DRAFT

ENVIRONMENTAL ASSESSMENT
FOR
PROPOSED VOLK FIELD SPECIAL ACTIVITY AIRSPACE MODIFICATION AND ESTABLISHMENT

WISCONSIN AIR NATIONAL GUARD

NATIONAL GUARD BUREAU
ASSET MANAGEMENT DIVISION

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DRAFT
FINDING OF NO SIGNIFICANT IMPACT
FOR PROPOSED VOLK FIELD SPECIAL ACTIVITY AIRSPACE MODIFICATION AND EXPANSION
AT VOLK FIELD CRTC
WISCONSIN AIR NATIONAL GUARD
CAMP DOUGLAS, WISCONSIN

1.0 INTRODUCTION

Implementation of the Proposed Action (Preferred Alternative) would resolve existing Volk Field Special Activity Airspace (SAA) limitations and provide an integrated, properly configured, realistic military training airspace area with adequate dimension and size to support advanced tactical fighter technologies, tactics, and the evolving training mission requirements of multiple Air National Guard (ANG) units that rely on SAA associated with Volk Field. The Proposed Action would modify and expand the existing Volk Field SAA in such a way that it would adequately facilitate and support air-to-air and air-to-ground training as well as Large Force Exercises (LFEs) in accordance with training requirements established in Air Force Instruction (AFI) 11-2F-16 V1 (2011) and Air Force Tactics, Techniques, and Procedures (AFTTP) 3-1.F-16. The proposed modification, including expansion, of the Volk Field SAA would adequately support AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) tactics, Low Altitude Training (LOWAT) tactics, and Advanced Targeting Pod (ATP) stand-off employment in support of Air National Guard Military Directive (ANGMD) 10.01 direction to establish "a training area that approximates a deployed, combat-oriented operating base."

2.0 PROPOSED ACTION (PREFERRED ALTERNATIVE)

The Proposed Action (Preferred Alternative) would modify existing airspace by raising the floor altitude of some areas, reconfiguring the airspace borders, and expanding the external airspace boundaries. Additionally, the Proposed Action would establish a new Restricted Area (RA). The existing Air Traffic Controlled Assigned Airspace (ATCAA) would be modified through establishing ATCAAs over (i.e., on top of) the proposed Military Operations Areas (MOAs) and establishing a new ATCAAs to the east of the Volk East MOA (see Tables 2-6 and 2-7).

2.1 Volk Field SAA Modifications

2.1.1 Establishment of the Volk Falls MOA and Black River ATCAA

Under the Proposed Action (Preferred Alternative), the existing Falls 1 MOA and a portion of the Falls 2 MOA would be combined to establish the proposed Volk Falls MOA and its dimensions would remain from 500 feet above ground level (AGL) to 17,999 feet above mean sea level (MSL). Additionally, the southern-most border of the existing Falls 1 MOA would be modified, resulting in a linear boundary that would align with the proposed Volk South MOA. This would result in the Wisconsin Air National Guard (WIANG) both giving up a segment of airspace, and expanding airspace into a small area not previously underlying the existing MOA. Additionally, the Proposed Action would include the establishment of the Black River ATCAA, which would cover a majority of the proposed Volk Falls MOA with the exception of small areas on the northern and western borders to accommodate existing commercial air traffic routes and holding points. Black River ATCAA would extend from Flight Level (FL) 180 to FL 210 (18,000 feet MSL to 21,000 feet MSL), with the ability to periodically schedule the proposed ATCAA to FL 500 (50,000 feet MSL) to accommodate LFEs and Defense Counter Air (DCA) training requirements.

2.1.2 Modification of the Volk West MOA

Under the Proposed Action (Preferred Alternative), the existing boundaries of the Volk West MOA would be expanded to the north to include the eastern region of the existing Falls 2 MOA. Additionally, the existing boundaries of the Volk West MOA would be extended to the south, absorbing the northern-most portion of the existing Volk South MOA. However, there would be no expansion of the existing Volk West MOA into areas not currently covered by existing airspace. The existing floor of the Volk West MOA is 100 feet AGL based on a legacy low-level training requirement; however, current flight operations do not occur below 500 feet AGL. Under the Proposed Action the proposed Volk West MOA would extend from 500 feet AGL to 17,999 feet MSL, with the WIANG relinquishing existing unused airspace below 500 feet AGL.

2.1.3 Modification of the Volk South MOA

Under the Proposed Action (Preferred Alternative), the northern-most extent of the existing Volk South MOA would be included as part of the proposed Volk West MOA. Consequently, the northern border of the proposed Volk South MOA would be linear and moved southward under the Proposed Action. Additionally, the southwestern border of the Volk South MOA would be expanded. As is the case with the proposed Volk Falls and Volk West MOAs, the proposed Volk South MOA would extend from 500 feet AGL to 17,999 feet MSL.

2.1.4 Modification and Expansion of the Volk West ATCAA

The existing Volk West ATCAA would be expanded to combine/consolidate two existing ATCAAs, including the Volk West ATCAA that extends from FL 180 to FL 230 (18,000 feet MSL to 23,000 feet MSL), and the Volk South ATCAA that extends from FL 180 to FL 280 (18,000 feet MSL to 28,000 feet MSL). The proposed Volk West ATCAA would cover the footprint of the proposed Volk South MOA and the majority of the proposed Volk West MOA extending from FL 180 to FL 280 (18,000 feet MSL to 28,000 feet MSL), with the ability to periodically schedule a ceiling of FL 500 (50,000 feet MSL) to accommodate LFEs and DCA training events.

2.1.5 Modification of the Volk East MOA and ATCAA

Under the Proposed Action (Preferred Alternative), the existing Volk East MOA would be extended to the north as well as the east, resulting in an approximately 1,265-square-mile increase in total airspace area. Additionally, the Volk East ATCAA would be expanded to match the footprint of the proposed Volk East MOA. The vertical extent of the airspace areas would not change with MOA boundaries extending from 8,000 feet MSL to 17,999 feet MSL and ATCAA boundaries extending from FL 180 to FL 280 (18,000 feet MSL to 28,000 feet MSL).

2.1.6 Establishment of the Oshkosh and Sheboygan East and West ATCAAs

Under the Proposed Action (Preferred Alternative), the WIANG A, B, and C ATCAAs would be rescinded and the Oshkosh and Sheboygan East and West ATCAAs would be established and utilized to support LFEs and specific unit phase training events. The vertical limits of the Oshkosh ATCAA would extend from FL 180 to FL 280 (18,000 feet MSL to 28,000 feet MSL) with the vertical limits of the Sheboygan East and West ATCAAs extending from FL 180 to FL 240 (18,000 feet MSL to 24,000 feet MSL).

2.1.7 Establishment of Restricted Area 6904C

Under the Proposed Action (Preferred Alternative), R-6904C would be established to support the use of long-range, non-eye safe laser training from maneuvering aircraft to the Hardwood Aerial Gunnery Range. Under the Proposed Action, the vertical limits of R-6904C would be 3,000 feet MSL to FL 280 (28,000 feet MSL). R-6904C would be activated by a Notice to Airmen (NOTAM), four (4) hours in advance of training operations.

3.0 ALTERNATIVES CONSIDERED

Specific modifications and establishment of military training airspace included in the Proposed Action (Preferred Alternative) were developed early in the concept phase by the WIANG with support from the Federal Aviation Administration's (FAA's) Minneapolis Air Route Traffic Control Center (ARTCC) and Chicago ARTCC as well as the Green Bay and Milwaukee Approach Control facilities. Proposed airspace improvements were developed to account for aircraft flight path histories in the region in order to identify the most ideal locations and configurations for the proposed modification and establishment of the Volk SAA with the least impact on surrounding military, commercial, and general aviation interests. These boundary locations also take into account the primary tenets of Air Force Instruction (AFI) 13-201, Airspace Management, to achieve better efficiency through Volume, Proximity, Time, and Attributes (VPTA).

In addition to the Proposed Action, three alternatives to the Proposed Action have been analyzed, which would which would include pursuing a subset of the proposed airspace modifications are discussed below. Implementation of any of these alternatives would meet achieve some, but not all, of the purpose and need requirements for the proposed airspace modification.

3.1 Alternative 1: Eliminate Oshkosh and Sheboygan East and West ATCAAs from Proposed Action

Under Alternative 1, all proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of establishing the Oshkosh and Sheboygan East and West ATCAAs. The implementation of this alternative would not address aircraft marshalling limitations that arise during LFEs and specific unit phase training events. During these events Volk Field CRTC airspace schedulers would need to continue to perform extensive inter- and intra-facility coordination efforts to establish temporary ATCAAs needed for operations. For this alternative the WIANG A, B, and C ATCAAs would be retained as the location of the temporary ATCAAs. Further, the WIANG A, B, and C ATCAAs would need to be redesigned to align with Volk East ATCAA.

3.2 Alternative 2: Eliminate Restricted Area 6904C from Proposed Action

With selection of Alternative 2, all proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of R-6904C development. While the majority of existing limitations associated with the Volk Field SAA would be addressed, this alternative would not address limitations to stand-off precision-guided munitions employment and target coordinate generation training using long-distance non-eye safe combat lasers. Under this alternative, pilots would only be able to engage in these types of training exercises at shorter distances that do not meet AFTTP requirements and do not approximate realistic mission-oriented scenarios.

3.3 Alternative 3: Increase Existing Volk West ATCAA Ceiling

Under Alternative 3, none of the proposed modifications to or expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented. However, under this alternative the ceiling of the existing Volk West ATCAA would be raised from FL 230 to FL 280 (23,000 feet MSL to 28,000 feet MSL) in order to reduce the number of airspace shelves in the complex. By eliminating a step-down shelf mid-way through the Volk Field SAA, air-to-air training capabilities would be modestly increased. However, implementation of this alternative would not address other overarching limitations of the existing airspace, including the complex airspace boundaries, bottleneck conditions, problematic airspace shelves, and inability to support long-range laser operations at the Hardwood Aerial Gunnery Range.

3.4 NO-ACTION ALTERNATIVE

Selection of the No-Action Alternative would result in no change to the current configuration of the Volk Field SAA. Under the No-Action Alternative, local and deployed units training at the Volk Field CRTC would continue to lose adequate training opportunities while preparing to deploy in support of Air Expeditionary Force (AEF) responsibilities. The current airspace would restrict current generation aircraft and tactics, and would limit support for future aircraft, tactics, and techniques. Existing fourth generation and emerging fifth generation fighter and bomber units could be forced to deploy to more costly (e.g., fuel costs), limited access, airspace venues elsewhere to fulfill training requirements; reducing the training provided to a number of personnel limited by funding and availability for deployment. Volk Field CRTC would not be able to fulfill ANGMD 10.01 directives to remain an effective advanced combat air forces training location.

4.0 ANTICIPATED ENVIRONMENTAL EFFECTS

Airspace Management. Implementation of the Proposed Action (Preferred Alternative) would simplify existing boundaries and thereby maximize efficient use of the Volk Field SAA. The Proposed Action would also address the "bottleneck" conditions currently experienced at R-6901 (Fort McCoy artillery range) and issues associated with the northeast boundary of the Volk West MOA. Implementation of the Proposed Action would not significantly impact general aviation pilots and would not interfere with air traffic control (ATC) facilities or underlying airports. Consequently, the Proposed Action would result in beneficial impacts to the Volk Field SAA and less than significant impacts to airspace management.

Noise. Only Proposed Volk South MOA would experience a noise increase which would not surpass the 65 A-weighted day-night average (DNL) threshold (Federal

Interagency Committee on Urban Noise 1980; FAA Order 1050.1E, Change 1). Additionally, the implementation of the Proposed Action (Preferred Alternative) would not result in additional sensitive receptors being exposed to noise levels greater than 65 DNL. Consequently, the Proposed Action would have a less than significant impact on the noise environment beneath the proposed Volk Field SAA.

Land Use and Visual Resources. None of the areas beneath the affected or proposed airspaces would experience noise levels greater than or equal to the 65 DNL threshold. The Necedah National Wildlife Refuge (NWR) is the only avoidance area identified within the Volk Field CRTC Standard Operating Procedures (SOPs). Noise levels in the Necedah NWR under the Proposed Action (Preferred Alternative) would be approximately 49.4 DNL. Noise levels in the Necedah NWR would continue to be characteristic of a sensitive, quiet environment. Additionally, under the Proposed Action Volk Field CRTC would continue to maintain a hotline for noise-related complaints associated with military aircraft operations. Finally, the continued use of chaff and flare within the Volk Field SAA would not impact underlying land uses, as summarized in the Environmental Assessment (EA). Therefore, implementation of the Proposed Action would have less than significant impacts on land use and visual resources beneath the proposed Volk Field SAA.

Biological Resources. The expansion of the Volk Field SAA would result in negligible increases in bird strike risks. Additionally, the Proposed Action (Preferred Alternative) would result in very minor changes to the current noise environment. Consequently, there would be no effect on federally protected species or federally designated critical habitat areas known to occur beneath the proposed Volk Field SAA. Predicted noise levels in the Necedah NWR under the Proposed Action would be approximately 49.4 DNL, which is below recognized thresholds of significance. Similarly, predicted noise levels in the Fox River NWR would be approximately 36.0 Onset rate-adjusted monthly day-night average, A-weighted sound level (L_{dnmr}). Therefore, implementation of the Proposed Action would have less than significant impacts on biological resources beneath the proposed Volk Field SAA.

Cultural Resources. Under the Proposed Action (Preferred Alternative), the floor of the proposed Volk Falls, Volk West, and Volk South MOAs would be established at 500 feet AGL. Aircraft operations at this altitude would not have the potential to cause structural damage to historical structures located beneath this airspace complex, which can occur with noise levels of approximately 130 dB. Visual effects (the presence of military aircraft) on these resources would be negligible since the aircraft would only be visible from any given cultural resource for a few minutes per flying day. Further, no impacts to Native American sacred or traditional sites have been identified or would be expected. Therefore, implementation of the Proposed Action would have less than significant impacts on cultural resources beneath the proposed Volk Field SAA.

Air Quality. Implementation of the Proposed Action (Preferred Alternative) would affect multiple counties in central and east-central Wisconsin; however, all counties within the region of influence (ROI) are in attainment for all criteria pollutants. Additionally, the majority of the proposed aircraft operations would take place at a sufficient altitude such that emissions would not affect ground-level concentrations of pollutants. Therefore, implementation of the Proposed Action would result in less than significant impacts on air quality.

Safety. This risk of mishap would remain consistent with the current risk of mishap. Additionally, re-configuration of the existing airspace areas would result in a reduced potential for aircraft to "spill out" of the SAA boundaries. Consequently, there would be a slightly reduced potential for collisions involving military and civilian aircraft. There would be no safety-related impacts associated with the use of long-range, non-eye safe lasers. Further, flare deployment procedures would not change under the Proposed Action (Preferred Alternative); fire risk and flare strike risk would remain low. Therefore, implementation of the Proposed Action would have less than significant impacts on safety.

Hazardous Materials and Waste. Implementation of the Proposed Action (Preferred Alternative) would not result in a change in the inventory, handling, storage, or use of petroleum, oils, and lubricants (POL) at Volk Field CRTC. Established safe handling, storage, and use procedures would continue to be implemented in accordance with established Hazardous Waste Management Plans (HWMPs) developed by Volk CRTC and visiting units. Fuel dump locations would remain unchanged under the Proposed Action and fuel venting would not be anticipated to occur within the modified or expanded airspace areas. Under the Proposed Action, the storage, transport, and use of chaff and flare would continue to be implemented consistent with current procedures and training requirements. Consequently, no significant impacts related to the transport, storage, use, or disposal of hazardous materials and wastes would result upon implementation of the Proposed Action.

Socioeconomics, Environmental Justice, and Children's Health and Safety. Under the Proposed Action (Preferred Alternative), there would be no long-term changes in economic activity associated with the Volk Field CRTC, as no additional personnel would be added to the staff mix at the training center. Further, the Proposed Action would have negligible impacts on underlying cities and communities. The majority of the existing Volk Field SAA and the proposed minor expansion areas would not cover areas of significant population or economic activity that are not already covered by the existing airspace complex. The proposed Volk East MOA would have an operational floor at 8,000 feet MSL, and the proposed Oshkosh and Sheboygan East and West ATCAAs would be established with an operational floor of FL 180 (18,000 feet MSL), which would separate WIANG training from affected populations such that ground-based economic activity – including employment – would not be impacted by any element of the expansion of or operations within the SAA. Noise levels would remain well below the recommended sound level thresholds established to protect public health and welfare, including annoyance, in areas where quiet is a recognized resource. Therefore, implementation of the Proposed Action would have less than significant impacts on socioeconomics, environmental justice, and children's health and safety issues beneath the proposed Volk Field SAA.

Cumulative Impacts. At this time, no actions that would result in a cumulative impact when considered in concert with implementation of the proposed Volk Field SAA modification and expansion have been identified.

5.0 PUBLIC NOTICE

The National Environmental Policy Act (NEPA), 40 Code of Federal Regulations (CFR) 1500-1508, and 32 CFR 989 require public review of the EA before approval of the Finding of No Significant Impact (FONSI) and implementation of the Proposed Action (Preferred Alternative). A Notice of Availability (NOA) for public review of the Draft EA was published in the Marshfield News-Herald, Portage County Gazette, Stevens Point City Times, Stevens Point Journal, Tomah Journal, Daily Citizen, and Waupaca County Post. The Draft EA was available for public review during the 45-day public review period at the following locations: Madison Public Library, Black River Falls Public Library, Neillsville Public Library, Marshfield Public Library, Portage County Public Library, McMillan Memorial Library, New Lisbon Memorial Library, Coloma Public Library, and Oshkosh Public Library.

6.0 FINDING OF NO SIGNIFICANT IMPACT

After careful review of the potential impacts, I conclude that neither the Proposed Action (Preferred Alternative) nor any of the evaluated alternatives implementation would have a significant impact on the quality of the human or natural environment or generate significant controversy. Accordingly, the requirements of NEPA, Council on Environmental Quality (CEQ), and 32 CFR 989, et seq. have been fulfilled, and an Environmental Impact Statement (EIS) is not necessary and will not be prepared.

