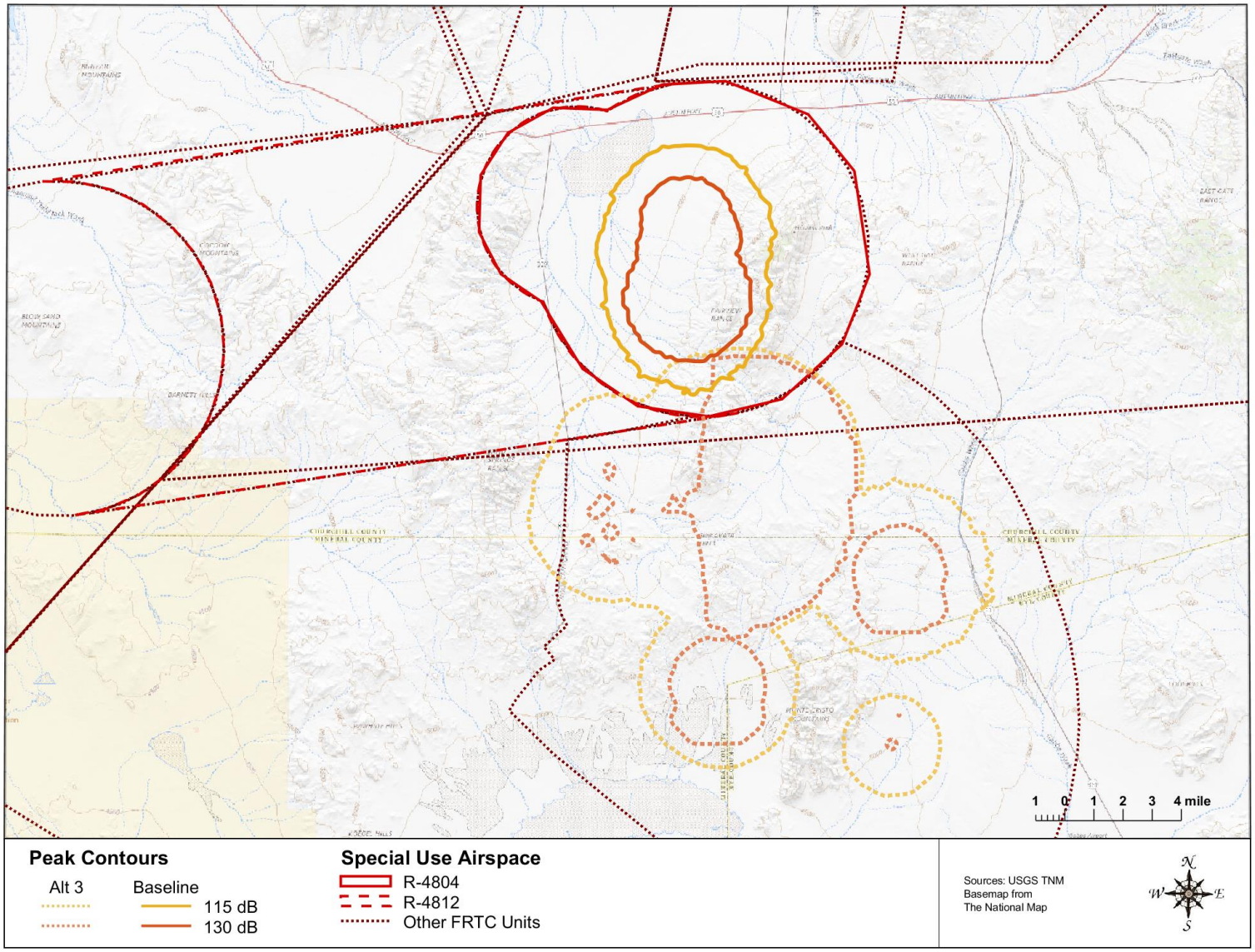


Figure 5-6. FRTC B-17 Range Results for Air Gunnery Operations for Baseline and Alternative 3 (L_{Pk})