______________________________ ________________________

TROY R. WERTZ, Col, USAF Date
Chief, Asset Management Division

ENVIRONMENTAL ASSESSMENT FOR PROPOSED VOLK FIELD SPECIAL ACTIVITY AIRSPACE MODIFICATION AND ESTABLISHMENT WISCONSIN AIR NATIONAL GUARD

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
114 FW	114th Fighter Wing
115 FW	115th Fighter Wing
148 FW	148th Fighter Wing
440 AW	440th Airlift Wing
AAA	Anti-Aircraft Artillery
ACC	Air Combat Command
ACHP	Advisory Council on Historic Preservation
ACMI	Air Combat Maneuvering Instrumentation
AEF	Air Expeditionary Force
AETC	Air Education and Training Command
AFI	Air Force Instruction
AFTTP	Air Force Tactics, Techniques, and Procedures
AGL	above ground level
AHAS	Avian Hazard Advisory System
AIM	Air Intercept Missile
AIRFA	American Indian Religious Freedom Act
AMC	Air Mobility Command
AMEC	AMEC Environment & Infrastructure, Inc.
AMRAAM	Advanced Medium-Range Air-to-Air Missile
ANG	Air National Guard
ANGMD	Air National Guard Mission Directive
ANGRC	Air National Guard Readiness Center
AQCR	Air Quality Control Regions
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
ATCAA	Air Traffic Controlled Assigned Airspace
ATP	Advanced Targeting Pod
ATV	All Terrain Vehicle
BAM	Bird Avoidance Model
BASH	Bird/Wildlife Aircraft Strike Hazard
BCE	Before Common Era
BEA	U.S. Bureau of Economic Analysis
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMC	Basic Mission Capable
C2	Command and Control
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CE	Common Era
CEQ	Council on Environmental Quality

ACRONYMS AND ABBREVIATIONS
(continued)

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	Controlled Firing Area
CFC	chlorofluorocarbon
CFR	Code of Federal Regulations
CFT	Composite Force Training
CH_4	methane
CMR	Combat Mission Ready
CO	carbon monoxide
CO_2	carbon dioxide
CRTC	Combat Readiness Training Center
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DCA	Defense Counter Air
DEAD	Destruction of Enemy Air Defense
DNL	A-weighted day-night average
DoD	Department of Defense
DOI	U.S. Department of Interior
DOT	U.S. Department of Transportation
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESQD	Explosives Safety Quantity-Distance
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FICON	Federal Interagency Committee on Noise
FL	Flight Level
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GDP	gross domestic product
GIS	Geographical Information System
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HAP	hazardous air pollutants
HCFC	hydrochlorofluorocarbon
HUD	U.S. Department of Housing and Urban Development

ACRONYMS AND ABBREVIATIONS (continued)

hz	hertz
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
IR	Instrument Routes
L_{dnmr}	Onset rate-adjusted monthly day-night average, A-weighted sound level
LFE	Large Force Exercise
L_{max}	maximum A-weighted sound level or maximum sound level
LOA	Letter of Agreement
LOWAT	Low Altitude Training
MBTA	Migratory Bird Treaty Act
MJU	Mobile Jettison Unit
MOA	Military Operations Area
MOU	Memorandum of Understanding
MSL	mean sea level
MTR	Military Training Route
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAS	National Airspace System
NAVAID	navigational aid
NAVFAC SW	Naval Facilities Engineering Command Southwest
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NGB	National Guard Bureau
NHPA	National Historic Preservation Act
NM	nautical mile
NMS	National Marine Sanctuaries
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOTAM	Notice to Airmen
NO_x	nitrogen oxides
NRHP	National Register of Historic Places
NWR	National Wildlife Refuges
O_3	ozone
OENS	Office of Endangered and Nongame Species
PAH	polycyclic aromatic hydrocarbons
Pb	lead

ACRONYMS AND ABBREVIATIONS (continued)

PCA	Positive Control Area
PL	Public Law
PM_{10}	particulate matter equal to or less than ten microns in diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
POL	petroleum, oils, and lubricants
RA	Restricted Area
RAP	Ready Aircrew Program
RCRA	Resource Conservation and Recovery Act
RNAV	Area Navigation
ROI	Region of Influence
RPZ	Runway Protection Zones
SAA	Special Activities Airspace
SAM	Surface-to-Air Missile
SEAD	Suppression of Enemy Air Defenses
SEL	Sound Exposure Level
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOP	Standard Operating Procedure
sq mi	square mile
SUA	Special Use Airspace
TERPS	Terminal Instrument Procedures
UMTE	Unmanned Threat Emitters
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USC	U.S. Code
USCCSP	U.S. Climate Change Science Program
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UWE	University of Wisconsin-Extension
VFR	Visual Flight Rules
VOC	volatile organic compound
VPTA	Volume, Proximity, Time, and Attributes
VR	Visual Route
WA	Warning Area
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources

ACRONYMS AND ABBREVIATIONS (continued)

WDT	Wisconsin Department of Tourism
WHS	Wisconsin Historic Society
WIANG	Wisconsin Air National Guard
WSCO	Wisconsin State Climatology Office
WSS	Wisconsin State Statute
WSTRI	Wisconsin State Tribal Relations Initiative

SECTION 1
PURPOSE AND NEED

1.1 INTRODUCTION

The Wisconsin Air National Guard (WIANG) has prepared this Draft Environmental Assessment (EA) to document and evaluate the proposed modification and establishment associated with the Volk Field Special Activity Airspace (SAA), under the direction of Volk Field Combat Readiness Training Center (CRTC) Wisconsin.[1] The Proposed Action (Preferred Alternative) would modify existing airspace by raising the floor altitude of some areas and reconfiguring the internal airspace boundaries. New airspace would be established to the north outside of the existing Military Operations Area (MOA) complex and a new Restricted Area (RA) would be established. The existing Air Traffic Controlled Assigned Airspace (ATCAA) would be modified through establishing ATCAAs over the proposed MOAs and establishing a newly proposed ATCAA to the east of the Volk East MOA. Volk Field CRTC includes Special Use Airspace (SUA) and support facilities necessary to support most Department of Defense (DoD) aircraft. As such, a number of DoD agencies, operating a variety of aircraft types, would benefit from the modification and establishment within the Volk Field SAA.

The Environmental Impact Analysis Process (EIAP) for the Volk Field SAA modification and establishment has been conducted in accordance with the Council on Environmental Quality (CEQ) regulations to comply with the National Environmental Policy Act (NEPA) of 1969 and in conformity with Federal Aviation Administration (FAA) Order 1050.1E, Chg. 1 (2006), 32 Code of Federal Regulations (CFR) 989, and Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*.

[1] SAA includes any airspace with defined dimensions within the National Airspace System (NAS) wherein limitations may be imposed upon aircraft operations. This airspace may be restricted areas, prohibited areas, military operations areas, air traffic control assigned airspace, and any other designated airspace areas (FAA 2014a).

1.2 LOCATION

Volk Field CRTC, located in Camp Douglas, Wisconsin, is operationally and organizationally tasked to support Joint Force training requirements. Volk Field serves as a deployed location for multiple aircraft types.

The Proposed Action (Preferred Alternative) includes modification and establishment associated with existing military training airspace located over central and east-central Wisconsin. The proposed modification, including expansion, of the Volk Field SAA would occur over the entirety, or sections of 19 counties in this region (see Table 1-1).

Table 1-1. Counties Underlying Existing and Proposed Airspace

Underlying Counties	
Adams	Marquette
Calumet	Monroe
Eau Claire	Outagamie
Clark	Portage
Columbia	Trempealeau
Dodge	Waupaca
Fond du Lac	Waushara
Green Lake	Winnebago
Jackson	Wood
Juneau	

Note: Some counties would underlie multiple airspace areas (e.g., western Clark County would underlie the Volk West MOA while eastern Clark County would under the Volk Falls MOA).

1.3 PRIMARY MILITARY USERS OF THE AIRSPACE

The Air National Guard (ANG) is an integral part of the U.S. Air Force (USAF) under the USAF's Total Force Policy and includes Volk Field's CRTC and SAA. The ANG is comprised of 89 aircraft operating units. The ANG has dual Federal and state roles, and ANG units may be activated in a number of ways as prescribed by public law. Primary users of the airspace include the 115th Fighter Wing (115 FW), 148th Fighter Wing (148 FW), and 114th Fighter Wing (114 FW). On average Volk Field SAA is activated by these users daily for a minimum of one hour and maximum of approximately 4.5 hours, with the number of aircraft varying per training mission requirements. For purposes of this document, a *sortie* represents a single takeoff, performance of a mission, and landing. An *operation* is defined as a subset of a sortie that accounts for an individual flying activity within an individual piece of training airspace. There can be multiple operations per sortie.

The 115 FW is based at Truax Field, located at the Dane County Regional Airport in Madison, Wisconsin, and operates F-16 Block 30 aircraft. Due to its proximity and available training assets, the 115 FW uses Volk Field SAA and the Hardwood Range almost exclusively, and on a daily basis.

Based at Duluth International Airport in Duluth, Minnesota, the 148 FW operates F-16 Block 50 aircraft with a primary mission of Suppression of Enemy Air Defenses (SEAD). The unit also maintains a requirement to remain proficient in free fall and forward firing ordnance. The five Unmanned Threat Emitters (UMTE) within Volk Field SAA and the Hardwood Range are critical assets required to support the 148 FW's mission. The Volk Field SAA is the nearest airspace to the 148 FW installation with SEAD training assets (ANG 2009).

South Dakota's 114 FW is stationed at Joe Foss ANG Station in Sioux Falls, and operates F-16 Block 40, utilizing the Volk Field SAA and Hardwood Range primarily for air-to-ground and SEAD training requirements. However, it also schedules Volk Field SAA as a weather back-up for their air-to-air training. The 114 FW also regularly participates in Volk Field CRTC-sponsored Large Force Exercises (LFEs) (ANG 2010).

1.4 PRIMARY AIRCRAFT OPERATED WITHIN THE AIRSPACE COMPLEX

A number of different aircraft type utilize the Volk Field SAA to meet training requirements for a variety of different mission types. During Fiscal Year (FY) 2013 aircraft that operated within the airspace complex included A-10, B-1B, C-12, C-135, F-16, F-18, KC-135R, PC-12, C-130, CH-47, UH-60, E-3 (WIANG 2013). However, as the primary users of the Volk Field SAA operate F-16s, this aircraft type represents approximately 90 percent of the operations within the airspace complex.

The F-16 Fighting Falcon is a versatile, compact, multi-role fighter aircraft. It is highly maneuverable and agile and is used for both air-to-air and air-to-ground combat (ANG 2014a) (see Table 1-2).

Table 1-2. Characteristics of the F-16C/D Aircraft

Function	Multi-Role Fighter
Power	Pratt & Whitney F100-PW-200/220/229 or General Electric F110-GE-100/129
Thrust	27,000 pounds
Weight	19,700 pounds (without fuel)
Speed	1,500 miles per hour (Mach 2 at altitude)
Range	Approximately 2,002 miles (1,740 nautical miles)
Ceiling	50,000 feet above mean sea level
Crew	One (F-16C), or two (F-16D)

Source: ANG 2014a.

1.5 AIRSPACE MANAGEMENT AND AIR TRAFFIC CONTROL

The FAA has overall responsibility to manage and control U.S. airspace, including that used by commercial, civil, and military aircraft. To ensure safe and efficient airspace use, the FAA defines the types of airspace and the nature of activities that each type can accommodate. Within this system, military services identify specific needs for airspace (the horizontal and vertical boundaries as well as projected times of use) and request the FAA designate SUA to meet those needs. The FAA retains overall management of SUA and individual military units schedule and coordinate airspace use with the FAA using Letters of Agreement to formalize and delineate areas of responsibility.

Currently, military training airspace over central and east-central Wisconsin is complex and is utilized, scheduled, and coordinated by many different military units through a centralized scheduling process at Volk Field. These requests are vetted by Volk Field airspace managers and forwarded to Minneapolis Air Route Traffic Control Center (ARTCC) for FAA coordination within the National Airspace System (NAS).[2]

1.5.1 Military Special Use Airspace

The existing Volk Field SAA is comprised of MOAs and ATCAAs as well as MOAs overlain by ATCAAs. Additionally, the airspace complex includes RAs, associated

[2] Portions of both current and proposed Volk Field SAA lie within the boundaries of Chicago ARTCC but Minneapolis coordinates all of the Volk Field Airspace Complex per a three-way letter of agreement between the two FAA facilities and Volk Field.

with the Hardwood Range (R-6904A/B) and R-6903 located over Lake Michigan. These airspace types are described in detail below.

1.5.1.1 Military Operations Areas

MOAs are airspace areas established below 17,999 feet above mean sea level (MSL) to segregate high performance military aircraft conducting training activities from nonparticipating civil and military air traffic operating under Instrument Flight Rules (IFR). Nonparticipating military and civilian aircraft flying under Visual Flight Rules (VFR) can operate in MOAs without approval from the military scheduling or controlling agency; however, extreme caution is advised when such aircraft transit active MOAs to ensure flight safety.

Within the Volk Field SAA in the existing Falls 1, Falls 2, Volk West, Volk South, and Volk East MOAs, approximately 16 percent of military training operations occur between 1,000 feet above ground level (AGL) and 5,000 feet AGL. Additionally, approximately four percent of total military training operations within these existing MOAs occur below 1,000 feet AGL.[3]

1.5.1.2 Air Traffic Control Assigned Airspaces

ATCAAs are airspace areas of defined vertical and lateral limits, assigned by Air Traffic Control at and above 18,000 feet MSL, in order to provide segregation between training activities conducted within the assigned airspace and nonparticipating IFR traffic in Class A airspace.

1.5.1.3 Restricted Areas

RAs typically overly gunnery ranges. Non-participating aircraft are restricted from entering these areas because the activities taking place within (e.g., ordnance delivery, use of non-eye safe lasers, etc.) are considered hazardous to flight.

[3] This excludes operations which occur within the Hardwood Range (i.e., R-6904A/B).

1.5.1.4 Military Training Routes

Military Training Routes (MTRs) include airspace of defined vertical and lateral dimensions established for military flight training. Two established MTRs transit Volk Field SAA, Visual Route (VR)-1616 and VR-1650 (see Figure 1-1).

1.6 REGIONAL TRAINING REQUIREMENTS

To ensure aircrew mission readiness, tactical aircrew conduct several basic types of training including air-to-ground, air-to-air, threat awareness, and composite events. These different types of training are discussed in general below.

1.6.1 Air-to-Ground Training

Air-to-ground training employs all low-, medium-, and high-altitude tactics and techniques associated with the delivery of precision, non-precision, and forward firing ordnance. Training may take place on a bombing range if inert ordnance is intended to be expended and scored by range personnel. It may also take place in MOAs/ATCAAs if munition deployment is simulated and assessed via on-board video tape. Actual ordnance delivery or use of non-eye safe lasers must occur in a RA.

1.6.2 Air-to-Air Training

Air-to-air training provides experience gaining and maintaining air superiority in a designated piece of airspace. A standard phased training plan sees training progress from basic one versus one “dogfighting” to longer range intercepts and often culminates in engagements between multiple “friendly” and “enemy” aircraft.

1.6.3 Threat Awareness

This training consists of aircrew assessments of and reactions to ground based threats like anti-aircraft artillery (AAA) or surface-to-air missiles (SAMs). This training can be against notional threats or may be facilitated by the use of ground-based threat simulator systems that accurately replicate the electronic signatures of AAA and SAM systems. Threat awareness training may be included as a sub-set of either of the two training events discussed above or may be an independent mission set, particularly for units like the 148 FW that are tasked with the SEAD or Destruction of Enemy Air Defense (DEAD) missions.

1.6.4 Composite Force Training

Composite Force Training (CFT) exercises, which occur less frequently, consist of aircraft performing missions that integrate major elements of air-to-air, air-to-ground, and threat awareness training. Additionally, this event may integrate other important training elements like aerial refueling, incorporation of Command and Control (C2) inputs from ground or airborne C2 assets, and integration with non-USAF ground based and airborne assets. Because these exercises are designed to provide as complex of a training environment as possible, they generally use all available training airspace and ranges for a brief period during each operation period.

1.6.5 Description of Training Exercises

Table 1-3 below describes the types of training missions conducted within the current and proposed modified Volk Field SAA.

1.7 PURPOSE OF THE PROPOSED ACTION (PREFERRED ALTERNATIVE)

The purpose of the Proposed Action (Preferred Alternative) is to provide an integrated, properly configured, realistic military training airspace with adequate dimension and size to support advanced tactical fighter technologies and tactics. The Proposed Action would support and more adequately facilitate and support air-to-air and air-to-ground training as well as LFEs in accordance with Air Force Instruction (AFI) 11-2F-16 V1 (2011) and Air Force Tactics, Techniques, and Procedures (AFTTP) 3-1.F-16 training requirements. The proposed modification, including expansion, of the Volk Field SAA would more adequately support AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) tactics, Low Altitude Training (LOWAT) tactics, and Advanced Targeting Pod (ATP) stand-off employment in support of ANGMD 10.01 direction to establish "a training area that approximates a deployed, combat-oriented operating base."

Table 1-3. Training Exercises Defined

Training Type	Definition
Advanced Handling Characteristics (AHC)	Consists of a single airplane training for proficiency in utilization and exploitation of the aircraft flight characteristics consistent with operational and safety constraints.
Air Combat Maneuvering (ACM)	Training typically involves three to four similar aircraft and emphasizes intra-flight coordination, survival tactics, and maneuvering of two aircraft against one or two adversaries.
Air Combat Tactics (ACT)	Usually involves four to eight aircraft. This scenario involves designating friendly and enemy forces with training consisting of opposing forces engaging each other over a large range of altitudes.
Basic Fighter Maneuvering (BFM)	Fundamental training of all air-to-air flight maneuvering. This training is normally conducted with two similar aircraft to practice individual offensive and defensive maneuvering against a single adversary.
Defense Counter Air (DCA)	The objective of DCA is to protect friendly forces and vital interests from enemy air and missile attacks and is synonymous with air defense. DCA consists of active and passive air defense operations including all defensive measures designed to destroy attacking enemy air and missile threats or to nullify or reduce the effectiveness of such attacks should they escape destruction.
Low Altitude Training (LOWAT)	Normally involves two to four aircraft practicing the fundamentals of searching for and engaging an aerial target at low-altitude usually below 5,000 feet AGL.
Low Altitude Navigation	Involves training conducted below 1,000 feet AGL using onboard systems and the fundamental aspects of dead reckoning and point-to-point low-altitude navigation, with or without prior route planning.
Low/Slow Visual Identification	Consists of identifying and engaging aerial targets at low-altitude usually below 5,000 feet AGL.
Large Force Exercise (LFE)	LFEs provide training scenarios in which many aircraft are involved. LFEs in Volk Field SAA could include up to 20 aircraft or more, as opposed to smaller scenarios such as 1v1, 2v2, or 4v4.
Slow Shadow Training	Involves practicing maneuvers to intercept slow flying rotary or fixed wing aircraft and maintaining surveillance without being detected.
Tactical Intercepts (TI)	Involves the detection and interception of hostile aircraft. The target aircraft attempts to penetrate the area protected by the interceptor who, with the aid of radar, attempts to detect the target, maneuver to identify the target, and based on the scenario, reach a position from which the target can be destroyed.

Table 1-3. Training Exercises Defined (Continued)

Training Type	Definition
Basic Surface Attack	Building block air-to-ground weapons delivery training events that focus on specific skill sets in a non-threat environment. Pilots practice both precision-guided and unguided weapons delivery using either inert or notional weapons at Hardwood Range. Skill sets vary greatly depending on type of ordnance and avionics delivery parameters.
Offensive Counter Air/ Interdiction/ Surface Attack Tactics	Varsity level air-to-ground weapons employment using either precision-guided or unguided ordnance in a complicated threat environment; pilots must fight their way deep into enemy territory against adversary aircraft and integrated air defense systems, employ weapons against targets, and then return to friendly skies. This mission typically utilizes the entire Volk Field SAA complex.
Suppression of Enemy Air Defenses (SEAD)/ Destruction of Enemy Air Defense (DEAD)	Weapons employment against Integrated Air Defense systems. Typically involve notional weapons against Volk Field's UMTE systems. This mission typically utilizes the entire Volk Field SAA complex.
Close Air Support	Non-Traditional Intelligence, Surveillance, and Reconnaissance with strike capabilities in support of ground maneuver operations. Avionics and weapons employment in coordination with embedded Joint Terminal Attack Controllers or Joint Fires Observers. Typically utilizing the entire Volk Field SAA complex (with emphasis on R-6904 for inert weapons delivery).

1.7.1 The Ready Aircrew Program

Training requirements for active-duty and reserve components of the USAF are specified in regulations written by their host commands (e.g., Air Combat Command [ACC], Air Mobility Command [AMC], and Air Education and Training Command [AETC]). These regulations specify the type, quality, and frequency of pilot training required to develop and maintain flight proficiency to meet expected wartime tasking, air sovereignty alert, and contingency operations taskings. These training requirements are developed into the Ready Aircrew Program (RAP), which is the USAF's overarching continuation training program designed to focus training or develop capabilities vital to a unit's core missions.

1.7.2 Air Force Instructions and Mission Readiness

AFI 11-2F-16 V1 (2011) implements the RAP, which recognizes two levels of pilot readiness: Combat Mission Ready (CMR) and Basic Mission Capable (BMC). The fundamental difference between CMR and BMC status is the level of proficiency in mission-critical skills. In other words, a CMR pilot is fully proficient in all mission-critical skills, whereas a BMC pilot is familiar with, but not necessarily proficient in, all mission-critical skills. The RAP directs units to "design training programs to achieve the highest degree of combat readiness consistent with flight safety and resource availability. Training must balance the need for realism against the expected threat, pilot capabilities, and safety." AFI 11-2F-16 V1 instructs units to maintain as many pilots in CMR as practicable.

1.8 NEED FOR THE AIRSPACE MODIFICATION

The *need* for the Proposed Action (Preferred Alternative) is driven by multiple shortfalls in the existing Volk Field SAA complex, which were identified in the internal *Volk Airspace Complex Joint FAA/ANG Special Use Airspace Review (June 2008)*. Implementation of the Proposed Action would address the limitations of the current airspace complex and would not include any changes to the current operating hours or activation schedule for the Volk Field SAA. The following sections describe the existing airspace and its limitations associated with its existing configuration.

1.8.1 Existing Volk Field Special Activities Airspace Configuration

The primary tactical portion of the Volk Field SAA overlying central and east-central Wisconsin consists of five MOAs, three corresponding ATCAAs, and the RA associated with the Hardwood Range.[4] Additional adjacent airspace includes the non-tactical Wisconsin ANG ATCAAs, R-6903, and Minnow MOA extending over Lake Michigan.[5] Figures 1-1 and 1-2 depict the airspace complex and illustrate the complexity associated with scheduling, administration, and utilization of the Volk Field SAA in its current configuration. Table 1-4 describes the existing dimensions of the individual airspace parcels as well as the existing operations that occur within the Volk Field SAA.