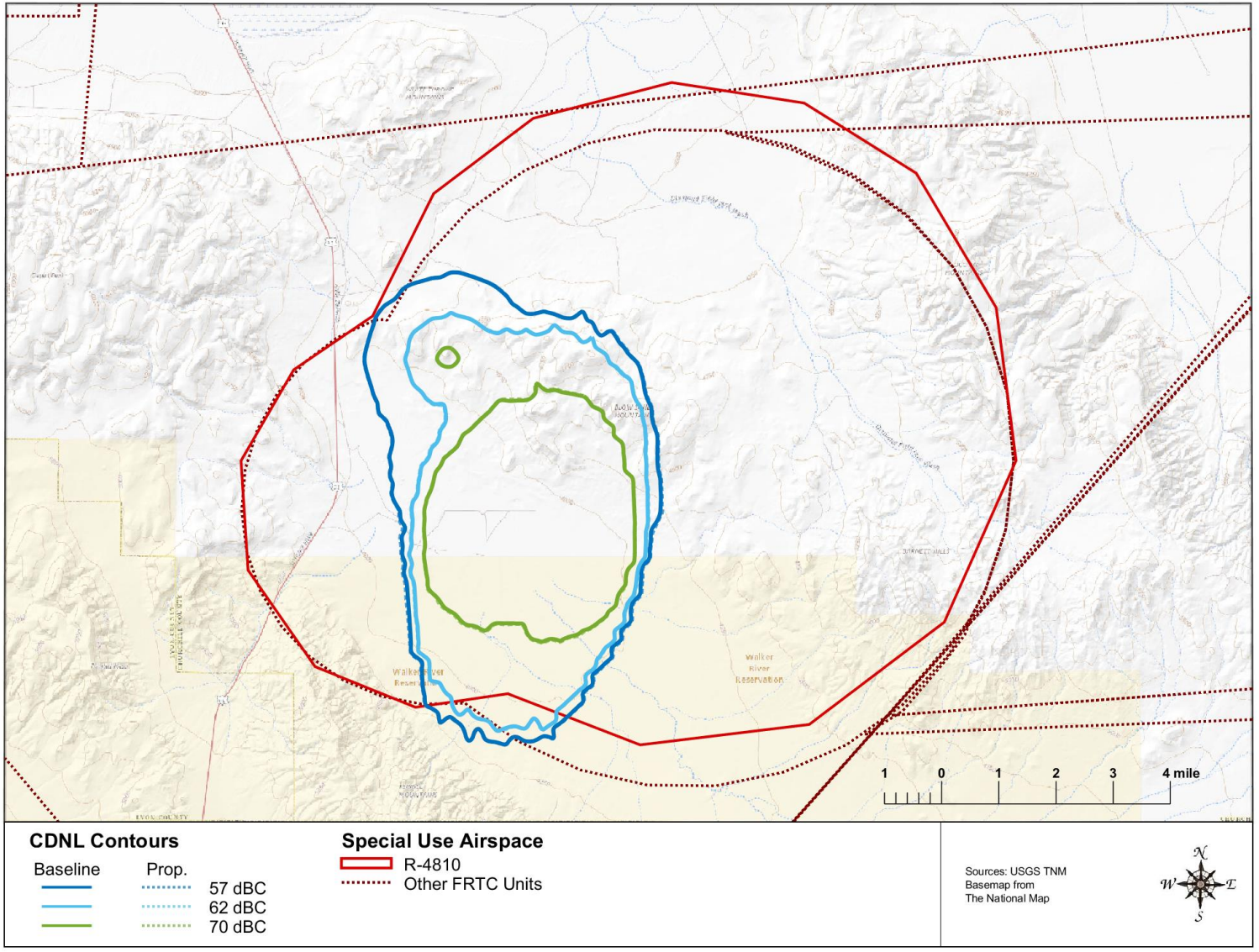


Figure 5-7. FRTC B-19 Range Results for Air Gunnery Operations for Baseline and Proposed Action (L_{Cdn})

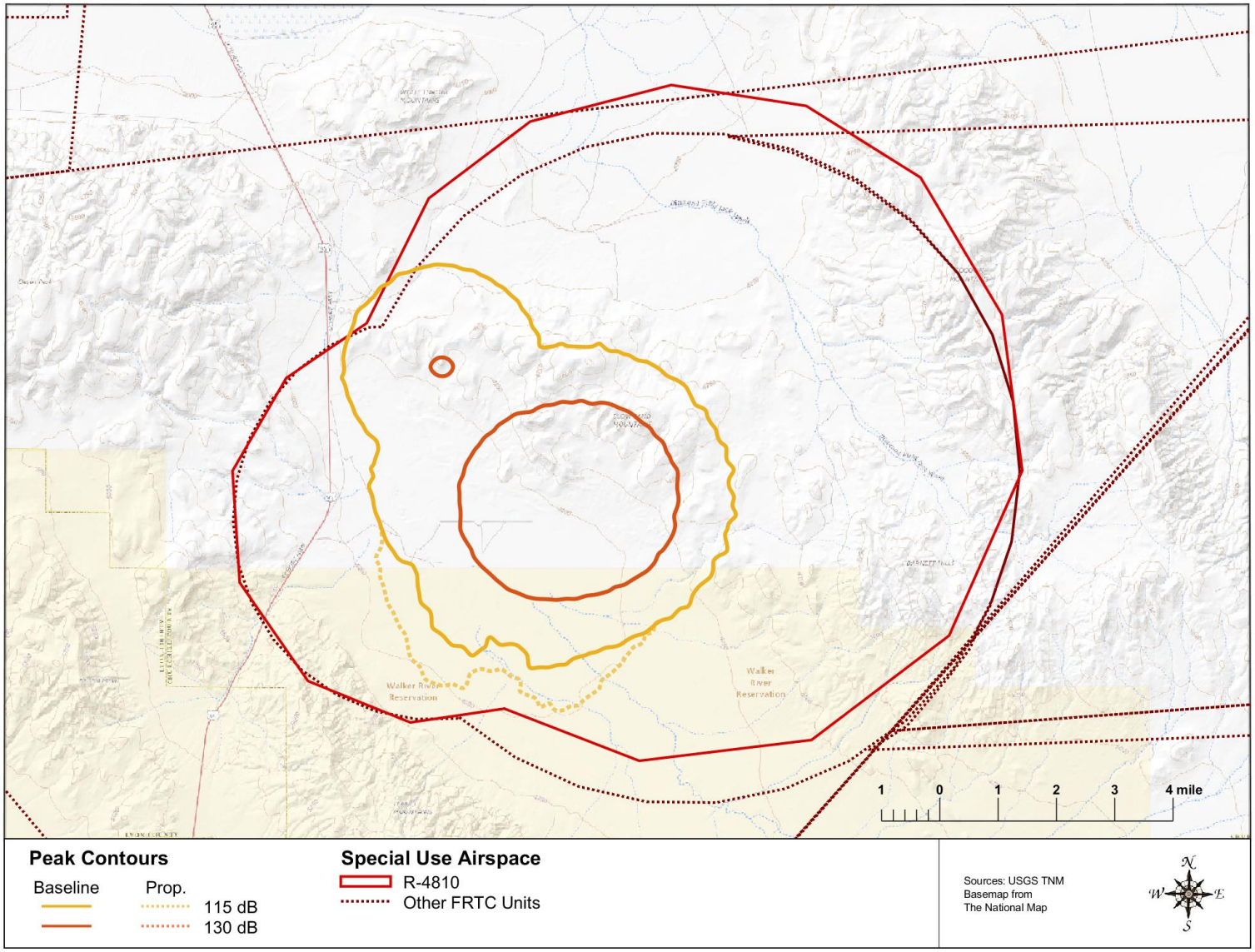


Figure 5-8. FRTC B-19 Range Results for Air Gunnery Operations for Baseline and Proposed Action (L_{Pk})