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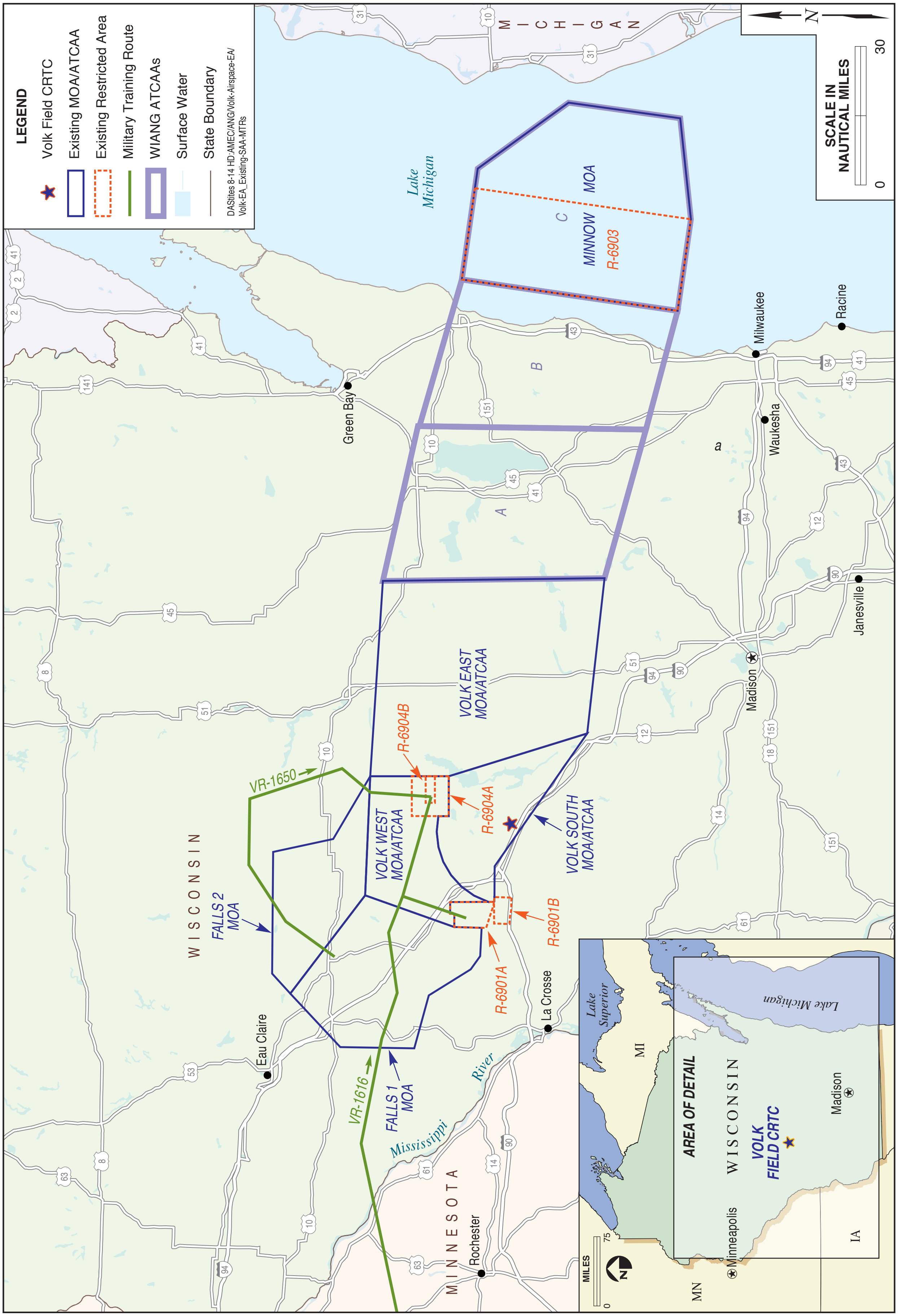
[4] R-6901 is contiguous with Volk Field SAA but is managed by the Army's Reserve's Fort McCoy – Volk Field does not manage and has no control over this RA.

[5] The Wisconsin ANG A, B, and C ATCAAs would be rescinded and R-6903 as well as the Minnow MOA would not be modified or expanded under the Proposed Action or its alternatives.

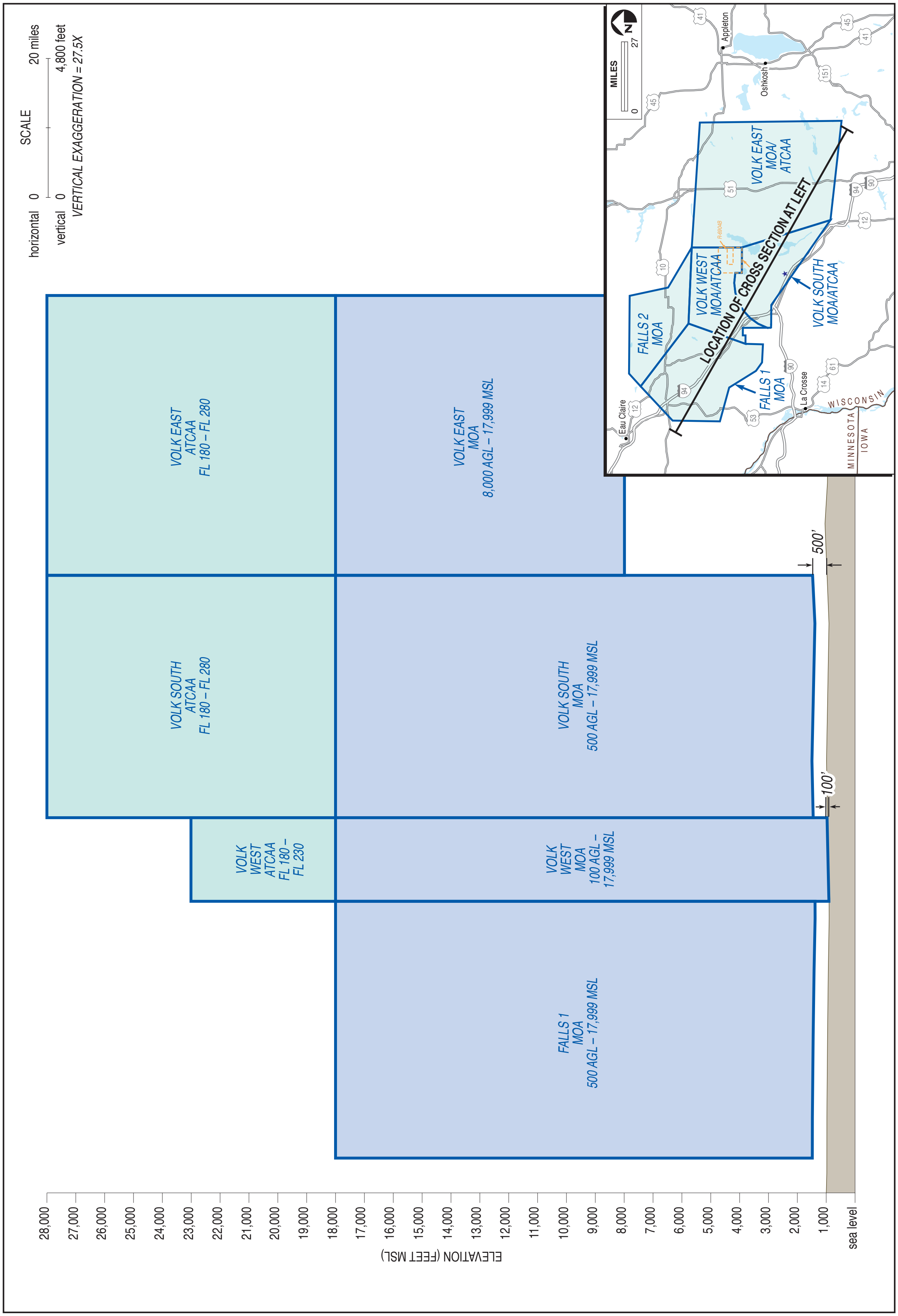


Existing Volk Field Special Activity Airspace
and Military Training Routes

FIGURE
1-1

EA

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.



Existing Volk Field Special Activity Airspace Cross Section

FIGURE 1-2

EA

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

Table 1-4. Existing Airspace Configuration

Airspace Identifier	Altitude Floor	Altitude Ceiling	Approximate Area (square miles)
Military Operations Areas			
Falls 1 MOA	500 AGL	17,999 MSL	1,100
Falls 2 MOA	500 AGL	17,999 MSL	695
Volk West MOA	100 AGL[1]	17,999 MSL	680
Volk South MOA	500 AGL	17,999 MSL	680
Volk East MOA	8,000 MSL	17,999 MSL	2,470
Minnow MOA*	10,000 MSL	17,999 MSL	2,310
Air Traffic Control Assigned Airspace			
Volk West ATCAA	FL 180	FL 230	680
Volk South ATCAA	FL 180	FL 280	680
Volk East ATCAA	FL 180	FL 280	2,470
Wisconsin ANG A ATCAA (Non Tactical Airspace)*	FL 190	FL 240	2,120
Wisconsin ANG B ATCAA (Non Tactical Airspace)*	FL 190	FL 240	1,860
Wisconsin ANG C ATCAA (Non Tactical Airspace)*	FL 190	FL 240	2,310
Restricted Areas			
R-6904A*	150 AGL	FL 230	75
R-6904B*	Surface	FL 230	15
R-6903*	Surface	FL 450	1,250

Notes: AGL= above ground level; FL = Flight Level (e.g., FL 180 = 18,000 feet MSL); MSL = above Mean Sea Level
[1] While the Volk West MOA is charted at 100 feet AGL, this airspace is not utilized below 500 feet AGL.
* This airspace would not be modified or expanded under the Proposed Action (Preferred Alternative).

1.8.2 Current Airspace Limitations

The *Volk Airspace Complex Joint FAA/ANG Special Use Airspace Review (June 2008)* identified several limitations that affect the value and utility of the existing Volk Field SAA (WIANG 2012b). These limitations include:

- Usable width (i.e., 25 NM) and length (i.e., 80 NM) of the current tactical airspace structure insufficiently supports multiple required mission types including LFEs, Defense Counter Air (DCA), and other specific phase-training requirements. This shortfall is primarily due to a width "bottleneck" from the R-6901 (Fort McCoy artillery range) and the northeast boundary of the Volk West MOA (approximately 30 NM width) (WIANG 2012b).

- The vertical structure of existing airspace is marginally adequate to support multiple required mission types including LFEs, DCA, and specific phase-training requirements. Existing FAA high-altitude jet routes, holding fixes, and approach procedures into Minneapolis-St Paul International Airport intersect various points of the existing airspace structure, making vertical expansion difficult to achieve without significant impact on commercial traffic flows (WIANG 2012b).

- Nine separate ATCAA/MOA altitude transition shelves in the current airspace structure inhibit logical mission flow. These shelves routinely cause aircrew members to spend significant mental resources on maintaining their position within the vertical confines of the airspace and to ensure safe deconfliction from other participating aircraft. These shelves are largely a result of FAA commercial traffic limitations (WIANG 2012b).

- The current airspace structure does not allow users and schedulers to maximize the airspace activated for specific mission sets that might require less airspace, causing larger than required pieces of airspace to be activated. Poor design of airspace additions over the 50-year evolution of the airspace has resulted in non-optimal parcels of airspace (WIANG 2012b).

- Inability to support tactically relevant stand-off, non-eye-safe combat laser employment and weapons delivery at Hardwood Range due to the limited size of the R-6904A/B complex (WIANG 2012b).

- The WIANG currently lacks an established ATCAA for marshalling of large numbers of aircraft (i.e., holding aircraft in a pattern prior to the beginning of the training exercise). During LFEs and DCA training, WIANG has to coordinate with the Chicago and Minneapolis ARTCCs to establish a temporary ATCAA for routine components of these training exercises (WIANG 2014a).

To address these limitations the *Volk Airspace Complex Joint FAA/ANG Special Use Airspace Review (June 2008)* recommended the proposed modification and expansion of Volk Field SAA. The implementation of the Proposed Action (Preferred Alternative) would create a sufficient block of airspace to support realistic air-to-ground, air-to-air, threat awareness, and CFT/LFEs training. A complete discussion of criteria used to evaluate the Volk Field SAA and its alternatives is provided in Section 2.

1.8.2.1 Accommodation of Advanced Weapons Systems

The size of this airspace limits the ability to train using the advanced weapons employment systems currently available on modern aircraft. The advanced targeting pod systems for air-to-ground precision guided munitions delivery, which includes a non-eye-safe combat laser, is an example of such a system. These advanced systems allow target acquisition – whether air-to-air or air-to-ground – at much greater altitude and distance away than previous systems. Supporting air-to-ground training, the establishment of R-6904C would facilitate the required long-range, air-to-ground non-eye safe laser use by maneuvering aircraft to utilizing Hardwood Range.

1.8.2.2 Composite Force Training/Large Force Exercises Requirements

Volk Field CRTC hosts several air-to-air and air-to-ground CFT/LFEs per year in order to accommodate training for multiple aircraft executing numerous coordinated training events. These events can see up to 20 or more aircraft of different types and from different services utilizing the airspace. The facilities and assets present at Volk Field CRTC make it a highly suitable location for these exercises; however, the scale of CFT/LFEs has required the establishment of temporary ATCAAs and MOAs on a regular basis to ensure that participants safely receive effective training. Without the temporary airspace additions safety and the need for effective, realistic training would remain a sizable concern during CFT/LFEs. FAA guidance recommends that temporary airspace used on a routine basis should be established as a permanent airspace (e.g., FAA Order JO 7400.2K Chapter 25-1-7[b]). Modifications and additions to current Volk Field SAA would eliminate the need for temporary airspaces to accomplish the CFT/LFEs training required by AFI 11-2F-16V1 and AFTTP 3-1.F-16. Establishment of the Oshkosh ATCAA, which would be used during CFT/LFEs and specific unit phase training events, would provide suitable marshalling areas, significantly enhancing usability of the airspace complex.

1.9 SUMMARY OF ENVIRONMENTAL STUDY REQUIREMENTS

1.9.1 National Environmental Policy Act

NEPA requires that Federal agencies consider potential environmental consequences of proposed actions. The law's intent is to protect, restore, or enhance the environment through well-informed Federal decisions. The CEQ was established under NEPA for the purpose of implementing and overseeing Federal policies as they relate to this process. In 1978, the CEQ issued *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR §1500-1508 [CEQ 1978]). These regulations specify that an Environmental Assessment be prepared to:

- Briefly provide sufficient analysis and evidence for determining whether to prepare an Environmental Impact Statement (EIS), Finding of No Practicable Alternative (FONPA), or a Finding of No Significant Impact (FONSI);
- Aid in an agency's compliance with NEPA when no EIS is necessary; and
- Facilitate preparation of an EIS when one is necessary.

To comply with NEPA and other relevant environmental requirements (e.g., the National Historic Preservation Act [NHPA], Endangered Species Act [ESA], etc.) in addition to NEPA, and to assess potential environmental impacts, the EIAP and decision-making process for the Proposed Action (Preferred Alternative) involves a study and examination of all environmental issues pertinent to the proposed airspace modifications, in the form of this EA.

Although the Secretary of the Air Force or their designated representative will decide whether or not to implement the proposed airspace action, the FAA has final authority for approving or denying any proposal to modify, expand, or establish SUA (e.g., MOAs, ATCAAs, and RAs).

1.9.2 The Environmental Impact Analysis Process

The EIAP is the USAF process for conducting environmental impact analyses, as promulgated at 32 CFR §989. To comply with NEPA and complete the EIAP, CEQ Regulations and the EIAP are used together.

1.9.3 Lead and Cooperating Agencies

The National Guard Bureau (NGB) is the lead agency for this EA pursuant to 40 CFR §1501.5 and §1508.5. Since the Proposed Action includes activities associated with SUA, the NGB requested and will receive the FAA's cooperation (30 September 2013) in accordance with the guidelines described in the Memorandum of Understanding (MOU) between the FAA and the DoD Concerning SUA Environmental Actions, dated 4 October 2005 (FAA Order JO 7400.2K Appendix 7. *FAA/DoD Memorandum of Understanding*). As a cooperating agency, NGB requested that the FAA participate in various portions of EA development, including:

- Early review of the Proposed Action and Draft EA;
- Assuming responsibility, upon request by the Air Force, for developing information and preparing analyses on issues for which FAA personnel have special expertise; and
- Making FAA staff support available to enhance interdisciplinary review capabilities.

Details regarding the process of interaction between the NGB and FAA are described further in Appendix B within the cooperating agency letter.

This EA was prepared in compliance with NEPA (42 U.S. Code [USC] §4321 et seq.), CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR §1500-1508), EIAP as promulgated at 32 CFR §989, and FAA Order 1050.1E, Change 1 (2006).

1.9.4 Federal Aviation Administration Guidelines

The FAA is responsible for managing navigable airspace for public safety and ensuring efficient use for commercial air traffic, general aviation, and national defense, including SUA utilized by the DoD. Consequently, the FAA is the final decision-making authority regarding modification or establishment of airspace. The FAA has established several policies including:

- Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures* (2006); and
- Order 7400.2K, *Procedures for Handling Airspace Matters* (2008).

FAA Order 1050.1E, Change 1 provides the FAA with policies and procedures to ensure agency compliance with NEPA and implementing regulations issued by the CEQ (40 CFR parts 1500-1508). Appendix A in FAA Order 1050.1E, Change 1 identifies 18 impact categories that should be considered during the NEPA process. This EA considers each of the resources as prescribed by FAA Order

1050.1E, Change 1. The sections where each of these resources are discussed in the EA, or the rationale for excluding a detailed discussion of a specific resource, are provided in Table 1-5. FAA Order 7400.2K, specifically Chapter 32, provides guidance to air traffic personnel to assist in applying the requirements in FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, to air traffic actions.

1.9.5 Intergovernmental Review of Federal Programs

EO 12372, *Intergovernmental Review of Federal Programs*, structures the Federal government's system of consultation with state and local governments on its decisions involving grants, other forms of financial assistance, and direct development. Under EO 12372, states, in consultation with local governments, design their own review processes and select those federally supported development activities that they wish to review. As detailed in 40 CFR §1501.4(b), CEQ regulations require intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the consultation under EO 12372, the WIANG notifies relevant Federal, state, and local agencies (Appendix B) and allows them sufficient time to make known their environmental concerns specific to a proposed action. Comments and concerns submitted by these agencies are subsequently incorporated into the analysis of potential environmental impacts conducted as part of the EA. The following agencies were provided an opportunity to comment on both the scope and analysis of the Draft Environmental Assessment: Bureau of Land Management; National Parks Service; U.S. Environmental Protection Agency; U.S. Fish and Wildlife Service; U.S. Army Corps of Engineers; U.S. Department of Agriculture; U.S. Geological Survey; Wisconsin Department of Natural Resources; Wisconsin Department of Transportation; and, Wisconsin Historical Society.

Table 1-5. FAA Order 1050.1E, Change 1, Environmental Resources to be Considered in an EA or EIS

Resource	Location in the EA
Air Quality	Sections 3.6 and 4.6, *Air Quality*. Greenhouse gas emissions are addressed in Section 3.10, *Dismissed Resource Areas*.
Coastal Resources	The proposed airspace complex would not be located over coastal waters; therefore, this resource was eliminated from further consideration.
Compatible Land Use	Sections 3.3 and 4.3, *Land Use and Visual Resources*
Construction Impacts	No construction activities would occur under the Proposed Action (Preferred Alternative) or its alternatives; therefore, this resource was eliminated from further consideration.
Department of Transportation Act: Section 4(f)	Per FAA Order 1050.1E, Change 1, Section 6 the Draft EA does not provide a Section 4(f) analysis. Paragraph 6.1c describes that designation of airspace for military flight operations is exempt from section 4(f) of the Department of Transportation Act. The Department of Defense reauthorization in 1997 provided that "[n]o military flight operations (including a military training flight), or designation of airspace for such an operation, may be treated as a transportation program or project for purposes of Section 303(c) of Title 49, U.S. Code (USC) (Public Law [PL] 105-85).
Farmlands	Sections 3.3 and 4.3, *Land Use and Visual Resources*
Fish, Wildlife, and Plants	Sections 3.4 and 4.4, *Biological Resources*
Floodplains	No construction activities or other ground-based activities would occur under the Proposed Action (Preferred Alternative) or its alternatives and its implementation would not cause any disturbance of floodplains; therefore, this resource was eliminated from further consideration.
Hazardous Materials, Pollution Prevention, and Solid Waste	Sections 3.8 and 4.8, *Hazardous Materials and Wastes*
Historical, Architectural, Archeological, and Cultural Resources	Sections 3.5 and 4.5, *Cultural Resources*
Light Emissions and Visual Impacts	Sections 3.3 and 4.3, *Land Use and Visual Resources*
Natural Resources, Energy Supply, and Sustainable Design	The Proposed Action (Preferred Alternative) or its alternatives would not involve extractive activities or changes in the energy supply; therefore, this resource was eliminated from further consideration.
Noise	Sections 3.2 and 4.2, *Noise*
Secondary (Induced) Impacts	Secondary impacts are addressed by resource area within Section 4, *Environmental Consequences*

Table 1-5. FAA Order 1050.1E, Change 1, Environmental Resources to be Considered in an EA or EIS (Continued)

Resource	Location in the EA
Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks	Sections 3.9 and 4.9, *Socioeconomics, Environmental Justice, and Children's Health and Safety*
Water Quality	No construction activities or other ground-based activities would occur under the Proposed Action (Preferred Alternative) or its alternatives and its implementation would not cause any disturbance of surface water or groundwater resources; therefore, this resource was eliminated from further consideration.
Wetlands	No construction activities or other ground-based activities would occur under the Proposed Action (Preferred Alternative) or its alternatives and its implementation would not cause any disturbance of surface waters, including wetlands.
Wild and Scenic Rivers	No construction activities or other ground-based activities would occur under the Proposed Action (Preferred Alternative) or its alternatives and its implementation would not cause any disturbance of surface waters, including wild and scenic rivers.

Source: FAA 2006.

1.9.6 Public and Agency Involvement

Specific modifications and improvements to military training airspace included under the Proposed Action were initially developed by the WIANG in coordination with Minneapolis ARTCC and Chicago ARTCC as well as the Green Bay and Milwaukee Approach Control facilities. Further, during the development of the Proposed Action the WIANG met and engaged with members of the public including the Aircraft Owners and Pilots Association as well as affected airports (e.g., Stevens Point and Marshfield Municipal Airports). See Appendix B for history of past engagement regarding the Proposed Action. The majority of concerns brought up during this period involved airport approaches. For example the Marshfield Municipal Airport has a Global Positioning System (GPS) approach under the proposed Volk East MOA that it raised concerns about; however, the Minneapolis ARTCC has an existing 15-minute Letter of Agreement (LOA) with airport to address this issue. Under the LOA, airspace is recalled to 5,000 feet MSL when use of the GPS approach is requested. Volk Field CRTC is unaware of any outstanding concerns from affected airports that were not addressed during the early engagement period (WIANG 2014a).

Prior to the preparation of the Draft EA, scoping letters were provided to relevant Federal, state, and local agencies on 20 November 2014 to notify them of the Proposed Action and to request assistance in providing early identification of any potential issues. Similarly, consultation letters were sent to all federally recognized tribes in Wisconsin to provide notification of the Proposed Action and to initiate government-to-government consultation in accordance with Section 106 of the NHPA (see Appendix B). The Draft EA will be made available and distributed to Federal, state, and local agencies as well as regional libraries to ensure the widest distribution possible. The placement of a Notice of Availability (NOA) in the local newspaper will indicate the availability of the Draft EA. The 45-day public comment period provides the public and agencies the opportunity to review the Draft EA and to provide comments on the analyses. All comments received during the public comment period will be considered.

1.9.7 Endangered Species Act

The ESA of 1973 (16 USC §§ 1531–1544, as amended) established measures for the protection of plant and animal species that are federally listed as threatened and endangered, and for the conservation of habitats that are critical to the continued existence of those species. Federal agencies must evaluate the effects of their proposed actions through a set of defined procedures, which can include the preparation of a Biological Assessment and can require formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the ESA.

1.9.8 Clean Air Act

The Clean Air Act (CAA) (42 USC §§ 7401–7671, as amended) provided the authority for the U.S. Environmental Protection Agency (USEPA) to establish nationwide air quality standards to protect public health and welfare. Federal standards, known as the National Ambient Air Quality Standards (NAAQS), were developed. The CAA also requires that each state prepare a State Implementation Plan (SIP) for maintaining and improving air quality and eliminating violations of the NAAQS. Under the CAA Amendments of 1990, Federal agencies are required to determine whether their undertakings are in conformance with the applicable SIP and demonstrate that their actions will not cause or contribute to a new violation of the NAAQS; increase the frequency or severity of any existing violation; or delay timely attainment of any standard, emission reduction, or milestone contained in the SIP.

1.9.9 Cultural Resources Regulatory Requirements

The NHPA of 1966 (54 USC §300101 et seq.) established the National Register of Historic Places (NRHP) and the Advisory Council on Historic Preservation (ACHP) outlining procedures for the management of cultural resources on Federal property. Cultural resources can include archaeological remains, architectural structures, and traditional cultural properties such as ancestral settlements, historic trails, and places where significant historic events occurred. NHPA requires Federal agencies to consider potential impacts to cultural resources that are listed, nominated to, or eligible for listing on the NRHP; designated a National Historic Landmark; or valued by modern Native Americans for maintaining their traditional culture. Section 106 of NHPA requires Federal agencies to consult with the appropriate State Historic Preservation Office (SHPO) if their undertaking might affect such resources. *Protection of Historic and Cultural Properties* (36 CFR 800 [1986]) provided an explicit set of procedures for Federal agencies to meet their obligations under the NHPA, which includes inventorying of resources and consultation with SHPO.

EO 13007, *Indian Sacred Sites*, directs Federal land (any land or interests in land owned by the United States, including leasehold interests held by the United States, except Indian trust lands) managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site. Sacred sites are defines as any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion. The term Indian tribe refers to an Indian or Alaska Native tribe, band, nation, Pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe pursuant to Public Law No. 103-454, 108 Stat. 4791, and "Indian" refers to a member of such an Indian tribe or Indian individual determined to be an appropriately authoritative representative of an Indian religion.

The American Indian Religious Freedom Act (AIRFA) (42 USC §1996) established Federal policy to protect and preserve the rights of Native Americans to believe, express, and exercise their traditional religions, including providing access to sacred sites. The Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC §§ 3001–3013) requires consultation with Native American Tribes prior to excavation or removal of human remains and certain objects of cultural importance. Also, EO 13175, *Consultation and Coordination with Indian Tribal Governments*, charges Federal departments and agencies with regular and meaningful consultation with Native American tribal officials in the development of policies that have tribal implications. The following Native American tribes were provided an opportunity to comment on both the scope and analysis of the Draft Environmental Assessment: Bad River Band of Lake Superior Chippewa; Forest County Potawatomi Community; Ho-Chunk Nation; Lac Courte Oreilles Band of Lake Superior Chippewa; Lac du Flambeau Band of Lake Superior Chippewa; Menominee Nation; Stockbridge-Munsee Band of Mohican Indians; Oneida Nation of Wisconsin; Red Cliff Band of Lake Superior Chippewa; St. Croix Chippewa Community; and, Sokaogon Chippewa Community (Mole Lake Band of Lake Superior Chippewa Indians) (see Appendix B).

1.9.10 Other Regulatory Requirements

Additional regulatory legislation that potentially applies to the implementation of this proposal includes guidelines promulgated by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that citizens in either of these categories are not disproportionately affected. Additionally, potential health and safety impacts that could disproportionately affect children are considered under the guidelines established by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, acts as additional protection for migratory birds. EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, specifies that every Federal organization and agency must make the reduction of greenhouse gas emissions a priority and establishes specific goal-setting, inventorying, and reporting requirements for Federal agencies.

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SECTION 2
DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This section presents a description of the Proposed Action (Preferred Alternative), which was developed to address limitations of the Volk Field Special Activity Airspace (SAA) resulting from its current configuration. Additionally, this section also describes alternatives to the Proposed Action, including the No-Action Alternative. Guidance for complying with the National Environmental Policy Act (NEPA) requires an assessment of potentially effective and reasonably feasible alternatives to implementation of the Proposed Action. Alternatives that were dismissed early in the planning process as infeasible – including alternative airspace locations and configurations – are not carried forward for analysis in this Environmental Assessment (EA). Details related to the Proposed Action and reasonable alternatives, including the No-Action Alternative, are provided below.

Specific modifications and establishment of military training airspace included in the Proposed Action were developed early in the concept phase by the Wisconsin Air National Guard (WIANG) with support from the Federal Aviation Administration's (FAA's) Minneapolis Air Route Traffic Control Center (ARTCC) and Chicago ARTCC as well as the Green Bay and Milwaukee Approach Control facilities (see Appendix A). Proposed airspace improvements were developed to account for aircraft flight path histories in the region in order to identify the most ideal locations and configurations for the proposed modification and establishment of the Volk SAA with the least impact on surrounding military, commercial, and general aviation interests. These boundary locations also take into account the primary tenets of Air Force Instruction (AFI) 13-201, Airspace Management, to achieve better efficiency through Volume, Proximity, Time, and Attributes (VPTA).

2.1 PROPOSED ACTION (PREFERRED ALTERNATIVE)

Units of the Air National Guard (ANG), U.S. Air Force (USAF), Air Force Reserve, U.S. Navy, and U.S. Marine Corps must maintain a high degree of readiness for their assigned missions to protect our nation's national security interests. Each mission consists of numerous integrated elements and activities that require high levels of skill and precisely coordinated actions among all participants. Quality training incorporates all mission elements and provides the highest possible degree of realism necessary to maintain required readiness. The Volk Field Combat Readiness Training Center (CRTC) is required to provide training airspace, along with associated facilities and equipment, in accordance with ANG Mission Directive (ANGMD) 10.01, in support of these realistic, mission-oriented training activities.

In order to address training limitations presented by the existing configuration of the Volk Field SAA (see Section 1.7.2, *Current Airspace Limitations*) (WIANG 2012b), the WIANG is proposing to modify and expand the existing airspace complex overlying central and east-central Wisconsin. The Proposed Action (Preferred Alternative) would include modifications to and expansions of existing Military Operations Areas (MOAs) and Air Traffic Control Assigned Airspaces (ATCAAs), as well as the establishment of Restricted Area (RA) 6904C (R-6904C) and the Oshkosh and Sheboygan East and West ATCAAs. As previously described in Section 1.6, *Purpose of the Proposed Action (Preferred Alternative)*, implementation of the Proposed Action would facilitate and support air-to-air and air-to-ground training as well as Large Force Exercises (LFEs) in accordance with AFI 11-2F-16 V1 (2011) and Air Force Tactics, Techniques, and Procedures (AFTTP) 3-1.F-16 training requirements. Airspace complex modifications and expansions associated with the Proposed Action would provide contiguous airspace shelves that would permit functional and safe transitions from one airspace section to another in order to support realistic air-to-ground, air-to-air, and composite force training. Additionally, simplification of airspace boundaries would allow more efficient use of the airspace for both military and civilian traffic through optimizing the amount of activated airspace needed for training activities.

The proposed airspace improvements would be utilized by numerous Department of Defense (DoD) agencies; however, the airspace complex would predominantly be utilized by the 115th Fighter Wing (115 FW), 148th Fighter Wing (148 FW), and 114th Fighter Wing (114 FW) based in Madison, Wisconsin, Duluth, Minnesota, and Sioux Falls, South Dakota, respectively. The Proposed Action would not include any near-term changes to the existing fleet mix of aircraft or scheduling of Volk Field SAA (WIANG 2014b). The Proposed Action would not include any changes to the current operating hours or activation schedule for the Volk Field SAA. Further, the Proposed Action would not include the development or construction of any facilities, or any other ground-disturbing activities, or changes in impact area from air-to-ground training activities (WIANG 2014a). Details regarding the specific components of the Proposed Action are provided below.

2.2 ESTABLISHMENT OF THE VOLK FALLS MOA AND BLACK RIVER ATCAA

The existing Falls 1 and Falls 2 MOAs are the western-most airspace areas in the Volk Field SAA, extending from 500 feet above ground level (AGL) to 17,999 feet above mean sea level (MSL). Under the Proposed Action (Preferred Alternative) the existing Falls 1 MOA and a portion of the Falls 2 MOA (approximately 410 square miles [sq mi]) would be combined to establish the proposed Volk Falls MOA and would remain from 500 feet AGL to 17,999 feet MSL. Additionally, the southern-most border of the existing Falls 1 MOA would be modified resulting in a linear boundary. This would result in the WIANG both giving up a segment of airspace (approximately 33 sq mi), and expanding airspace into a small area (approximately 29 sq mi) not previously below the existing MOA. The Black River Falls Municipal Airport is located beneath the existing airspace. The airport's horizontal and vertical exclusion zone (three [3] nautical mile [NM] radius and 1,500 feet AGL) would be maintained and excluded from the proposed Volk Falls MOA (FAA Order 7400.2K). Similarly, the horizontal and vertical exclusion zone for the Neillsville Airport would be maintained and excluded from the proposed Volk Falls MOA (FAA Order 7400.2K).

Additionally, the Proposed Action would include the establishment of the Black River ATCAA, which would cover a majority of the proposed Volk Falls MOA with the exception of small areas on the northern and western borders to accommodate existing commercial air traffic routes and holding points. Black River ATCAA would extend from Flight Level (FL) 180 to FL 210 (i.e., 18,000 feet MSL to 21,000 feet MSL), with the ability to schedule the proposed ATCAA to FL 500 (50,000 feet MSL) to accommodate LFEs and Defense Counter Air (DCA) training requirements.

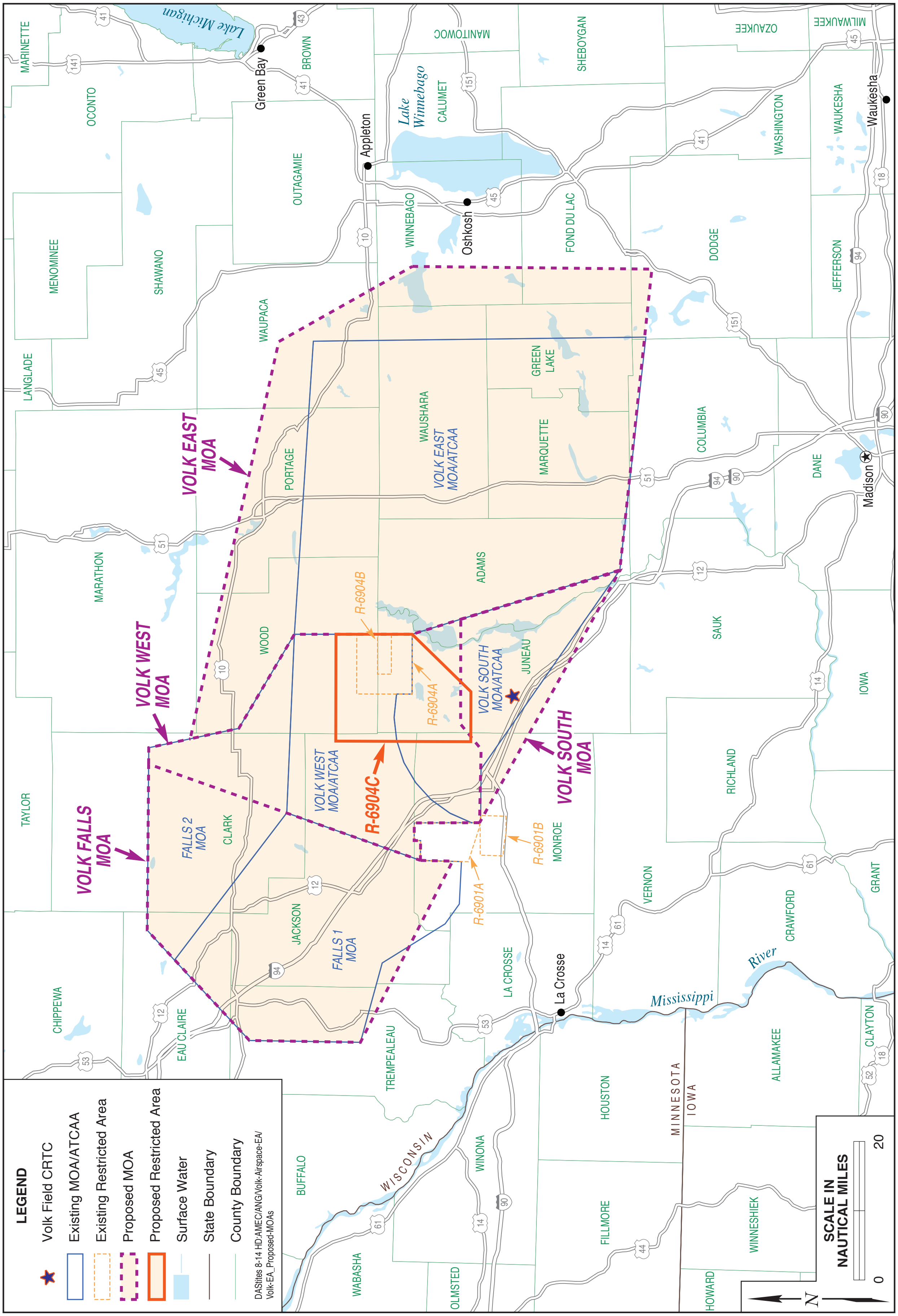

FIGURE 2-1

Proposed Military Operations Areas and Restricted Area

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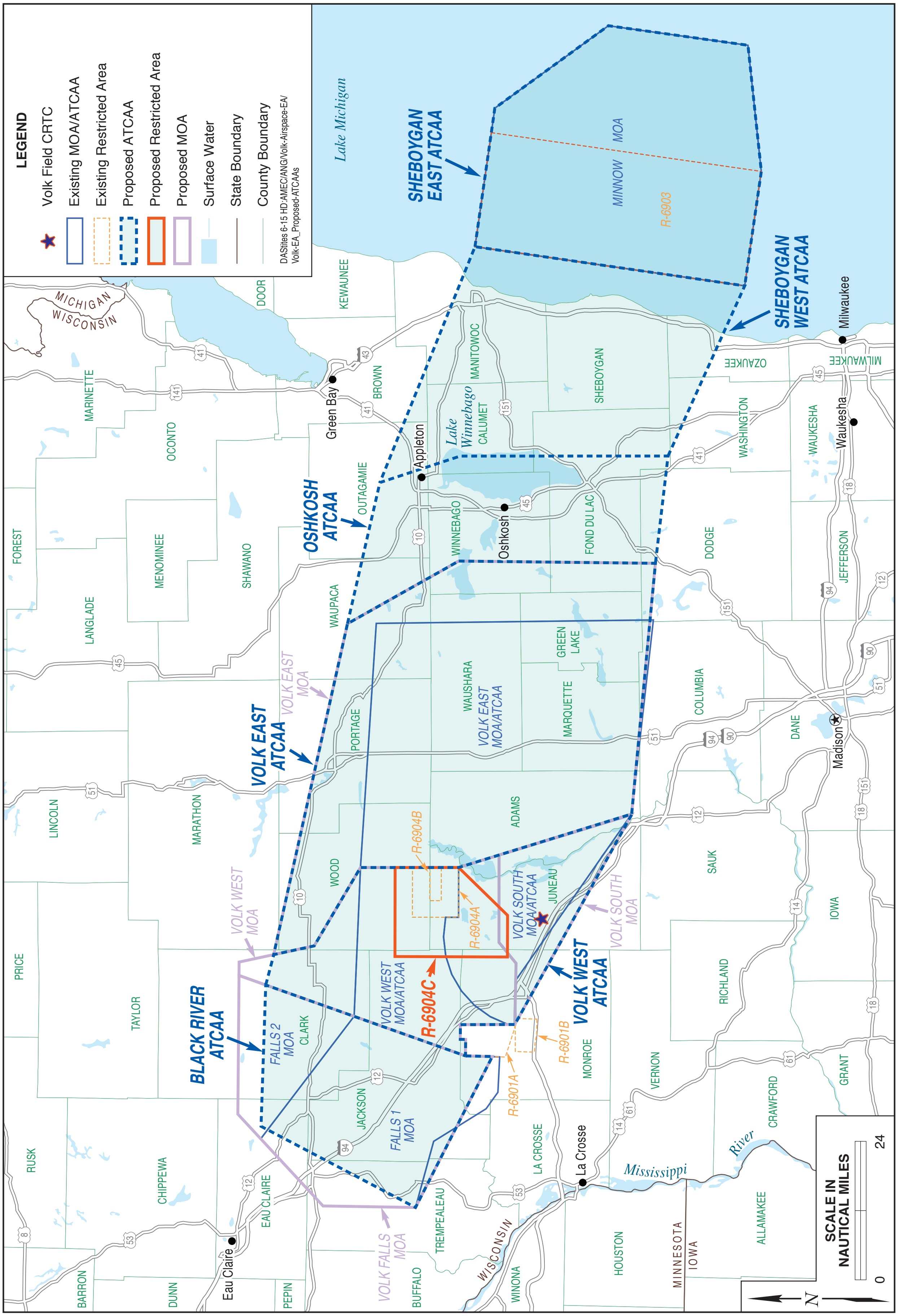
No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.



Proposed Air Traffic Control Assigned Airspace and Restricted Area

FIGURE 2-2

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No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a “living document,” in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

Establishment of the Volk Falls MOA and Black River ATCAA would simplify existing airspace boundaries in the western-most region of the Volk Field SAA and as a result maximize efficient use of the airspace. Based on the current configuration of the Falls 1 MOA and the Falls 2 MOA, these airspace areas cannot support training exercises if scheduled as individual stand-alone airspace sections due to the risk of aircraft inadvertently flying outside of the existing lateral boundaries. The consolidation of these airspace sections associated with the Volk Falls MOA under the Proposed Action would allow airspace schedulers to effectively schedule parcels of airspace and therefore provide better stewardship of the airspace complex by scheduling only airspace that is needed for the required training (WIANG 2014a). Further, establishment of the Black River ATCAA would support multiple required mission types including LFEs and DCA.