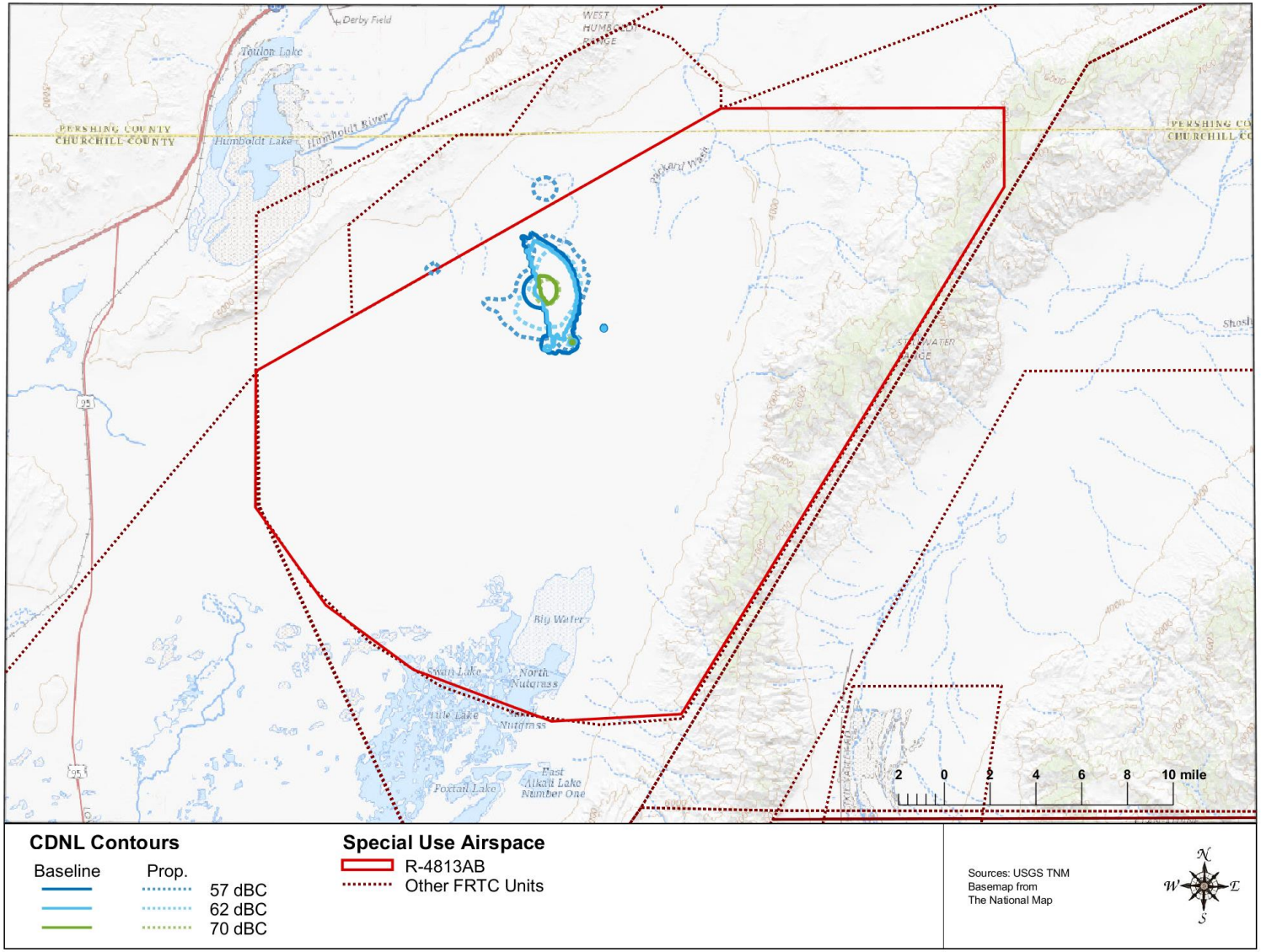
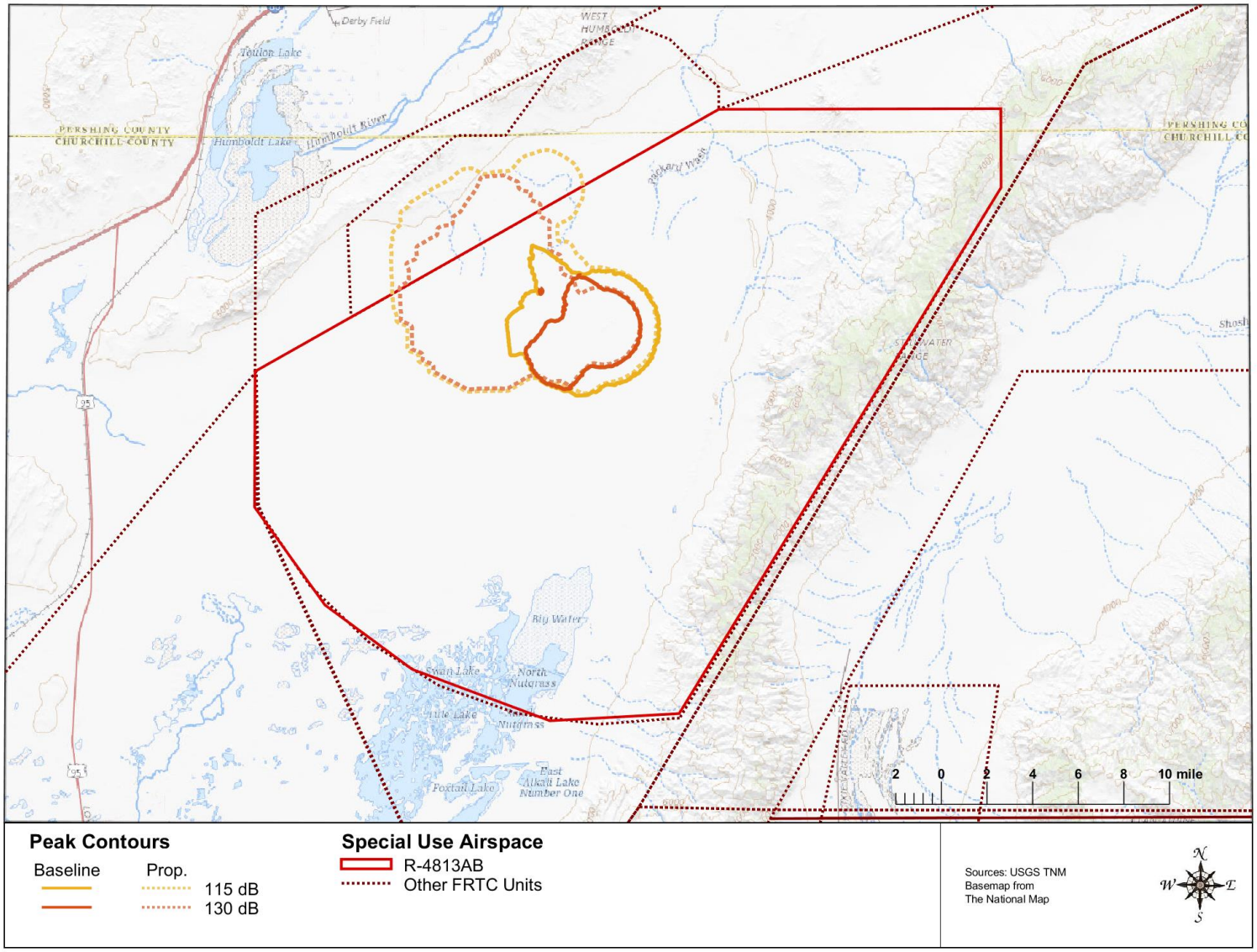


Figure 5-9. FRTC B-20 Range Results for Air Gunnery Operations for Baseline and Proposed Action (L_{Cdn})

1



2

3 **Figure 5-10. FRTC B-20 Range Results for Air Gunnery Operations for Baseline and Proposed Action (L_{Pk})**

6 High Explosives

6.1 HE Expenditures

The FRTC features 2.75" rocket, Hellfire, Mk-82, Mk-83, and Mk-84 HE munitions. The noise associated with the detonation of these HE rounds was modeled using BNoise and reviewed by Army PHC. The Baseline H-60 Hellfire expenditures are shown in Table 6-1, and the fixed-wing bombing expenditures are itemized in Table 6-3. For the Proposed Action Alternative 1, the annual H-60 rocket and Hellfire expenditures within B-17 are split evenly between two new target locations, and the B-20 rocket and Hellfire target location is shifted from the Baseline. Similarly, the annual fixed-wing bombing rounds within B-17 and B-20 are split evenly between two new target locations under Proposed Alternative 1. B-19 remains unchanged between the Baseline and Proposed Alternative 1, except for the removal of Mk-84 rounds. The Proposed Alternative 1 H-60 rocket and Hellfire expenditures are shown in Table 6-4, and the fixed-wing bombing expenditures are itemized in Table 6-6. Proposed Alternative 3 features shifted Hellfire and bombing target locations for B-17, with revised annual expenditures (all other SUAs remain the same as Alternative 1). All expenditures for both helicopters and fixed-wing under Proposed Alternative 3 are shown in Table 6-7.

Table 6-1. Baseline Helicopter Hellfire and Rocket Blast Noise Expenditures for FRTC

SUA	Munition Type	BNoise2 Target Noise Source	Target ID	Target/Impact Areas		Events	Rounds		
				Easting UTM Coord. Zone 11	Northing UTM Coord. Zone 11	After 2200	Annual	Allocation	Subtotal
						%	#	%	
B-17	Hellfire	IHF01	17-45	394635	4340398	10%	105	100%	105
B-20			20-45	383188	4415105		5	100%	5
B-17	2.75" FFAR	I2801	17-33	394615	4338876	10%	37	100%	37
	2.75" APKWS						19	100%	19
B-20	2.75" FFAR		20-33	382571	4414092		28	100%	28
	2.75" APKWS						14	100%	14

Table 6-2. Baseline Fixed-wing Rocket Blast Noise Expenditures for FRTC

SUA	Munition Type	BNoise2 Target Noise Source	Target ID	Target/Impact Areas		Events	Rounds		
				Easting UTM Coord. Zone 11	Northing UTM Coord. Zone 11	After 2200	Annual	Allocation	Subtotal
						%	#	%	
B-17	2.75" FFAR	I2801	17-21	394573	4342880	10%	14	25%	56
			17-23	394905	4342119		14	25%	
			17-24	394383	4341390		14	25%	
			17-33	394615	4338876		14	25%	
	2.75" APKWS		17-33	394615	4338876		28	100%	28
	5.0" Zuni	ETN34	17-21	394573	4342880		1	25%	5
			17-23	394905	4342119		1	25%	
			17-24	394383	4341390		1	25%	
			17-33	394615	4338876		1	25%	
B-19	2.75" FFAR	I2801	19-3	356732	4335780	10%	10	50%	19
			19-4	356095	4335607		10	50%	
	5.0" Zuni	ETN34	19-3	356732	4335780		5	50%	10
			19-4	356095	4335607		5	50%	
B-20	2.75" FFAR	I2801	20-6	384766	4415033	10%	14	50%	28
			20-33	382571	4414092		14	50%	
	2.75" APKWS		20-33	382571	4414092		14	100%	14
	5.0" Zuni	ETN34	20-6	384766	4415033		2	100%	2

Table 6-3. Baseline Fixed-wing Bombing Blast Noise Expenditures for FRTC

SUA	Munition Type	BNoise2 Target Noise Source	Target ID	Target/Impact Areas		Events	Rounds		
				Easting UTM Coord. Zone 11	Northing UTM Coord. Zone 11	After 2200	Annual	Allocation	Subtotal
						%	#	%	
B-17	Mk-82	BM201	B-17 Bombing	394213	4342078	5%	950	100%	950
B-19			19-4	356095	4335607		324	100%	324
B-20			20-6	384766	4415033		288	100%	288
B-17	Mk-83	BM301	B-17 Bombing	394213	4342078		940	100%	940
B-19			19-4	356095	4335607		300	100%	300
B-20			20-6	384766	4415033		230	100%	230
B-19	Mk-84	BM401	19-4	356095	4335607		26	100%	26
B-20			20-6	384766	4415033		275	100%	275

Table 6-4. Proposed Alternative 1 Helicopter Hellfire and Rocket Blast Noise Expenditures for FRTC

SUA	Munition Type	BNoise2 Target Noise Source	Target ID	Target/Impact Areas		Events	Rounds		
				Easting UTM Coord. Zone 11	Northing UTM Coord. Zone 11	After 2200	Annual	Allocation	Subtotal
						%	#	%	
B-17	Hellfire	IHF01	B17_Hellfire 1	397386	4329216	10%	45	50%	90
			B17_Hellfire 2	396881	4326841		45	50%	
B-20			B20_Hellfire N	375710	4419639		0	0%	5
			B20_3HF1	375412	4420220		5	100%	
B-17	2.75" FFAR	I2801	B17 HEI Area 1	389789	4327594	10%	37	100%	37
	2.75" APKWS		North Hellfire	397433	4328840		10	50%	20
			South Hellfire	396957	4326744		10	50%	
B-20	2.75" FFAR		20-33	382571	4414092		47	100%	47
	2.75" APKWS						24	100%	24

Table 6-5. Proposed Alternative 1 Fixed-wing Rocket Blast Noise Expenditures for FRTC