Table 2-1 provides a detailed summary of existing and proposed airspace operations.

Table 2-1. Existing Falls 1 and Falls 2 and Proposed Volk Falls MOA Annual Operations and Operating Hours

Existing			Proposed		
Airspace	**Annual Operations**	**Operating Hours**	**Airspace**	**Annual Operations**	**Operating Hours**
Military Operations Area					
Falls 1 MOA (500 AGL to 17,999 MSL)	2,500	1,035	Volk Falls MOA (500 AGL to 17,999 MSL)	2,500	1,035
Falls 2 MOA (500 AGL to 17,999 MSL)	2,500	1,035			

Source: WIANG 2014b.
Note: See Table 2-7 for additional information regarding utilization, including number of hours.

2.3 MODIFICATION OF THE VOLK WEST MOA

The existing Volk West MOA includes an approximate 680 sq mi airspace area east of the existing Falls 1 MOA and south of the existing Falls 2 MOA. The existing Volk West MOA extends from 100 feet AGL to 17,999 feet MSL. Under the Proposed Action (Preferred Alternative) the existing boundaries of the Volk West MOA would be expanded to the north to include the eastern 285 sq mi of the existing Falls 2 MOA, not absorbed into the Volk Falls MOA (refer to Figure 2-1). Additionally, the existing boundaries of the Volk West MOA would be extended to the south absorbing the northern-most approximately 300 sq mi of the existing Volk South MOA. However, there would be no expansion of the existing Volk West MOA into areas not currently covered by existing airspace. The proposed Volk West MOA would extend from 500 feet AGL to 17,999 feet MSL, with the WIANG relinquishing existing airspace below 500 feet AGL.

As currently configured the existing Falls 1 and Falls 2, Volk West, and Volk South airspace areas cannot support any training exercises scheduled as individual stand-alone airspace areas due to the risk of aircraft inadvertently flying outside of the existing lateral boundaries (WIANG 2012b). The reconfiguration of these airspace areas would allow airspace schedulers to effectively schedule sections of airspace and therefore be better stewards of the airspace complex by scheduling only airspace that is needed for the required training (WIANG 2014a). Further, the proposed modification to and expansion of the Volk West MOA would address the existing bottleneck between the R-6901 (Fort McCoy Artillery Range) and the Falls 2 MOA. The northward expansion would increase the airspace width by approximately 10 NM along this bottleneck. Additionally, the proposed expansion of the Volk East MOA (see Section 2.1.5) would increase the total airspace width in this area, reducing the bottleneck created by R-6901 (i.e., Fort McCoy Artillery Range) and the Falls 2 MOA. However, excluded from Volk West MOA would be the Neillsville Airport and Bloyer Field, with a horizontal three (3) NM radius boundary and a 1,500 feet AGL vertical boundary, and the proposed R-6904C.

Table 2-2 provides a detailed summary of existing and proposed airspace operations.

Table 2-2. Existing Falls 2, Volk West, and Volk South MOAs and Proposed Volk West MOA Annual Operations and Operating Hours

Existing			Proposed		
Airspace	**Annual Operations**	**Operating Hours**	**Airspace**	**Annual Operations**	**Operating Hours**
Military Operations Area					
Falls 2 MOA (500 AGL to 17,999 MSL)	2,500	1,035	Volk West MOA (500 AGL to 17,999 MSL)	2,700	1,035
Volk West MOA (100 AGL to 17,999 MSL)	2,700	1,035			
Volk South MOA (500 AGL to 17,999 MSL)	2,400	920			

Source: WIANG 2014b.
Note: See Table 2-7 for additional information regarding utilization. The proposed Volk West MOA would incorporate a fraction of the existing Falls 2 and Volk South MOAs.

2.4 MODIFICATION OF THE VOLK SOUTH MOA

The existing Volk South MOA is located south of the existing Volk West MOA, along a semicircle shaped boundary. This antiquated boundary limits efficient use of the airspace making it difficult for pilots to manage their relative location within the airspace. As described above, under the Proposed Action (Preferred Alternative) the northern-most extent of the existing Volk South MOA would be included as part of the proposed Volk West MOA. Consequently, the northern border of the proposed Volk South MOA would be linear and moved southward under the Proposed Action. Additionally, the southwestern border of the Volk South MOA would be expanded, including an additional 85 sq mi (refer to Figure 2-1). Similar to the proposed Volk Falls MOA and the proposed Volk West MOA, the proposed Volk South MOA would extend from 500 feet AGL to 17,999 feet MSL. Excluded from Volk South MOA would be Bloyer Field and the Mauston-New Lisbon Airport with a horizontal three (3) NM radius boundary and a 1,500 feet AGL vertical boundary and the proposed R-6904C.

Similar to the proposed airspace modifications mentioned above, the proposed Volk South MOA configuration would permit airspace schedulers more flexibility to schedule this parcel of airspace individually for training exercises, resulting in better stewardship of the airspace complex (WIANG 2014a). Table 2-3 provides a summary of existing and proposed airspace operations within the Volk South MOA.

Table 2-3. Existing and Proposed Volk South MOA Annual Operations and Operating Hours

Existing			Proposed		
Airspace	Annual Operations	Operating Hours	Airspace	Annual Operations	Operating Hours
Military Operations Area					
Volk South MOA (500 AGL to 17,999 MSL)	2,400	920	Volk South MOA (500 AGL to 17,999 MSL)	2,400	920

Source: WIANG 2014b.
Note: See Table 2-7 for additional information regarding utilization.

2.5 Modification and Expansion of the Volk West ATCAA

The existing Volk West ATCAA would expand and consolidate two existing ATCAAs, including the Volk West ATCAA that extends from FL 180 to FL 230 (18,000 feet MSL to 23,000 feet MSL), and the Volk South ATCAA that extends from FL 180 to FL 280 (18,000 feet MSL to 28,000 feet MSL). The proposed Volk West ATCAA would cover the footprint of the proposed Volk South MOA and the majority of the proposed Volk West MOA and extending from FL 180 to FL 280 (18,000 feet MSL to 28,000 feet MSL), with the ability to periodically schedule a ceiling of FL 500 (50,000 feet MSL) to accommodate LFEs and DCA training events.

Modification to and expansion of the Volk West ATCAA would more adequately support realistic training exercises, including LFEs and DCA training events, and reduce the number of shelves within the airspace complex, allowing pilots to focus on the training exercise rather than aircraft positioning (WIANG 2014a).

2.5.1 Modification and Expansion of the Volk East MOA and Volk East ATCAA

The existing Volk East MOA and overlying Volk East ATCAA are the eastern most tactical airspace areas in the Volk Field SAA, with Wisconsin ANG A ATCAA located adjacent and to the east. The existing Volk East MOA extends from 8,000 feet MSL to 17,999 feet MSL, with the overlying ATCAA extending from FL 180 to FL 280 (18,000 feet MSL to 28,000 feet MSL). Under the Proposed Action (Preferred Alternative) the existing Volk East MOA would be extended to the north as well as the east, resulting in an approximately 1,220 sq mi increase in total airspace area. Additionally, the Volk East ATCAA would be expanded to match the footprint of the proposed Volk East MOA; however, the vertical extent of the airspace areas would not change (i.e., Volk East MOA 8,000 feet MSL to 17,999 feet MSL and Volk East ATCAA FL 180 to FL 280 [18,000 feet MSL to 28,000 feet MSL]). However, under the Proposed Action Volk Field CRTC would have the ability to periodically schedule a ceiling of FL 500 (50,000 feet MSL) to accommodate LFEs and DCA training events.

The northward expansion of the Volk East MOA under the Proposed Action would extend the airspace over Marshfield and Stevens Point, Wisconsin, both large cities, with populations of approximately 20,000 residents. Table 2-4 provides a summary of existing and proposed airspace operations within the Volk East MOA.

Table 2-4. Existing and Proposed Airspace Volk East MOA Annual Operations and Operating Hours

Existing			Proposed		
Airspace	Annual Operations	Operating Hours	Airspace	Annual Operations	Operating Hours
Military Operations Area					
Volk East MOA (8,000 MSL to 17,999 MSL)	2,700	1,035	Volk East MOA (8,000 MSL to 17,999 MSL)	2,700	1,035

Source: WIANG 2014b.
Note: See Table 2-7 for additional information regarding utilization.

2.6 ESTABLISHMENT OF THE OSHKOSH AND SHEBOYGAN EAST AND WEST ATCAAS

As described above, the Volk East MOA and overlying Volk East ATCAA are currently the eastern-most airspace areas within the Volk Field SAA. However, during LFEs the Volk Field CRTC schedulers need additional airspace to marshal or stage large numbers of aircraft (i.e., holding aircraft in a pattern prior to the beginning of the training exercise). To meet this requirement the existing Wisconsin A, B, and C ATCAAs were considered. However, because the boundaries of the Wisconsin A, B, and C ATCAAs do not match with, or properly abut, the proposed Volk East MOA, and the floors of these ATCAAs do not match with the ceiling of the proposed Volk East MOA these ATCAAs were considered inadequate. Under the Proposed Action (Preferred Alternative), the WIANG would therefore rescind the WIANG A, B, and C ATCAAs and establish the Oshkosh and Sheboygan East and West ATCAAs, which would be utilized on a much less frequent non-exclusive basis to support LFEs, aerial refueling, and specific unit phase training events approximately 50 days per year. The vertical limits of the Oshkosh ATCAA would extend from FL 180 to FL 280 (18,000 feet MSL to 28,000 feet MSL) with the vertical limits of the Sheboygan East and West ATCAAs extending from FL 180 to FL 240 (18,000 feet MSL to 24,000 feet MSL).

The proposed ATCAAs would not be activated every day and would reduce potential scheduling conflicts with the Chicago Air Route Traffic Control Center (ARTCC). It would also eliminate the need for coordination to establish a temporary ATCAA for a routine component of LFEs and DCA training exercises (WIANG 2014a). Rather, the proposed Oshkosh and Sheboygan East and West ATCAAs would provide a ready-made marshalling area for large numbers of aircraft during these training operations.

2.6.1 Establishment of Restricted Area 6904C

Targeting pods provide positive target identification, autonomous tracking, coordinate generation, and precise weapons guidance from extended standoff ranges using non-eye safe lasers. The existing R-6904A allows for aircraft to use non-eye safe lasers for the purpose of identifying targets within Hardwood Range and directing precision guided munitions from armed aircraft within the range. However, modern advanced targeting pod capabilities for multiple aircraft, weapons, and delivery systems allow standoff distances in excess of 15 NM from the target area, or approximately three times the distance provided by the current RA configuration within the Volk Field SAA. R-6904C would be established above the Hardwood Aerial Gunnery Range, but would include a larger area than both R-6904A and R-6904B, encompassing approximately 350 sq mi (see Table 2-6 and Figure 2-2). The addition of R-6904C would support the use of long-range, non-eye safe laser training from maneuvering aircraft to the Hardwood Aerial Gunnery Range impact area thereby segregating this hazardous activity from nonparticipating aircraft (WIANG 2012b).[6]

[6] Establishment of R-6904C under the Proposed Action (Preferred Alternative) would not have any effect on the munitions delivery area within the Hardwood Aerial Gunnery Range (WIANG 2014a). While non-eye safe lasers could be used at a greater distance, the disturbance areas within the range would remain identical to existing conditions.

Under the Proposed Action (Preferred Alternative), the vertical limits of R-6904C would be 3,000 feet MSL to FL 280 (28,000 feet MSL). R-6904C would be activated by a Notice to Airmen (NOTAM), four (4) hours in advance of training operations. Operations within the RA would not increase under the Proposed Action (see Table 2-5). Rather, non-eye safe laser training exercises would be conducted at greater distances, in accordance with AFTTP requirements.

Table 2-5. Existing and Proposed Restricted Area Operations

Existing			Proposed		
Airspace	**Annual Operations**	**Operation Hours**	**Airspace**	**Annual Operations**	**Operation Hours**
Restricted Areas					
R-6904A (150 AGL to 17,000 AGL)	2,200	800	R-6904A (150 AGL to 17,000 AGL)	2,200	800
R-6904B (Surface to 17,000 AGL)			R-6904B (Surface to 17,000 AGL)		
--	--		R-6904C (3,000 MSL to FL 280)	550	240

Source: WIANG 2014b.
Note: See Table 2-7 for additional information regarding utilization. R-6904A/B are always scheduled simultaneously to facilitate air-to-ground training activities.

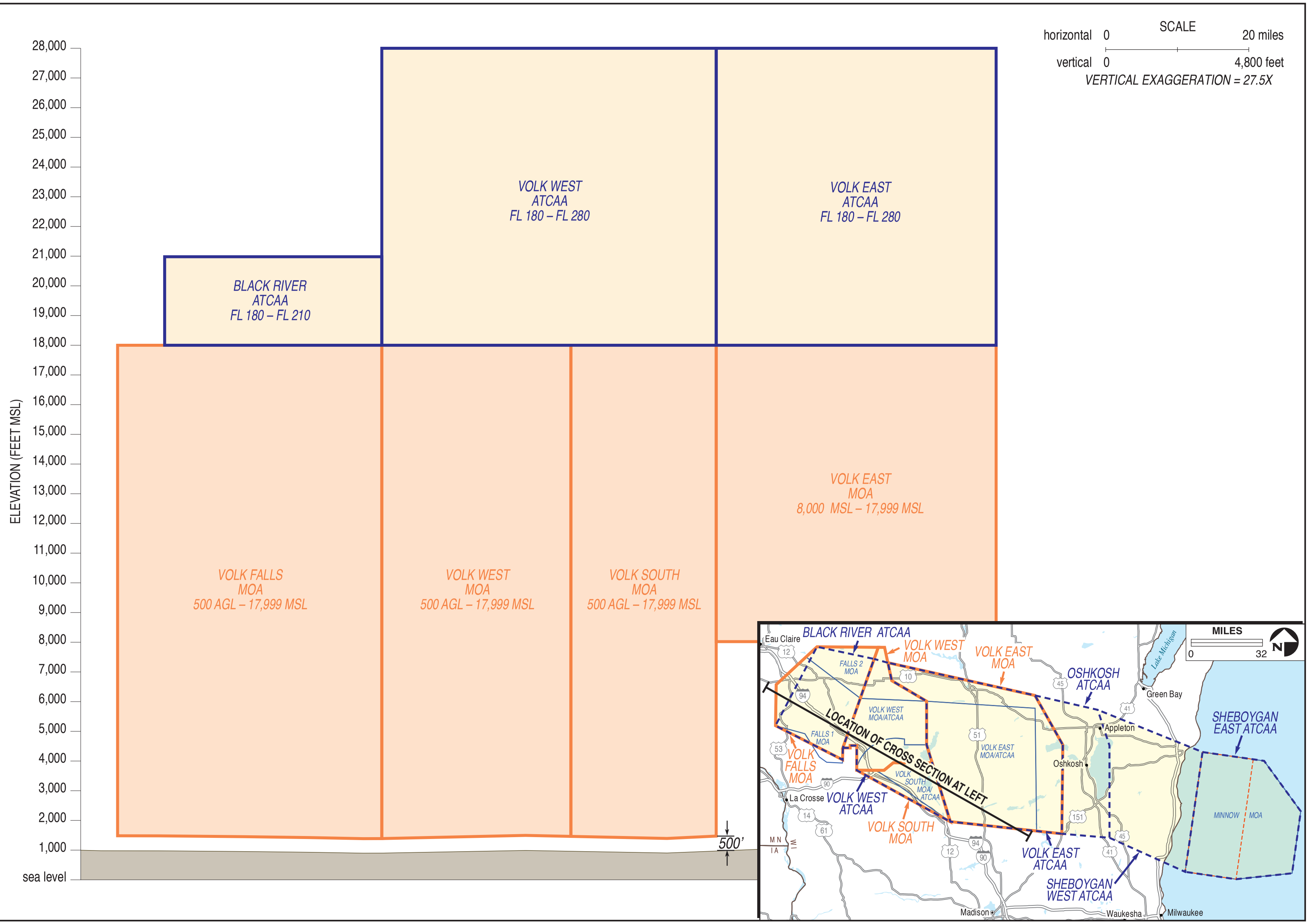
2.7 Alternatives to the Proposed Action Considered for Analysis

As described in the introduction (refer to Section 2.1, *Proposed Action [Preferred Alternative]*), the Proposed Action (Preferred Alternative) was developed in coordination with the Minneapolis ARTCC and Chicago ARTCC as well as the Green Bay and Milwaukee Approach Control facilities (see Appendix A). In this process, the Minneapolis ARTCC applied evaluative and exclusionary criteria to preliminarily design the placement of airspace boundaries. The specific locations and shapes of proposed airspace modifications were specifically developed to account for aircraft flight path histories in the region in order to identify the most ideal locations and configuration for the proposed airspace with the least potential to impact surrounding military, commercial, and general aviation. However, guidance for complying with NEPA requires an assessment of potentially effective and reasonably feasible alternatives to implementation of the Proposed Action.

The selection of feasible alternatives underwent similar scrutiny. Initial considerations for alternatives emerged from discussions with the USAF, NGB/A7, and NGB/A3, as well as from engagement with a large number and diverse group of stake holders including the public, airports, special interest groups (e.g., Aircraft Owners and Pilots Association [AOPA]), state and Federal government officials, etc. As a result of these discussions and outreach, the alternatives were developed by trying to forecast what elements could become potentially contentious, including Oshkosh ATCAA and Restricted Area (R-) 6904C. Additionally, Alternative 3 has been included as a safeguard in case the entire proposed airspace action is not approved. Alternatives considered and rejected include: Big Bear & Ontonagon MOAs (Northern Michigan); Pike East/West and Steelhead MOAs & R-4201A/B (Grayling Range) Restricted Areas (Eastern Michigan). Each was rejected due to significant distances resulting in unrealistic fuel consumption and flight times from Volk CRTC, the 115th and 114th Fighter Wings. Additionally, The Big Bear/Ontonagon airspace does not possess an air-to-ground gunnery range. With the exception of the No-Action Alternative, the alternatives described below and analyzed in Section 4, *Environmental Consequences,* would accomplish at least some of the objectives of the Proposed Action.

2.7.1 Alternative 1: Eliminate Oshkosh and Sheboygan East and West ATCAAs from Proposed Action

Under this alternative, all of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of the Oshkosh and Sheboygan East and West ATCAAs development. While existing limitations of the Volk Field SAA (e.g., bottleneck, complex airspace boundaries, airspace shelves, and inability to support long-range laser operations at the Hardwood Aerial Gunnery Range) would be addressed, the implementation of this alternative would not address aircraft marshalling limitations that arise during LFEs and specific unit phase training events. During these events Volk Field CRTC airspace schedulers would need to continue to perform extensive inter- and intra-facility coordination efforts to establish temporary ATCAAs needed for operations. For this alternative the WIANG A, B, and C ATCAAs would be retained as the location of the temporary ATCAAs. Further, the WIANG A, B, and C ATCAAs would need to be redesigned to align with Volk East ATCAA.



EA

Proposed Airspace Cross Section

FIGURE 2-3

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

Table 2-6. Existing and Proposed Airspace Configuration

Existing			Proposed		
Airspace Identifier	**Existing Vertical Limits**	**Existing Area (sq mi)**	**Airspace Identifier**	**Proposed Vertical Limits**	**Proposed Area (sq mi)**
Military Operations Area					
Falls 1 MOA	500 AGL to 17,999 MSL	1,100	Volk Falls MOA	500 AGL to 17,999 MSL	1,500
Falls 2 MOA	500 AGL to 17,999 MSL	695			
Volk West MOA	100 AGL to 17,999 MSL	680	Volk West MOA	500 AGL to 17,999 MSL[1]	1,270
Volk South MOA	500 AGL to 17,999 MSL	680	Volk South MOA	500 AGL to 17,999 MSL	455
Volk East MOA	8,000 MSL to 17,999 MSL	2,470	Volk East MOA	8,000 MSL to 17,999 MSL	3,690
Air Traffic Control Assigned Airspace					
Volk West ATCAA	FL 180 to FL 230	680	Volk West ATCAA	FL 180 to FL 280*	1,670
Volk South ATCAA	FL 180 to FL 280	680			
Volk East ATCAA	FL 180 to FL 280	2,470	Volk East ATCAA	FL 180 to FL 280*	3,690
--	--	--	Black River ATCAA	FL 180 to FL 210*	1,265
--	--	--	Oshkosh ATCAA	FL 180 to FL 280*	1,290
			Sheboygan East ATCAA	FL 180 to FL 240	2,309
			Sheboygan West ATCAA	FL 180 to FL 240	2,163
Restricted Areas					
R-6904A	150 AGL to FL 230	75	R-6904A	150 AGL to FL 230	75
R-6904B	Surface to FL 230	15	R-6904B	Surface to FL 230	15
--	--	--	R-6904C	3,000 MSL to FL 280	350

Note: AGL= Above Ground Level; FL = Flight Level (e.g., FL 180 = 18,000 feet MSL); MSL = Above Mean Sea Level.
The Proposed Action would increase the total footprint of the Volk Field SAA MOAs by 23 percent as the majority of the Proposed Action includes reconfiguration of existing airspace; however, the total footprint of the Volk Field SAA including the proposed Oshkosh and Sheboygan East and West ATCAAs would be increased by 106 percent.
[1] The floor of the current Volk West MOA would rise to 500 feet AGL.
* With approval from Minneapolis and Chicago ARTCC Volk Field CRTC would have the ability to schedule this airspace up to FL 500 (50,000 feet MSL).