SUA	Munition Type	BNoise2 Target Noise Source	Target ID	Target/Impact Areas		Events	Rounds		
				Easting UTM Coord. Zone 11	Northing UTM Coord. Zone 11	After 2200	Annual	Allocation	Subtotal
						%	#	%	
B-17	2.75" FFAR	I2801	B17 HEI Area 1	389789	4327594	10%	56	100%	56
	2.75" APKWS		North Hellfire	397433	4328840		14	50%	28
			South Hellfire	396957	4326744		14	50%	
	5.0" Zuni	ETN34	B17 HEI Area 1	389789	4327594		5	100%	5
B-19	2.75" FFAR	I2801	19-3	356732	4335780		10	50%	19
			19-4	356095	4335607		10	50%	
	5.0" Zuni	ETN34	19-3	356732	4335780		5	50%	10
			19-4	356095	4335607		5	50%	
B-20	2.75" FFAR	I2801	20-6	384766	4415033		10	33%	30
			20-33	382571	4414092		10	33%	
			B20 HEI	376693	4416734		10	33%	
	2.75" APKWS		20-33	382571	4414092		14	100%	14
	5.0" Zuni	ETN34	20-6	384766	4415033		1	50%	2
			B20 HEI	376693	4416734		1	50%	

Table 6-6. Proposed Alternative 1 Fixed-wing Bombing Blast Noise Expenditures for FRTC

SUA	Munition Type	BNoise2 Target Noise Source	Target ID	Target/Impact Areas		Events	Rounds		
				Easting UTM Coord. Zone 11	Northing UTM Coord. Zone 11	After 2200	Annual	Allocation	Subtotal
						%	#	%	
B-17	Mk-82	BM201	B17_Bombing	394213	4342078	5%	238	25%	950
			B17 HEI Area 1	389789	4327594		356	38%	
			B17 HEI Area 2	392170	4323342		356	38%	
B-19			19-4	356095	4335607		324	100%	324
B-20			20-6	384766	4415033		144	50%	288
			B20 HEI Area 5	376693	4416734		144	50%	
B-17	Mk-83	BM301	B17_Bombing	394213	4342078		235	25%	940
			B17 HEI Area 1	389789	4327594		353	38%	
			B17 HEI Area 2	392170	4323342		353	38%	
B-19			19-4	356095	4335607		300	100%	300
B-20			20-6	384766	4415033		115	50%	230
			B20 HEI Area 5	376693	4416734		115	50%	
B-20	Mk-84	BM401	20-6	384766	4415033		138	50%	275
			B20 HEI Area 5	376693	4416734		138	50%	

Table 6-7. Proposed Alternative 3 Helicopter and Fixed-wing Blast Noise Expenditures for B-17

Airframe	Munition Type	BNoise2 Target Noise Source	Target ID	Target/Impact Areas		Events	Rounds		
				Easting UTM Coord. Zone 11	Northing UTM Coord. Zone 11	After 2200	Annual	Allocation	Subtotal
						%	#	%	
H-60	Hellfire	IHF01	B17A3_HEI3	406615	4322174	10%	100	100%	100
H-60	2.75" FFAR	I2801	East HEI	406104	4323457	10%	19	50%	38
			West HEI	395908	4317406		19	50%	
	2.75" APKWS		East HEI	406104	4323457		5	50%	10
			West HEI	395908	4317406		5	50%	
FA-18	2.75" FFAR	I2801	East HEI	406104	4323457	10%	28	50%	56
			West HEI	395908	4317406		28	50%	
	2.75" APKWS		East HEI	406104	4323457		14	50%	28
			West HEI	395908	4317406		14	50%	
	5.0" Zuni	ETN34	East HEI	406104	4323457		3	50%	6
			West HEI	395908	4317406		3	50%	
FA-18	Mk-82	BM201	B-17 Bombing	394213	4342078	5%	238	25%	950
			B17A3_HEI1	396362	4317119		178	19%	
			B17A3_HEI2	399684	4321861		178	19%	
			B17_HEI_West	395908	4317406		178	19%	
			B17_HEI_East	406805	4321881		178	19%	
	Mk-83	BM301	B-17 Bombing	394213	4342078		235	25%	940
			B17A3_HEI1	396362	4317119		176	19%	
			B17A3_HEI2	399684	4321861		176	19%	
			B17_HEI_West	395908	4317406		176	19%	
			B17_HEI_East	406805	4321881		176	19%	

6.2 HE Explosive Noise Results

Several of the air gunnery operations conducted within FRTC involve HE. For example, non-inert Hellfire missiles have HE warheads. HE noise was modeled within the B-17, B-19, and B-20 ranges for both Baseline and Proposed Action target locations.

For B-17, the Baseline and two Alternatives differ. For Alternative 1 and 3, all munitions expenditures will be split between the current and proposed target locations, which is reflected in the modeled CDNL noise contours in Figure 6-1 and Figure 6-2, respectively. The new target locations are located near varying terrain, so the noise contours are reduced in size compared to the Baseline. For the current target area, the Alternative CDNL contours are reduced by 6 dB. For the proposed target areas, the CDNL contours are smaller in area than Baseline but further south of the current target area.

For B-19, the Baseline and Proposed noise levels modeled are the same since no changes are proposed for B-19 (Figure 6-3). The resultant CDNL contours are concentric circular arcs from the SE to the NW. Terrain effects reduce the extent of the contours to the NE.

For B-20, the Baseline CDNL contours are concentric circles since the terrain is primarily flat at the current target area, where the Alternative 1 CDNL noise contours are oval shaped due to the two new target areas (Figure 6-4). For Alternative 1, the 57 dBC contour lies outside the current R-4813, but well within the new expanded R-4814 restricted area to the north, whereas the Baseline contour remains well within the current restricted area.

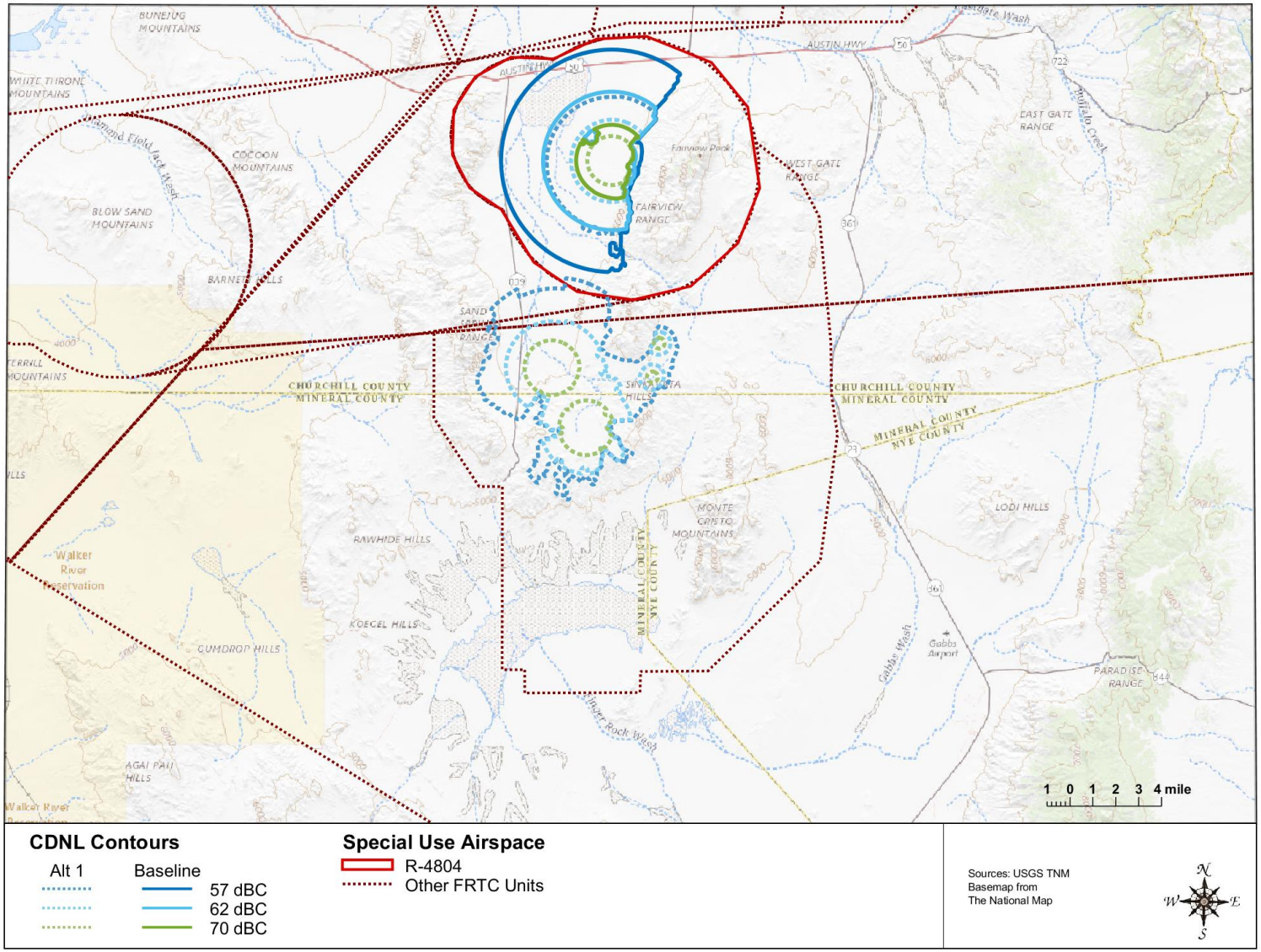


Figure 6-1. FRTC B-17 Range Results for HE Noise for Baseline and Proposed Alternative 1 (L_{Cdn})

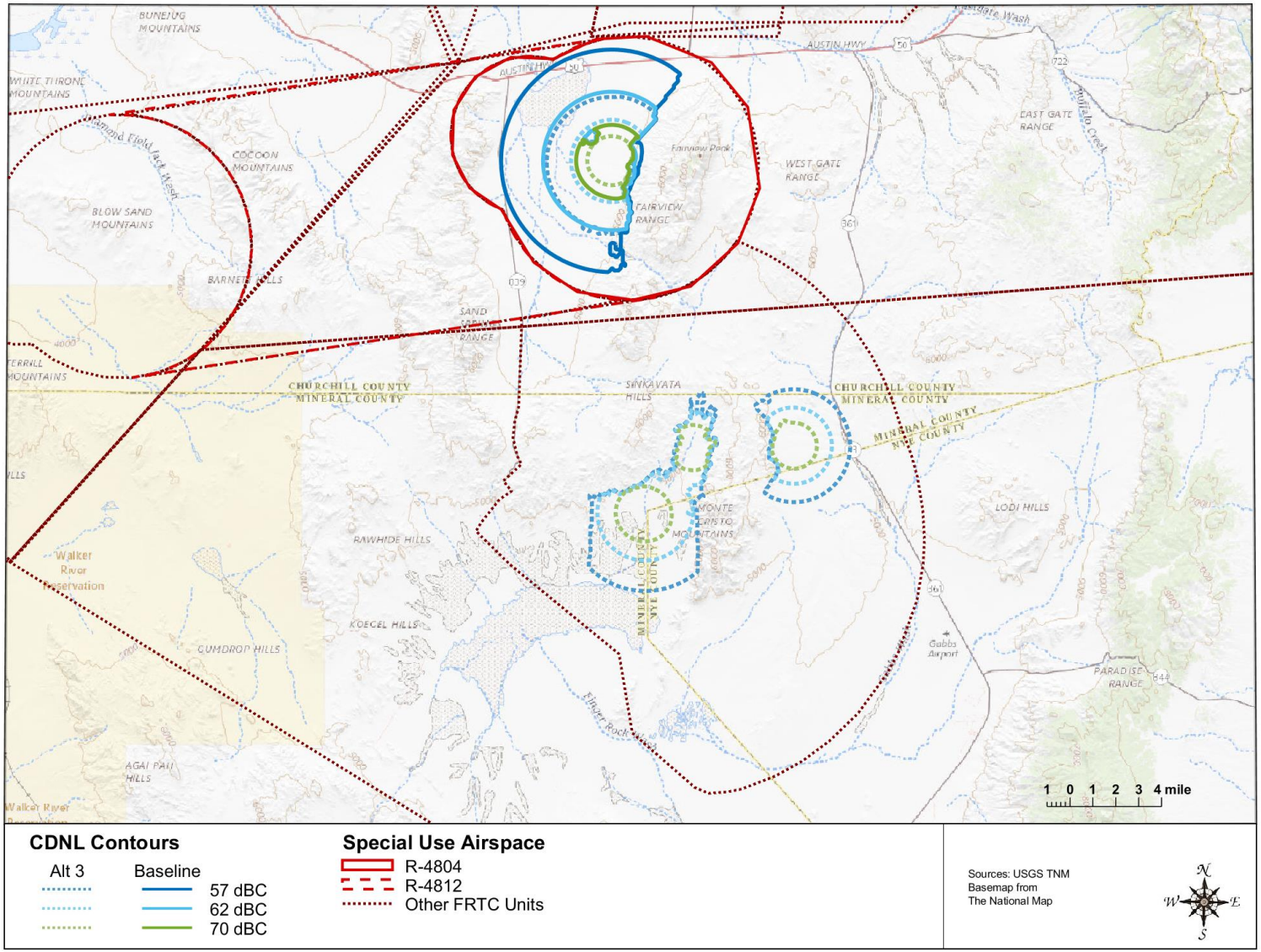


Figure 6-2. FRTC B-17 Range Results for HE Noise for Baseline and Proposed Alternative 3 (L_{Cdn})