Table 2-7. Existing and Proposed Utilization of Volk Field SAA

Airspace	Annual			Daily (24-hour)†		
	Operating Days	Operating Hours	Operations	Operating Minutes	Operations	Minutes per Operation
Existing Utilization						
Falls 1 MOA	230	1,035	2,500	270.0	10.9	24.8
Falls 2 MOA	230	1,035	2,500	270.0	10.9	24.8
Volk West MOA	230	1,035	2,700	270.0	11.7	23.1
Volk South MOA	230	920	2,400	240.0	10.4	23.1
Volk East MOA	230	1,035	2,700	270.0	11.7	23.1
R-6904A/B*	200	800	2,200	240.0	11.0	21.8
Proposed Utilization						
Volk Falls MOA	230	1,035	2,500	270.0	10.9	24.8
Volk West MOA	230	1,035	2,700	270.0	11.7	23.1
Volk South MOA	230	920	2,400	240.0	10.4	23.1
Volk East MOA	230	1,035	2,700	270.0	11.7	23.1
R-6904A/B*	200	800	2,200	240.0	11.0	21.8
R-6904C	60	240	550	240.0	9.2	26.1

Source: WIANG 2014b.
Note: Utilization of the ATCAAs is in compliance with the letters of agreement for each airspace area; however, within the Volk Field SAA, activation of ATCAAs is not recorded by Volk Field CRTC. †Daily refers to a 24-hour period with 90% occurring between 0800 and 1600 and 10% occurring between 1600 and 0800.
*R-6904A/B are always scheduled simultaneously to facilitate air-to-ground training activities.
**MOA and RA use would be intermittent and a Notice to Airmen (NOTAM) would occur at least 2 and 4 hours in advance, respectively

2.7.2 Alternative 2: Eliminate Restricted Area 6904C from Proposed Action

Under this alternative all of the proposed modifications of and expansions to the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of R-6904C development. While the majority of existing limitations associated with the Volk Field SAA would be addressed, this alternative would not address limitations to stand-off precision guided munitions and target coordinate generation training using long-distance non-eye safe combat lasers. Under this alternative, pilots would only be able to engage in these types of training exercises at shorter distances that do not meet AFTTP requirements and do not approximate realistic mission-oriented scenarios.

2.7.3 Alternative 3: Increase Existing Volk West ATCAA Ceiling

Under this alternative, none of the proposed modifications to and expansions of to the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented. However, under this alternative the ceiling of the existing Volk West ATCAA would be raised from FL 230 to FL 280 (23,000 feet MSL to 28,000 feet MSL) in order to reduce the number of airspace shelves in the complex. By eliminating a step-down shelf mid-way through the Volk Field SAA, air-to-air training capabilities would be modestly increased. However, implementation of this alternative would not address the other limitations of the existing airspace, including the complex airspace boundaries, bottleneck, airspace shelves, and inability to support non-eye safe long-range laser operations to the Hardwood Aerial Gunnery Range.

2.8 NO-ACTION ALTERNATIVE

Selection of the No-Action Alternative would result in no change to the current configuration of the Volk Field SAA. Under the No-Action Alternative, local and deployed units would continue to lose adequate training opportunities while preparing to deploy in support of Air Expeditionary Force (AEF) responsibilities. The current airspace would restrict current generation aircraft and tactics and would limit support for future aircraft, tactics, and techniques. Existing fourth generation and emerging fifth generation fighter and bomber units would be forced to deploy to more costly, limited access, airspace venues elsewhere to fulfill training requirements; reducing the training provided to a number of personnel limited by funding and availability for deployment. Volk Field CRTC would not be able to fulfill ANGMD 10.01 directives to remain a cost-effective and advanced combat air forces training location.

SECTION 3
AFFECTED ENVIRONMENT

This section describes relevant existing environmental conditions for resources potentially affected by implementation of the Proposed Action (Preferred Alternative) and its alternatives. In accordance with guidelines established by the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, Air Force Instruction (AFI) 32-7061, and Federal Aviation Administration (FAA) Order 1050.1 E (Change 1), the description of the affected environment focuses on only those aspects potentially subject to impacts.

For the purposes of this Environmental Assessment (EA), the Region of Influence (ROI) includes the areas below the proposed Volk Falls, Volk West, Volk South and Volk East Military Operations Areas (MOAs) and associated overlying Air Traffic Controlled Assigned Airspaces (ATCAAs) as well as the proposed Oshkosh and Sheboygan East and West ATCAAs. The proposed Restricted Area (RA) 6904C (R-6904C) is also included in the ROI; however, it is located within the footprint of the proposed Volk West and Volk South MOAs. In general the following discussion is structured based on the areas underlying each of the proposed airspaces; however, where applicable (e.g., cultural resources, safety, hazardous materials and wastes, etc.) the discussion includes the entire ROI rather than segmenting it by airspace.

Many of the areas within the ROI underlie existing Volk Field Special Activity Airspace (SAA) that would be modified under the Proposed Action (see Figure 3-1 and refer to Section 2, *Description of Proposed Action and Alternatives*). The proposed Volk Falls MOA overlies portions of Clark, Eau Claire, Jackson, Monroe, and Trempealeau counties. To the east of the proposed Volk Falls MOA, the proposed Volk West MOA overlies portions of Clark, Jackson, Juneau, Monroe, and Wood counties, while the proposed Volk South MOA overlies portions of Juneau and Monroe counties. Additionally, the proposed Volk East MOA overlies portions of Adams, Columbia, Dodge, Green Lake, Marquette, Portage, Washara, Waupaca, Winnebago, and Wood counties. Further, the proposed Oshkosh ATCAA, located to the east of the proposed Volk East MOA, overlies portions of Calumet, Dodge, Fond du Lac, Outagamie, Waupaca, and Winnebago counties. Sheboygan East and West ATCAAs cover Brown, Calumet, Fond Du Lac, Manitowoc, Outagamie, Ozaukee, Sheboygan, and Washington counties.

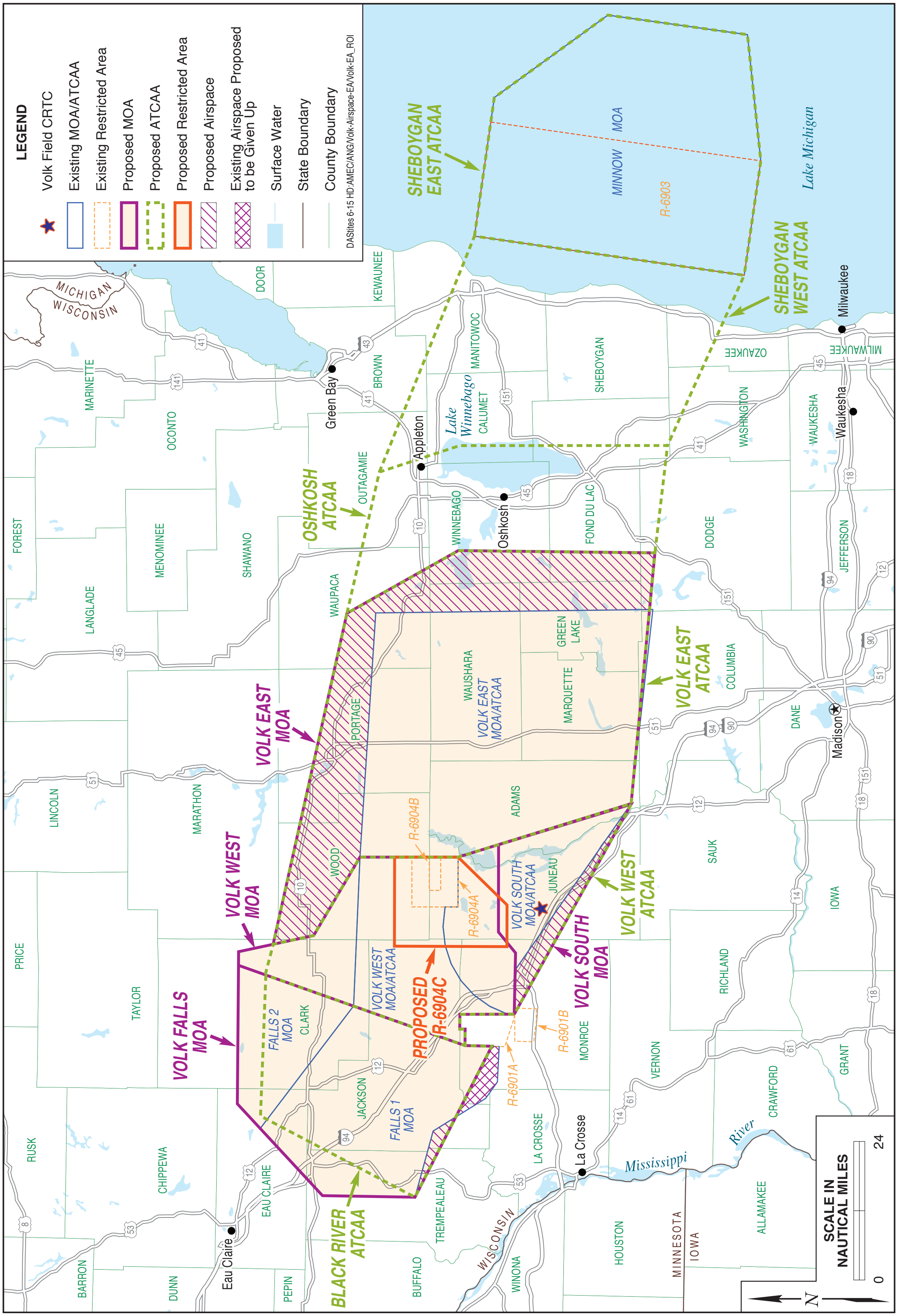


FIGURE 3-1

Region of Influence

EA

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

The following resource areas that may be affected by the Proposed Action or its alternatives are included in the description of the affected environment:

- Airspace Management;
- Noise;
- Land Use;
- Biological Resources;
- Cultural Resources;
- Air Quality;
- Safety;
- Hazardous Materials and Wastes; and
- Socioeconomics, Environmental Justice, and Children's Health and Safety.

A brief discussion of resource areas that are anticipated to experience no environmental impact under the implementation of the Proposed Action or its alternatives is included in Section 3.10, *Dismissed Resource Areas*. These environmental resources include:

- Greenhouse Gas Emissions
- Utilities and Infrastructure;
- Ground Transportation;
- Geological Resources; and
- Water Resources and Wetlands.

3.1 Airspace Management

3.1.1 Definition of Resource

Airspace management is defined by the U.S. Air Force (USAF) as the coordination, integration, and regulation of the use of airspace of defined dimensions. The objective is to meet military training requirements through the safe and efficient use of available navigable airspace in a peacetime environment while minimizing the impact on other aviation users and the public (AFI 13-201). There are two categories of airspace or airspace areas: regulatory and nonregulatory. Within these two categories, further classifications include *controlled*, *uncontrolled*, *special use*, and *other airspace*. The categories and types of airspace are dictated by: (1) the complexity or density of aircraft movements; (2) the nature of the operations conducted within the airspace; (3) the level of safety required; and (4) national and public interest in the airspace.

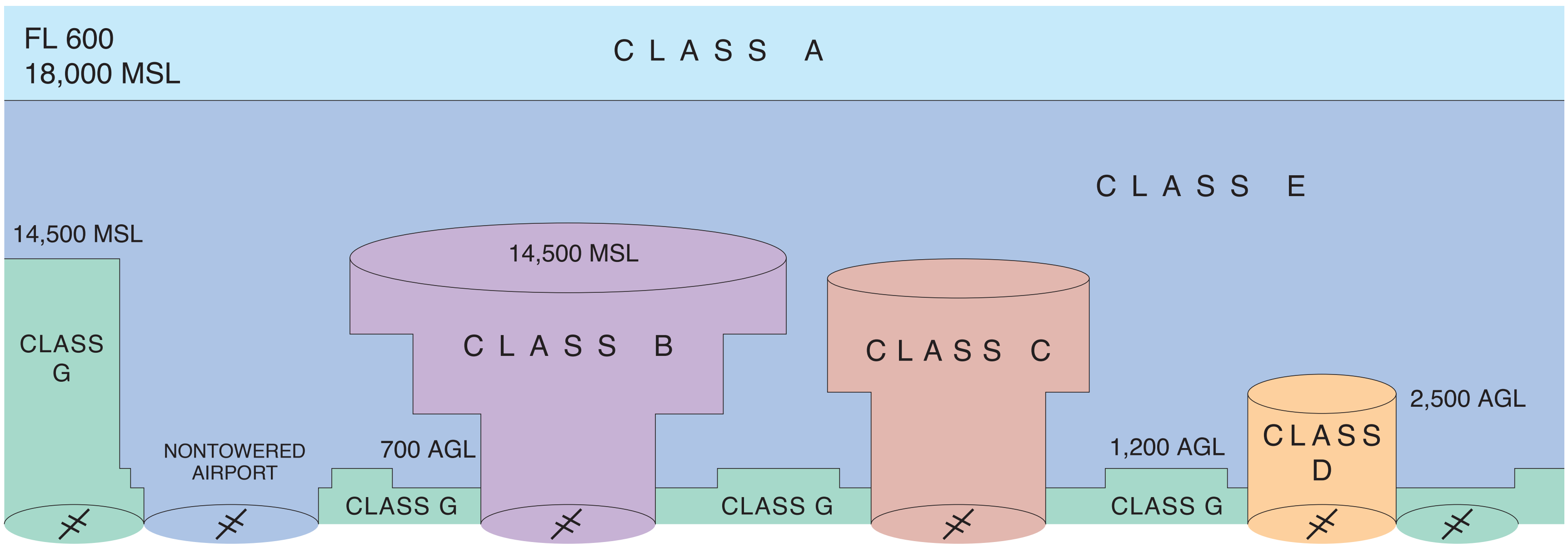
As described in Section 1.3, *Primary Military Users of the Airspace* for purposes of this analysis, a *sortie* represents a single takeoff, performance of a mission, and landing. An *operation* is defined as a subset of a sortie that accounts for an individual flying activity within an individual piece of training airspace. There can be multiple operations per sortie.

<u>Controlled Airspace</u>

Controlled airspace is a generic term that encompasses the different classifications of airspace (Class A, B, C, D, and E airspace shown in Figure 3-2) and defines dimensions within which air traffic control service is provided to Instrument Flight Rules (IFR) flights and to Visual Flight Rules (VFR) flights (U.S. Department of Transportation [DOT] 1994). All military and civilian aircraft are subject to Federal Aviation Regulations (FARs).

Class A Airspace

Class A airspace includes all flight levels or operating altitudes over 18,000 feet above mean sea level (MSL). Formerly referred to as a Positive Control Area (PCA), Class A airspace is dominated by commercial aircraft utilizing routes between 18,000 and 60,000 feet MSL.



AGL – above ground level
FL – flight level
MSL – mean sea level

NOTE: Altitudes not to scale.
Source: FAA 1993.

EA

FAA Airspace Classification

FIGURE 3-2

Class B Airspace

Class B airspace typically comprises contiguous cylinders of airspace, stacked upon one another, extending from the surface up to 14,500 feet MSL. To operate in Class B airspace, pilots must contact appropriate controlling authorities and receive clearance to enter the airspace. Additionally, aircraft operating within Class B airspace must be equipped with specialized electronics that allow air traffic controllers to accurately track aircraft speed, altitude, and position. Class B airspace is typically associated with major metropolitan airports. There are no Class B airports in the State of Wisconsin.

Class C Airspace

Airspace designated as Class C can generally be described as controlled airspace that extends from the surface or a given altitude to a specified higher altitude. Class C airspace is designed and implemented to provide additional air traffic control (ATC) into and out of primary airports where aircraft operations are periodically at high-density levels such as Austin Straubel International Airport in Green Bay, northeast of the Volk Field SAA, or Dane County Regional Airport in Madison, southeast of the Volk Field SAA. All aircraft operating within Class C airspace are required to maintain two-way radio communication with local ATC entities.

Class D Airspace

Class D airspace encompasses a five-statute-mile radius of an operating ATC-controlled airport, extending from the ground to 2,500 feet above ground level (AGL) or higher. All aircraft operating within Class D airspace must be in two-way radio communication with the ATC facility.

Class E Airspace

Class E airspace can be described as general controlled airspace. It includes designated Federal airways consisting of the high altitude (J or "Jet" Route) system and low altitude (V or "Victor" Route) system. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. Also included in this class of airspace are Federal Airways, airspace beginning at either 700 or 1,200 feet AGL used to transition to or from the terminal or enroute environment and enroute domestic and offshore airspace, designated below 18,000 feet MSL.

Uncontrolled Airspace

Uncontrolled airspace (Class G) is not subject to restrictions that apply to controlled airspace. Limits of uncontrolled airspace typically extend from the ground surface to 700 feet AGL in urban areas and from the ground surface to 1,200 feet AGL in rural areas. Uncontrolled airspace can extend above these altitudes to as high as 14,500 feet MSL if no other types of controlled airspace have been assigned. ATC does not have authority to exercise control over aircraft operations within uncontrolled airspace. Primary users of uncontrolled airspace are general aviation aircraft operating in accordance with VFR.

Special Use Airspace

Special Use Airspace (SUA) consists of airspace within which specific activities must be confined, or wherein limitations are imposed on aircraft not participating in those activities. With the exception of Controlled Firing Areas (CFAs), SUA is depicted on aeronautical charts, including hours of operation, altitudes, and the agency controlling the airspace. All special use airspace descriptions are contained in Federal Aviation Administration (FAA) Order 7400.8.

Prohibited Areas and RAs (e.g., R-6904A/B) are regulatory SUA and are established in FAR Part 73 through the rulemaking process. Warning Areas (WAs), CFAs, and MOAs are nonregulatory SUA.

WAs are airspace of defined dimensions over international waters that contain activity that may be hazardous to nonparticipating aircraft. Because international agreements do not provide for prohibition of flight in international airspace, no restrictions to flight are imposed. As such, WAs are established in international airspace to alert pilots of nonparticipating aircraft to potential danger.

CFAs are established to contain activities that, if not conducted in a controlled environment, would be hazardous to nonparticipating aircraft. The approval of a CFA shall only be considered for those activities that are either of short duration or of such a nature that they could be immediately suspended upon notice that such activity might endanger nonparticipating aircraft. Examples of such activities include: firing of missiles, rockets, anti-aircraft artillery, and field artillery; static testing of large rocket motors; blasting; and ordnance or chemical disposal.

MOAs are airspace areas designated outside of Class A airspace, to separate or segregate certain nonhazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. IFR traffic may be cleared to enter and pass through the area if adequate IFR separation criteria can be met and procedures are described in a Letter of Agreement between the unit and the ATC controlling agency (FAA Order 7400.2K). Nonparticipating VFR aircraft are not prohibited from entering an active MOA; however, extreme caution is advised when such aircraft transit the area during military operations. All MOAs within the U.S. are depicted on sectional aeronautical charts identifying the exact area, the name of the MOA, altitudes of use, published hours of use, and the corresponding controlling agency.

Air Traffic Control Assigned Airspace

An ATCAA is airspace above 18,000 feet MSL designed to accommodate non-hazardous high-altitude military flight training activities; this airspace remains in the control of the FAA and, when not in use by military aircraft, may be used to support civil aviation activities. ATCAA permits military aircraft to conduct high-altitude air-to-air combat training, practice evasion maneuvers, perform air refueling, and initiate or egress from attacks on targets within a range. ATC routes IFR traffic around this airspace when activated; ATCAA does not appear on any sectional or enroute charts.

Military Training Routes

Military Training Routes (MTRs) are flight paths that provide a corridor for low-altitude navigation and training. Low altitude navigation training is important because aircrews may be required to fly at low altitudes for tens or hundreds of miles to avoid detection in combat conditions. To train realistically, the military and the FAA have developed MTRs. This system allows the military to train for low-altitude navigation at air speeds in excess of 250 knots. There are two types of MTRs, instrument routes (IR) and visual routes (VR).