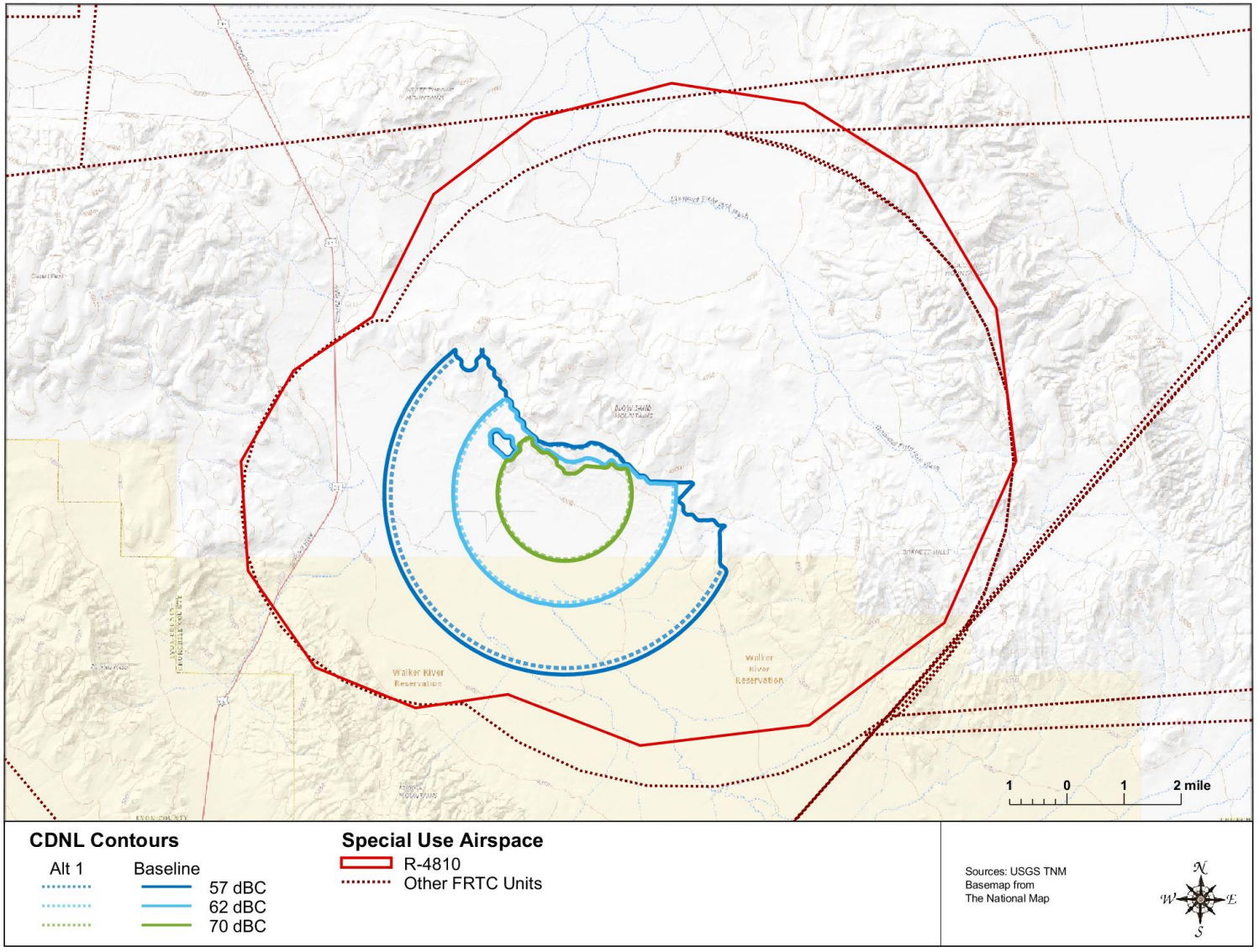


Figure 6-3. FRTC B-19 Range Results for HE Noise for Baseline and Proposed Action (L_{Cdn})

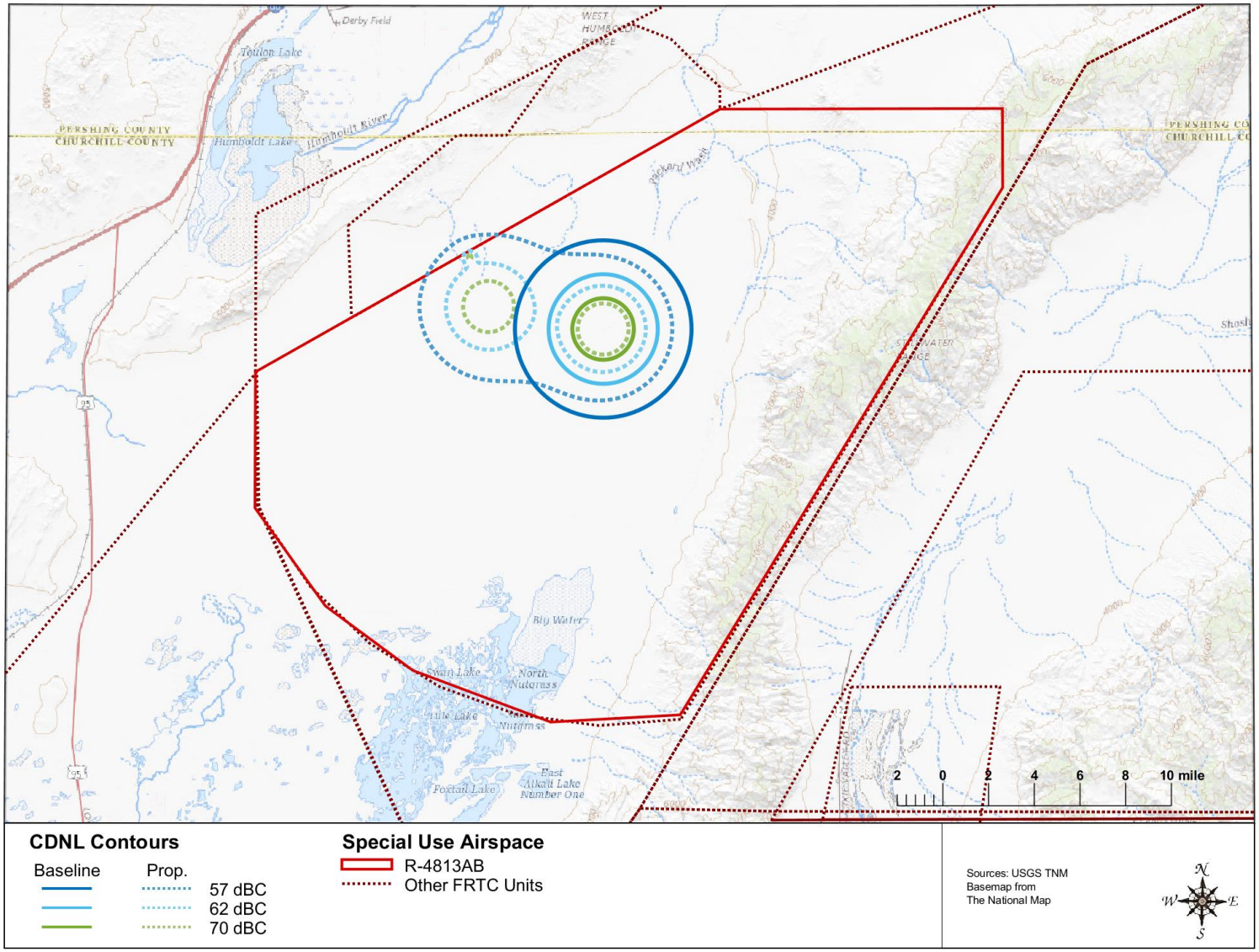


Figure 6-4. FRTC B-20 Range Results for HE Noise for Baseline and Proposed Action (L_{Cdn})

7 Ground-to-Ground Small Arms Training

Navy SEALs conduct ground-based small arms firing within B-16. Figure 7-1 provides the potential firing areas along with the SDZ within B-16. Per Army PHC guidance, tactical small arms firing is not suitable for detailed modeling since it is random in nature. However, for command situational awareness, tactical small arms noise effects are instead represented via a noise buffer distance and/or area. The largest noise buffer distance produced from the SEAL training occurs from 0.50 Cal fire, which has a buffer distance of 2.9 NM for 87 dB_{Pk} and 0.6 NM for 104 dB_{Pk}. These buffer areas are also provided in Figure 7-1, which shows that the 104 dB_{Pk} buffer areas falls with the SDZ, but the 87 dB_{Pk} falls approximately 0.6 NM outside of the SDZ. Other small arms buffer areas will remain within the SDZ.

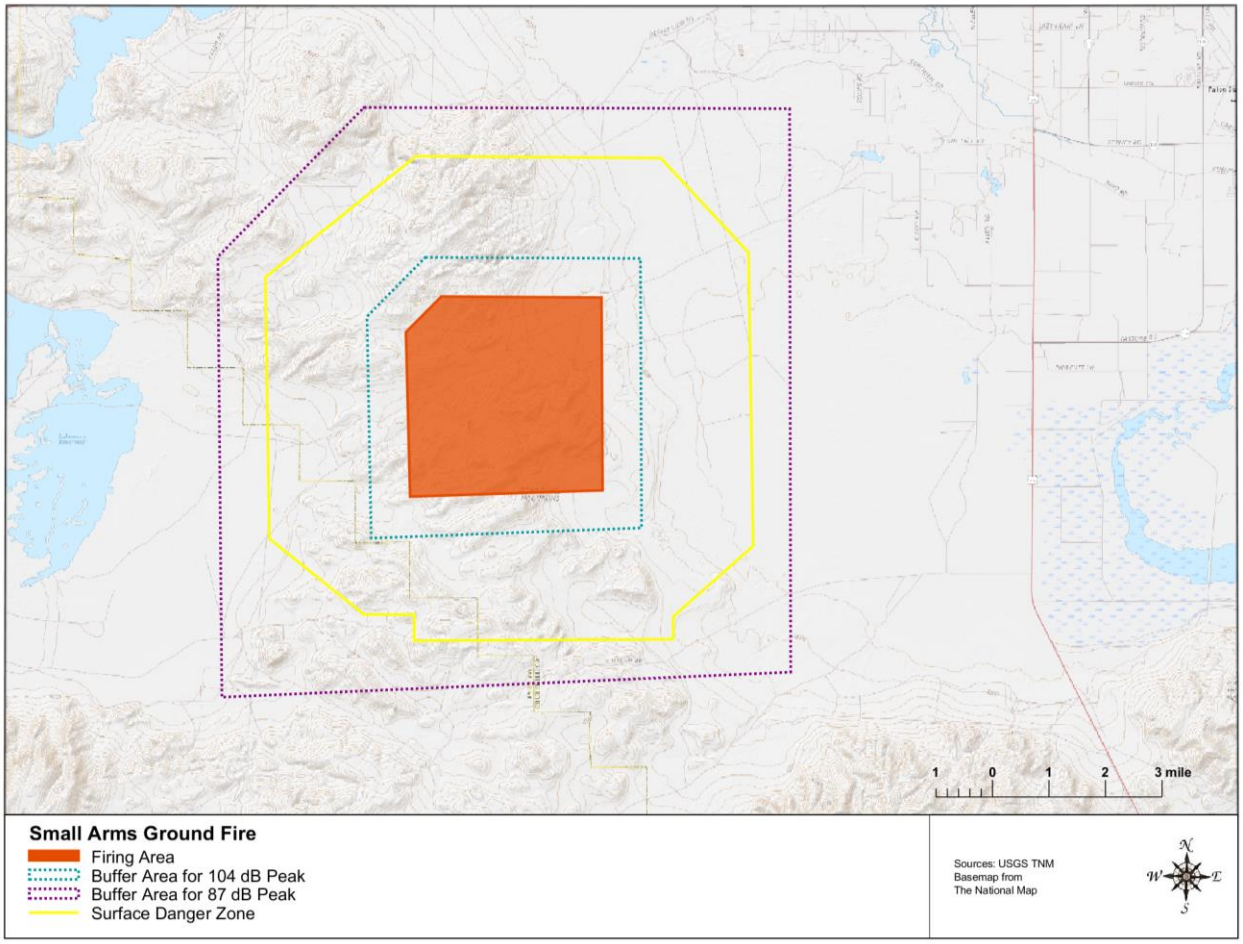


Figure 7-1. Small Arms Noise Buffer Area for B-16

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