3.1.2 Existing Conditions

3.1.2.1 Regional Airspace

Military airspace in central and east-central Wisconsin in the immediate vicinity of the Volk Field Combat Readiness Training Center (CRTC) includes the existing Falls 1 MOA and Falls 2 MOA as well as the Volk West, Volk South, and Volk East MOAs. R-6904A/B, associated with the Hardwood Range, is located within the Volk West MOA. Overlying these MOAs (not including Falls 1 and Falls 2 MOAs) are the Volk West, Volk South, and Volk East ATCAAs. For a discussion of specific altitude blocks for these existing airspaces please refer to Table 2-6. Further, the Wisconsin Air National Guard (ANG) ATCAAs, R-6903, and Minnow MOA are located to the east, but are not included within the ROI (refer to Figure 3-1). An additional restricted area, R-6901A, associated with the Fort McCoy Artillery Range is located just south of the Volk West MOA; however, this airspace area is not managed or used by the Wisconsin Air National Guard (WIANG) and is not included within the ROI.

3.1.2.2 Affected Airspace

Volk Field CRTC is operationally and organizationally tasked to support Joint Force training requirements. The Volk Field SAA is utilized, scheduled, and coordinated by many different military units through a centralized scheduling process at Volk CRTC, which also serves as a deployed location for multiple aircraft types.

The primary tactical section of the Volk Field SAA overlying central and east-central Wisconsin consists of five MOAs, three corresponding ATCAAs, and the RA associated with the Hardwood Range. The Falls 1 MOA and Falls 2 MOA, as well as the three Volk MOAs, Volk East, Volk West, and Volk South, are located adjacent to each other, creating a contiguous airspace that spans across central Wisconsin (see Figure 3-3; refer to Table 1-4 and Figure 1-2 for a detailed description of the vertical limits of the existing airspace).

To ensure aircrew mission readiness, tactical aircrew conduct several basic types of training within the Volk Field SAA including air-to-ground, air-to-air, threat awareness, and composite events. Air-to-ground training employs all low-, medium-, and high-altitude tactics and techniques associated with the delivery of precision, non-precision, and forward firing ordnance within the Hardwood Range (i.e., R-6904A/B). Air-to-air training provides experience gaining and maintaining air superiority in a designated piece of airspace. A standard phased training plan sees training progress from basic one versus one "dogfighting" to longer range intercepts and often culminates in engagements between multiple "friendly" and "enemy" aircraft. Threat awareness training consists of aircrew assessments of and reactions to ground based threats like anti-aircraft artillery (AAA) or surface-to-air missiles (SAMs). This training can be against notional threats or may be facilitated by the use of ground-based threat simulator systems that accurately replicate the electronic signatures of AAA and SAM systems. Composite Force Training (CFT) exercises, which occur less frequently, consist of aircraft performing missions that integrate major elements of air-to-air, air-to-ground, and threat awareness training.

Table 3-1. Existing Annual Operations

Airspace	Falls 1 MOA	Falls 2 MOA	Volk West MOA	Volk South MOA	Volk East MOA	R-6904A/B
Annual Operations	2,500	2,500	2,700	2,400	2,700	2,200
Annual Operating Hours	1,035	1,035	1,035	920	1,035	800

Source: WIANG 2014a.
Note: Aircraft operating within the existing airspace are described in Section 1.4, *Primary Aircraft Operated within the Airspace Complex*.

As shown in Table 3-1, annual utilization of the Volk Field SAA MOAs varies, but generally ranges between approximately 920 operating hours within the Volk South MOA to 1,035 hours within all other MOAs. On average Volk Field SAA is activated by these users daily for a minimum of one hour and maximum of approximately 4.5 hours, with the number of aircraft varying per training mission requirements (refer to Section 1.3, *Primary Users of the Airspace*). Approximately 95 percent of operations occur between 0700 and 2200 while five percent occur between 2200 and 0700.

As described in Section 1.8.2, *Current Airspace Limitations*, there are several limitations that affect the value and utility of the existing Volk Field SAA (WIANG 2012b). These include a limited usable width and length that restrict the utility of airspace for multiple required mission types including Large Force Exercises (LFEs), Defense Counter Air (DCA), and other specific phase-training requirements. Additionally, the vertical structure of existing airspace is marginally adequate to support multiple required mission types including LFEs, DCA, and specific phase-training requirements. The existing RAs within the Volk Field SAA are also insufficient to support tactically relevant stand-off, non-eye-safe combat laser employment and weapons delivery at Hardwood Range.

3.1.2.3 Public Airports within the ROI

Table 3-4 describes public airports that are located beneath the existing and proposed modified Volk Field SAA. Thirteen public airports are located within the ROI, four of which are not currently overlaid by an existing MOA (see Figure 3-3). Of those airports identified, Outagamie County Regional, Fond du Loc County Airport, and Wittman Regional Airport are located under the proposed Oshkosh ATCAA. Further, New Holstein Municipal Airport is under the proposed Sheboygan West ATCAA.

3.1.2.4 Regional Aviation Activity

Within the Volk Field SAA, both civilian and military aircraft operate under VFR and IFR. Typically, General Aviation aircraft operate between 500 feet AGL and 8,000 feet MSL, while Air Carriers travel at altitudes above 23,000 feet MSL. Military aircraft operating within Volk SAA while it's activated operate between 500 feet AGL and 28,000 feet MSL. Air Taxi, Military, and aircraft transitioning from higher or lower altitudes tend to operate within the altitude block of 8,000 feet MSL to 23,000 feet MSL. Volk SAA is typically activated 4-hours per day, Monday through Friday, with altitudes from 500 feet AGL to 17,999 feet MSL. Samples of daily operations within the Volk SAA by both civilian and military aircraft operations under either IFR or VFR are presented in Table 3-2.

Table 3-2. Daily Military and Civilian Aircraft Operations within Volk SAA

Day	Altitude (feet MSL)	Time of Day	
		0800-1200	1200-1600
11 March 2015	0 to 8,000	18	3
	8,000 to 18,000	5	3
	18,000 to 24,000	4	2
	24,000 to 50,000	0	0
9 June 2015	0 to 8,000	22	1
	8,000 to 18,000	5	1
	18,000 to 24,000	2	0
	24,000 to 50,000	3	0
5 October 2015	0 to 8,000	27	2
	8,000 to 18,000	13	2
	18,000 to 24,000	4	2
	24,000 to 50,000	0	2

Source: FAA 2015.

In addition to routine general aviation traffic within the vicinity of the Volk Field SAA, EAA AirVenture hosts the Oshkosh Fly-In Convention, which in the past has attracted over 10,000 general aviation aircraft. This airshow/aviation convention generally occurs during a week long period within the summer. Oshkosh 2016 will occur between 25 July and 31 July, 2016. Volk Field CRTC avoids the Volk Field SAA during the Oshkosh Fly-In Convention and utilizes other regional airspace, located further away from the Volk Field CRTC.

3.1.2.5 Military Training Routes

MTRs, or military flight paths that provide a corridor for regional low-altitude navigation and training, are located throughout the State of Wisconsin. MTRSs, including both IRs and VRs that are located under or near the Volk Field SAA included VR-1616 and VR-1650 (refer to Figure 3-3).

3.1.2.6 Jet Routes and Victor Airways

The enroute phase of flight is defined as that segment of flight from the termination point of a departure procedure to the origination point of an arrival procedure. The procedures employed in the enroute phase of flight are governed by a set of specific flight standards established by 14 CFR, FAA Order 8260.3, and

U.S. Standard for Terminal Instrument Procedures (TERPS), as well as other related publications. En route IFR navigation is evolving from the ground-based navigational aid (NAVAID) airway system to a sophisticated satellite and computer-based system that can generate courses to suit the operational requirements of almost any flight. The FAA Global Navigation Satellite System (GNSS) provides satellite-based positioning, navigation, and timing services in the U.S. to enable performance-based operations for all phases of flight, to include en route navigation (FAA 2014c).

The enroute airspace structure of the National Airspace System (NAS) consists of three strata. The first stratum low altitude airways in the U.S. can be navigated using NAVAIDs, have names that start with the letter V, and are called Victor Airways. They cover altitudes from approximately 1,200 feet AGL up to, but not including 18,000 feet MSL. The second stratum high altitude airways in the U.S. all have names that start with the letter J, and are called Jet Routes. These routes run from 18,000 feet MSL to 45,000 feet MSL. The third stratum allows random operations above FL 450 (FAA 2014c).

New low altitude Area Navigation (RNAV) routes have been created by the FAA. RNAV routes provide more direct routing for IFR aircraft and enhance the safety and efficiency of the NAS. In order to utilize these routes, aircraft must be equipped with IFR approved GNSS. RNAV routes not based on VOR routes at both low and high altitudes are given the prefix "T" and "Q" (FAA 2014c).

Six Victor Airways (V-) pass through the existing Airspace Complex: V-55, V-345, V-246, V-228, V-177, and V-63, respectively. Each Victor Airway is made up of segments and within the current Airspace Complex configuration, each Victor Airway has between one (1) and four (4) segments. Existing civilian operations along these Victor Airways are relatively low (i.e., less than one per day) (Table 3-3). Currently, no T-routes pass through the existing Airspace Complex and only one Q-route (Q-440) enters and exits the Falls 2 MOA.

Table 3-3. Existing Aircraft Operations along Victor Airways within Volk Airspace Complex

Victor Airway	Number of Segments	Annual Operations
V-55	2	9/8
V-65	1	5
V-177	2	4/4
V-228	4	0/0/0/7
V-246	3	11/2/2
V-345	3	11/364*/36

Source: FAA 2015.
Notes: *This count addresses both aircraft that enter and exit V-345 along this middle segment; Time frame from 1 June 2014 – 31 May 2015.

Table 3-4. Existing Public Airports within the ROI

Airport	Total Aircraft Operations (2012)
Commercial Service	
Outagamie County Regional	35,942
Large General Aviation	
Fond du Lac County Airport	63,050
Wittman Regional Airport	70,572
Medium General Aviation	
Alexander Field South Wood County Airport	9,050
Black River Falls Airport	12,320
Marshfield Municipal Airport*	22,400
Stevens Point Municipal Airport*	36,750
Waupaca Municipal Airport	20,160
Small General Aviation	
Adams County Legion Field	7,070
Bloyer Field†	N/A
Mauston-New Lisbon Union Airport†	6,610
Necedah Airport	N/A
Neillsville Municipal Airport	7,520

Source: FAA 2014b.
Note: *Airports not currently overlaid by existing airspace that would be located under the proposed expanded Volk East MOA; †Airports not currently overlaid by existing airspace that would be located under the proposed expanded Volk South MOA; Existing private and unverified airports below proposed and affected airspaces were not individually identified, though their existence and locations were acknowledged and considered.

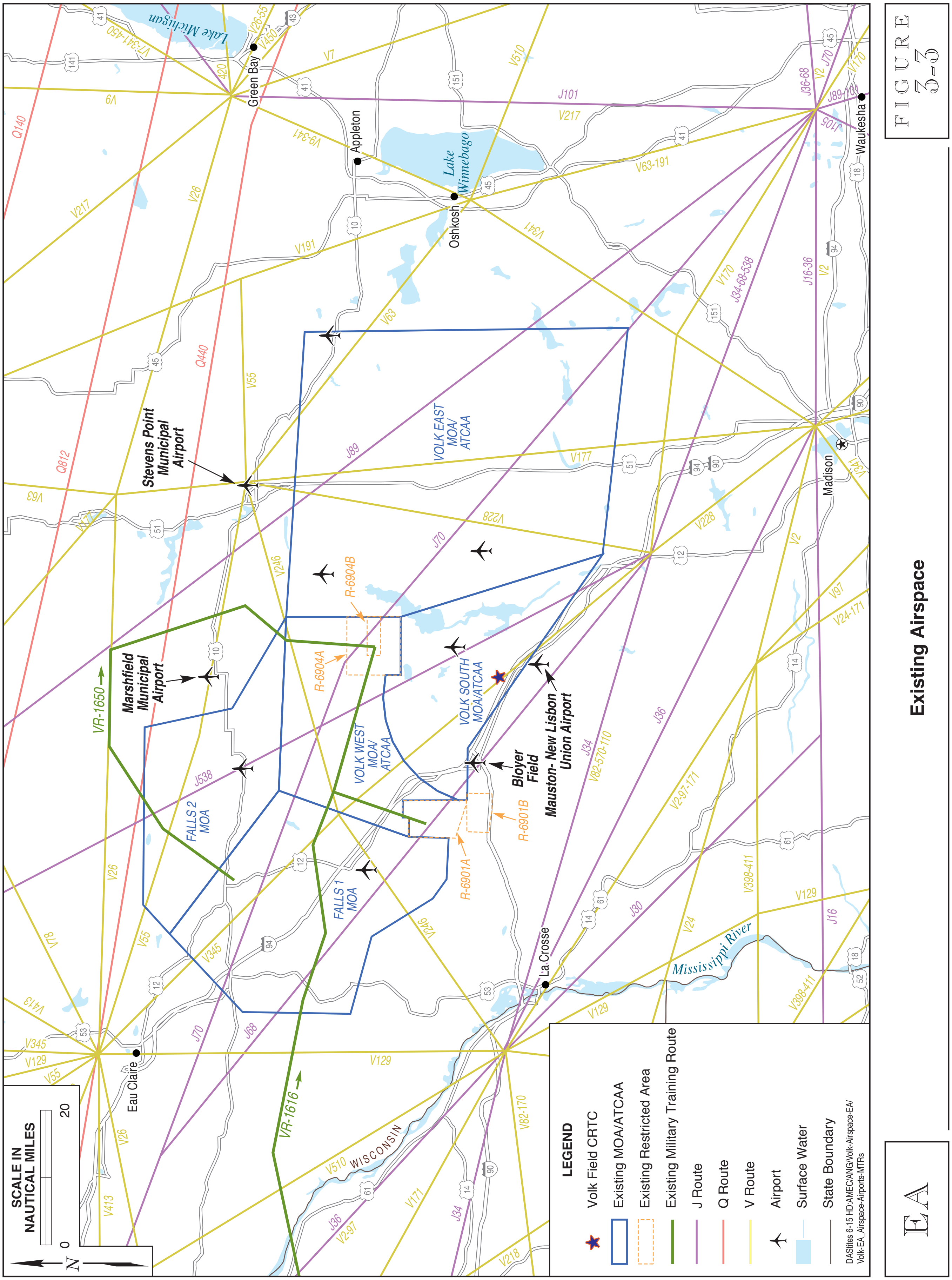


FIGURE 3-3
EA
Existing Airspace
LEGEND
Volk Field CRTC
Existing MOA/ATCAA
Existing Restricted Area
Existing Military Training Route
J Route
Q Route
V Route
Airport
Surface Water
State Boundary
DASites 6-15 HD:AMEC/ANG/Volk-Airspace-EA/
Volk-EA_Airspace-Airports-MTRs
SCALE IN NAUTICAL MILES
0
20
N
VOLK EAST MOA/ ATCAA
VOLK SOUTH MOA/ATCAA
VOLK WEST MOA/ ATCAA
FALLS 1 MOA
FALLS 2 MOA
R-6904A
R-6904B
R-6901A
R-6901B
VR-1650
VR-1616
Stevens Point Municipal Airport
Marshfield Municipal Airport
Bloyer Field
Mauston- New Lisbon Union Airport
Green Bay
Appleton
Oshkosh
Lake Winnebago
Lake Michigan
Waukesha
Madison
La Crosse
Eau Claire
Mississippi River
WISCONSIN

3.2 NOISE

3.2.1 Definition of Resource

Noise is defined as unwanted sound or, more specifically, as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying (Federal Interagency Committee on Noise [FICON] 1992). Human response to noise can vary according to the type and characteristics of the noise source, the distance between the noise source and the receptor, the sensitivity of the receptor, and the time of day.

This section describes the existing noise environment in and beneath the affected and proposed airspace areas and provides a summary of the noise metrics that are pertinent to the analysis of noise-related effects in Section 4.2, *Noise*. Further, Appendix E, *Noise* explains the basic properties of sound propagation, attenuation, and human responses to noise, and provides a more detailed description of the various noise metrics commonly used to assess noise-related impacts within special use airspace.

As described in Section 1.3, *Primary Military Users of the Airspace* for purposes of this noise analysis, a *sortie* represents a single takeoff, performance of a mission, and landing. An *operation* is defined as a subset of a sortie that accounts for an individual flying activity within an individual piece of training airspace. There can be multiple operations per sortie.

3.2.1.1 Noise Metrics for Airspace Noise Analysis

Due to the wide range in sound levels, sound is expressed in decibels (dB), a unit of measure based on a logarithmic scale. A 10-dB increase in noise level corresponds to a 100-percent increase (i.e., doubling) in perceived loudness. As a general rule, a 3-dB change is necessary for noise increases to be noticeable to humans (Bies and Hansen 1988). Sound measurement is further refined by using an A-weighted decibel (dBA) scale that emphasizes the range of sound frequencies that are most audible to the human ear (i.e., between 1,000 and 8,000 cycles per second). Sound frequency is measured in terms of hertz (hz), and the normal human ear can detect sounds ranging from about 20 to 15,000 hz. However, because all sounds in this wide range of frequencies are not heard equally well by the human ear, which is most sensitive to frequencies in the 1,000 to 4,000 hz range, the very high and very low frequencies are adjusted to approximate the human ear's lower sensitivity to those frequencies. This is called "A-weighting" and is commonly used in the measurement of community environmental noise. Unless otherwise noted, all decibel measurements presented in the following noise analysis are dBA.

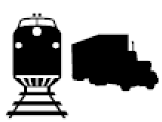
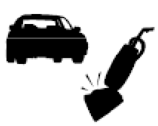
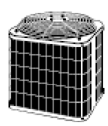
Table 3-5 identifies noise levels associated with some common indoor and outdoor activities and settings. Table 3-5 also indicates the subjective human judgments of noise levels, specifically the perception of noise levels doubling or being halved. For reference purposes, a baseline noise level of 70 dB is described as moderately loud. As can be seen in the table illustrating the logarithmic dB scale, humans perceive an increase of 10 dB as a doubling of loudness, while an increase of 30 dB corresponds with an eight-fold increase in perceived loudness (Branch and Beland 1970).

<u>Measurements of Average Sound Level</u>

Day-Night Average A-Weighted Sound Level

A-weighted day-night average sound level (DNL) is the preferred noise metric for aircraft operations in a community noise environment surrounding an airfield, in which noise is generally continuous or patterned. DNL averages A-weighted sound levels over a 24-hour period, with an additional 10-dB penalty added to noise events occurring between 10:00 p.m. and 7:00 a.m. This penalty is intended to account for generally lower background noise levels at night and the additional annoyance of nighttime noise events. The Federal government adopted DNL in the early 1980s because it is considered the best single system of noise measurement that can be uniformly applied in measuring noise in communities around civilian airports and military facilities, and for which there is a relationship between projected noise and surveyed reaction of people to the noise. DNL is the preferred noise metric of the U.S. Department of Housing and Urban Development (HUD), DOT, FAA, U.S. Environmental Protection Agency (USEPA), Veterans' Administration, and Department of Defense (DoD).

1 **Table 3-5. Sound Levels of Typical Noise Sources and Noise Environments**

	Over-all Level (Noise level, dB(A))		**Community** (Outdoor)	**Home or Industry** (Indoor)	**Loudness** (Human Judgement of Different Sound Levels)
	120-130	Uncomfortably Loud	Military Jet Aircraft Take-Off With After-Burner From Aircraft Carrier @ 50 ft. (130)	Oxygen Torch (121)	32 times as loud as 70 dB(A)
	110-119		Turbo Fan Aircraft @ Take-Off Power @ 200 ft. (118)	Riveting Machine (110) Rock and Roll Band (108-114)	16 times as loud as 70 dB(A)
	100-109		Boeing 707, DC-8 @ 6080 ft. Before Landing (106), Jet Flyover @ 1000 ft. (103), Bell J-2A Helicopter @ 100 ft. (100)		8 times as loud as 70 dB(A)
	90-99	Very Loud	Power Mower (96) Boeing 707, CD-8 @ 6080 ft. Before Landing (97) Motorcycle @ 25 ft. (90)	Newspaper Press (97)	4 times as loud as 70 dB(A)
	80-89		Car Wash @ 20 ft. (89) Propellor Plane Flyover @ 1000 ft. (88) Diesel Truck, 40 mph @ 50 ft. (84) Diesel Train, 45 mph @ 100 ft. (83)	Food Blender (88) Milling Machine (85) Garbage Disposal (80)	2 times as loud as 70 dB(A)
	70-79	Moderately Loud	High Urban Ambient Sound (80) Passenger Car, 65 mph @ 25 ft. (77) Freeway @ 50 ft. From Pavement Edge @ 10 a.m. (76 +/- 6)	Living Room Music (76) TV-Audio, Vacuum Cleaner (70)	
	60-69		Air Conditioning Unit @ 100 ft. (60)	Cash Register @ 10 ft. (65-70)	1/2 as loud as 70 dB(A)
	50-59	Quiet	Large Transformers @ 100 ft. (50)		1/4 as loud as 70 dB(A)
	40-49		Bird Calls (44) Lower Limit of Urban Ambient Sound in daytime (40)		1/8 as loud as 70 dB(A)
		Just Audible	**dB(A) Scale Interrupted**		
	0-10	Threshold of Hearing			

Source: Branch and Beland 1970.

Onset Rate-Adjusted Monthly Day-Night Average

Military aircraft utilizing special use airspace, such as MOAs, RAs, and MTRs generate a noise environment that is somewhat different from that associated with airfield operations. As opposed to daily patterned or continuous noise environments associated with airfields, flight activity within special use airspace is highly sporadic and often seasonal. Individual military overflight events also differ from typical community noise events in that noise from a low-altitude, high-airspeed flyover can have a rather sudden onset, exhibiting a rapid rate of increase and rapid rate of decrease in sound level (e.g., up to 150 dB per second).

Onset rate-adjusted monthly day-night average, A-weighted sound level (L_{dnmr}) is a noise metric that has been developed specifically for aircraft operations in special use airspace, including MOAs and MTRs (see Appendix E, *Noise*). The L_{dnmr} is similar to the DNL in that it is an average metric with a 10-dB penalty for events occurring between 10:00 p.m. and 7:00 a.m. However, because the tempo of operations is so variable, L_{dnmr} is calculated using the average number of operations per day in the busiest month of the year. L_{dnmr} represents an average for an entire month utilizing the highest monthly sortie activity (i.e., the busiest month), and includes an additional penalty up to 11 dB to compensate for the "startle" effect of a low-altitude overflight. For aircraft exhibiting a rate of increase in sound level (i.e., onset rate) of from 15 to 150 dB per second, an adjustment or penalty ranging from 0 to 11 dB is added. Onset rates above 150 dB per second require a 11 dB penalty, while onset rates below 15 dB per second require no adjustment. Because of this penalty, L_{dnmr} always equals or exceeds DNL. Consequently, L_{dnmr} can be conservatively compared to DNL noise thresholds (see Section 4.2, *Noise* for additional details regarding noise impact analysis methodology). Further, because it is a conservative measure of average noise exposure over time with built-in penalties for rapid onset of noise, L_{dnmr} closely correlates with the probability of "highly annoying" a noise receptor, and is appropriate to use in areas where receptors would be highly sensitive to potential noise impacts.

<u>Measurements of Short-term Noise Events</u>

L_{dnmr}, which is an average metric, is the accepted metric for land use compatibility guidelines beneath special use airspace; however, other important concerns regarding aircraft operations within special use airspace include the number, intensity, and duration of individual noise events that contribute to the L_{dnmr}. Consequently, L_{dnmr} is generally supplemented with metrics describing instances of unpredictable, discrete short-term noise events that produce long-term average L_{dnmr}.

Maximum Sound Level

The highest A-weighted sound level measured during a single event in which the sound level changes value over time (e.g., an aircraft overflight) is called the maximum A-weighted sound level or maximum sound level (L_{max}).

Sound Exposure Level

Although the maximum sound level described above provides some measure of the intrusiveness of the event, it does not completely describe the noise heard throughout the duration of the flyover event. The period of time during which the sound is heard is also significant. The Sound Exposure Level (SEL) combines both of these characteristics into a single metric.

SEL is a logarithmic measure of the total acoustic energy transmitted to the listener during the event. It represents the sound level of the constant sound that would, in one second, generate the same acoustic energy, as did the actual time-varying noise event. Since aircraft overflights usually last longer than one second, the SEL of an overflight for slower moving aircraft is usually greater than the L_{max} of the overflight.

SEL is a composite metric (i.e., made up of distinct parts), which represents both the intensity of a sound and its duration. It does not directly represent the sound level heard at any given time, but rather provides a measure of the net impact of the entire acoustic event. It has been well established in the scientific community that SEL measures this impact much more reliably than simply relying on the A-weighted sound level.

Similar to L_{dnmr}, SEL is a conservative noise metric and is therefore an appropriate metric to use in situations where receptors are highly sensitive to noise. Neither the FAA nor the USAF requires evaluation of SEL, however, the WIANG has elected to include SEL to more fully disclose potential noise impacts.

3.2.1.2 Noise Modeling Methodology

The noise analysis for existing conditions within the existing Volk Field SAA employed the noise model MRNMAP version 3.0. The MRNMAP program was used to calculate uniform distributed L_{dnmr} levels and the average daily number of events that exceed 65 dB SEL within existing MOAs. NOISEMAP version 7.3 was used to calculate DNL noise contours for the existing R-6094A/B. Unlike the existing MOAs, R-6904A/B were modeled as runways, given the ingress and egress routes are not random or evenly spread over the entire area. The analytical parameters considered in this analysis included aircraft type, airspeed, power settings, proposed aircraft operations, vertical training profile, and a conservative estimate of the amount of time spent within each airspace block (see Appendix E, *Noise*). Given the lowest elevation (i.e., the floor) of all ATCAAs (18,000 feet MSL), noise levels associated with military aircraft operating at this altitude would have little to no effect on ground based receptors; therefore, noise levels from military aircraft operating in ATCAAs were not modeled as a part of this analysis.

For the purpose of this analysis, an operation is defined as a randomized flight pattern occurring within the boundaries of a designated MOA, or along an MTR. The aircraft noise evaluation in this analysis is based on the busiest month of aircraft operations and the type of mission flown by each of the military aircraft. Information on the number of aircraft operations occurring at various altitudes within the MOAs was collected from the WIANG. The complete analysis parameters for baseline noise conditions using MRNMAP version 3.0 are presented in Appendix E, *Noise*.

3.2.2 Existing Conditions

3.2.2.1 Regional Setting

<u>Ambient Noise</u>

The land areas beneath and in the immediate vicinity of the Volk Field SAA are characterized by rural, low density communities with pockets of concentrated populations including the cities of Fond du Lac and Oshkosh, as well as other smaller communities. According to FICON, based on their land use type, relative size, and population density, these communities are assumed to experience ambient noise levels up to 55 DNL (FICON 1992).

Existing Noise Levels within the ROI

Aircraft Operations

Current military flight operations were modeled within the existing Volk Field SAA in order to determine existing noise conditions (see Table 3-6) and provide a baseline against which proposed noise levels could be assessed. For the purpose of this analysis, an operation is defined as a randomized flight pattern occurring within the boundaries of a designated MOA or RA. The noise evaluation is based on annual operations, and the type of mission flown by each of the military aircraft assessed.

Table 3-6. Existing Sound Levels Associated with Existing Military Aircraft Operations in the Existing Volk Field SAA

Special Use Airspace	Uniform Distributed Sound Level L_{dnmr}	Number of Daily Events Above 65 dB SEL
Military Operations Areas		
Falls 1 MOA	51.1	0.0
Falls 2 MOA	53.8	0.0
Volk West MOA	53.7	0.0
Volk South MOA	53.8	0.0
Volk East MOA	37.8	0.0

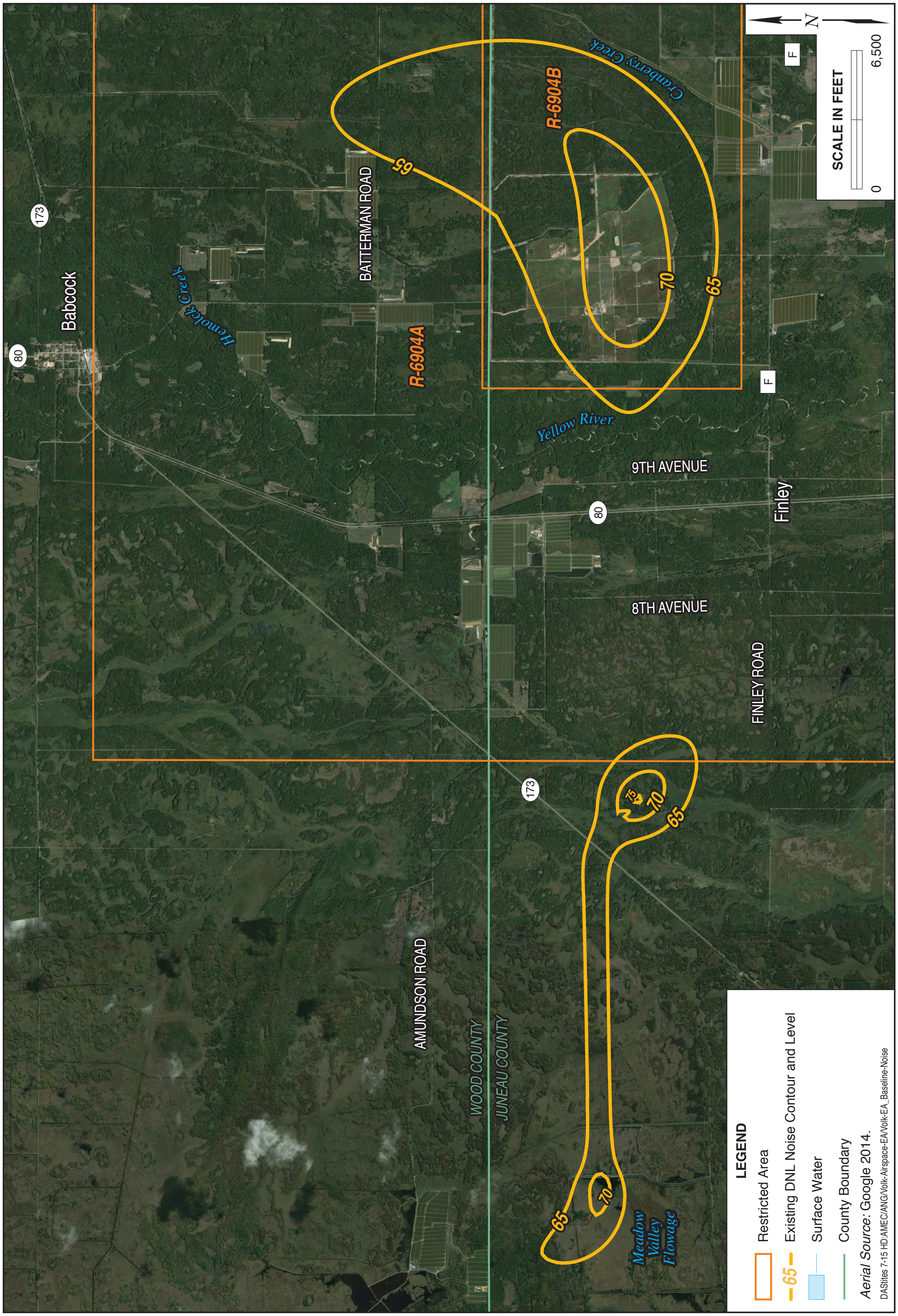
Source: AMEC 2014b (see Appendix E, *Noise*).

Interviews were held with the primary scheduling personnel for airspace areas included in the Volk Field SAA (WIANG 2014a, 2014b). Further information was collected to determine the number of aircraft operations occurring at various altitudes throughout the existing Volk Field SAA. These data were then refined to include time of operation and speed.

As previously described, the Volk Field SAA overlies rural areas and small communities. These areas generally experience ambient noise below 55 DNL (FICON 1992). However, the noise environment beneath the existing Volk Field SAA is also affected by sporadic military aircraft operations. Operations within the existing Volk Field airspace areas occur down to 500 feet AGL to the west within the Falls 1, Falls 2, Volk West, and Volk South MOAs, and above 8,000 feet MSL to the east, within the Volk East MOA (refer to Figure 1-2). Additionally, R-6904A extends to 150 feet AGL and R-6904B extends all the way down to the surface. These RAs are associated with the Hardwood Range and are used for target identification and delivery of munitions.

Unlike local aircraft operations at an airfield, operations within the existing Volk Field SAA are infrequent and sporadic. Additionally, unlike local aircraft operations at an airfield, flyover events are unpredictable and can happen anywhere within a MOA. On a daily 24-hour average throughout the Volk Field SAA, the contribution of noise generated from military aircraft is approximately the same as ambient levels described for rural areas (refer to Table 3-5 and Table 3-6). As previously described, operations within an RA are more consistent occurring on established ingress/egress routes and therefore generate more localized noise contours surrounding the area. Current aircraft operations associated with the existing R-6904A/B generate 65 DNL and 70 DNL contours covering 6.4 square miles (sq mi) and 1.4 sq mi, respectively (see Figure 3-4).

The noise modeling results also include SEL measurements for given airspace. As previously described, the SEL measurement provides a means of describing a noise event such as an aircraft overflight which is comprised of a period of time when an aircraft is approaching and noise levels are increasing, an instant when the aircraft is directly overhead and the highest noise level is experienced, and the period of time when the aircraft moves away from the noise receptor while noise levels decrease. While such an event may last several seconds, the SEL measurement represents a one-second-noise level describing the overflight. Since the SEL value represents a composite of noise levels over an extended period of time normalized to one second, SEL values are typically five to 10 dB higher than the actual highest noise level experienced by a noise receptor. SEL calculations are further described in Appendix E, *Noise*. As shown in Table 3-4, military aircraft operating throughout a given airspace section, on average, would result in virtually no events exceeding 65 dB SEL.



Volk SAA Existing Noise Contours

FIGURE 3-4

EA

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a “living document,” in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

3.2.2.2 Noise Sensitive Receptors

The floor of the existing and proposed modified Volk Field SAA would remain at 500 feet AGL in the west beneath the Volk Falls, Volk West, and Volk South MOAs and 8,000 feet MSL beneath the Volk East MOA, rendering it highly unlikely that sensitive receptors beneath these areas would notice any change in daily noise exposure resulting from direct flyover events. Additionally, while the expansion of the Volk East MOA to the north and east would result in a 1,265 sq mi increase in the airspace over areas not currently overlaid by an existing MOA, this airspace would have an established floor of 8,000 feet MSL, similar to the existing Volk East MOA. As described in Table 3-6, the existing noise contribution associated with the Volk East MOA is lower than ambient levels for rural areas. Consequently, it would be highly unlikely that sensitive receptors beneath the area proposed for expansion of the Volk East MOA would notice any change in daily noise exposure.

However, approximately 29 sq mi that are not currently overlaid by existing airspace would be included within the footprint of proposed Volk Falls MOA and approximately 85 sq mi would be included within the area of the proposed Volk South MOA (refer to Figure 2-1). These expanded airspace areas would be established with a floor of 500 feet AGL, similar to both the Volk Falls MOA and the Volk South MOA. Due to the randomness and distribution of flight operations throughout the airspace, the contribution of military aircraft-related noise would be lower than ambient levels for rural areas (refer to Table 3-6). However, a low-altitude flyover event in the immediate vicinity of a sensitive receptor in either of these areas could result in loud and sudden noise that would be experienced by the receptors below. Approximately 35 sensitive receptors were identified below the proposed Volk Falls MOA and Volk South expansion areas (see Table 3-7), primarily within the towns of Tomah, Oakdale, and Mauston.

Avoidance of noise-sensitive areas is emphasized to all flying units utilizing Volk Field SAA and is noted in the Special Operating Procedures (SOPs) established for each MOA within the U.S. SOPs identify areas where overflights at low altitudes should be avoided to the maximum extent practicable (such as National Marine Sanctuaries [NMS], National Wildlife Refuges [NWRs], farms and ranches, nesting sites, towns, and recreation areas). Volk Field CRTC also maintains a hotline for noise-related complaints associated with military aircraft operations. The Necedah

Table 3-7. Sensitive Noise Receptors below Proposed Expanded Low Altitude Airspace within the ROI

Proposed Expanded Volk Falls MOA	
Places of Worship	
Upper Beaver Creek Church	W15595 County Road C Melrose, WI 546441
Proposed Expanded Volk South MOA	
Schools	
St Patrick's School	325 Mansion St. Mauston, WI 53948
Mauston Pre-School Center	207 W State St. Mauston, WI 53948
Oakdale Elementary School	217 S Oakwood St. Oakdale, WI 54660
Timber PUPS	26232 County Highway CA Tomah, WI 54660
Robert Kupper Learning Center	1310 Townline Rd. Tomah, WI 54660
Lemonweir Elementary	711 N Glendale Ave. Tomah, WI 54660
Tomah Middle School	612 Hollister Ave. Tomah, WI 54660
Tomah High School	901 Lincoln Ave. Tomah, WI 54660
Tomah Head Start	402 Pine St. Tomah, WI 54660
St Paul Lutheran School	505 Superior Ave. Tomah, WI 54660
St Mary's Catholic School	315 W Monroe St. Tomah, WI 54660
Tomah School of Childhood	115 W Lacrosse St. Tomah, WI 54660
Western Wisconsin Technical	120 E Milwaukee St. Tomah, WI 54660
Tomah Baptist Academy	1701 Hollister Ave. Tomah, WI 54660
Kids Kountry Klubhouse	1322 Glendale Ave. Tomah, WI 54660
Hospitals	
Tomah Memorial Hospital	321 Butts Ave. Tomah, WI 54660

Table 3-7. Sensitive Noise Receptors below Proposed Expanded Low Altitude Airspace within the ROI (Continued)

Places of Worship	
Mauston Church of the Nazarene	975 Nazarene Dr. Mauston, WI 53948
Saint Patrick Catholic Church	325 Mansion St. Mauston, WI 53948
First Baptist Church	201 Oak St. Mauston, WI 53948
Bethany Lutheran Church	701 Grove St. Mauston WI, 53948
United Methodist Church	420 Suszycki Dr. Mauston, WI 53948
Trinity Lutheran Church	301 E Main St. Hustler, WI 54637
St Michael's Catholic Church	18316 County Hwy N Tomah, WI 54660
Bible Evangelical Free Church	625 W Veterans St. Tomah, WI 54660
Seventh Day Adventist Church	420 McLean Ave. Tomah, WI 54660
Saint Paul's Evangelical Lutheran Church	525 Superior Ave. Tomah, WI 54660
St Mary's Catholic Church	303 W Monroe St. Tomah, WI 54660
First United Methodist Church	1105 Butts Ave. Tomah, WI 54660
Saint Mary's Episcopal Church	1001 McLean Ave. Tomah, WI 54660
Tomah Baptist Church	1701 Hollister Ave. Tomah, WI 54660
Gloria Dei Lutheran Church	310 W Elizabeth St. Tomah, WI 54660
Lighthouse Assembly of God	762 W Clifton St. Tomah, WI 54660
Tomah Church of Christ	316 View St. Tomah WI 54660
First Congregational Church	115 W Lacrosse St. Tomah, WI

NWR is the only avoidance area within the Volk Field SAA identified within the Volk Field CRTC SOPs. Per AFI 90-2001 and to the extent feasible, flight activity over Necedah NWR does not occur below 1,000 feet AGL. This area currently experiences an average noise level of 48.3 L_{dnmr}.

3.3 LAND USE AND VISUAL RESOURCES

3.3.1 Definition of Resource

Land use or land cover can be separated into two major categories: *natural* and *human-modified*. *Natural* land cover includes woodlands, rangeland, and other open or undeveloped areas. *Human-modified* land use includes residential, commercial, industrial, communications and utilities, agricultural, institutional, recreational, and generally other areas developed from a natural land cover condition. Land use is regulated by management plans, policies, regulations, and ordinances (i.e., zoning) that determine the type and extent of land use allowable in specific areas and protect specially designated or environmentally sensitive areas.

Visual resources are defined as, "the visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features)" (U.S. Department of Interior [DOI] 1984). These features form the overall impressions that an observer receives of an area or its landscape character. Landforms, water surfaces, vegetation, and manufactured features are considered characteristic of an area if they are inherent to the structure and function of a landscape.

3.3.2 Existing Conditions

3.3.2.1 Volk Field CRTC

Volk Field CRTC is located in Juneau County, north of Interstate 90 (I-90), approximately 50 miles east of La Crosse and 70 miles northwest of Madison. Volk Field CRTC comprises approximately 2,300 acres, including an east/west-oriented runway, approximately 40 acres of aircraft aprons, and additional support and administrative facilities (WIANG 2008). There is also a considerable amount of forested, open space, and agricultural land within the boundaries of the installation. The areas immediately adjacent to Volk Field CRTC include predominantly rural land, consisting primarily of open space, agricultural land, and hardwood forest (WIANG 2009). Viewsheds are typical of marginally developed, rural areas with predominantly natural settings.

Mill Bluff State Park is located approximately two miles west of the installation, while Kennedy County Park is located approximately three miles to the southeast. Mill Bluff State Park is part of the Ice Age National Scientific Reserve and includes campsites, picnic areas, hiking trails, and a 2.5-acre swimming pond (Wisconsin Department of Natural Resources [WDNR] 2013a). Kennedy County Park is situated within a 200-acre parcel of Juneau County forest and accommodates a variety of recreational activities including boating and camping (Wisconsin Department of Tourism [WDT] 2014a).

3.3.2.2 Federal, State, and Local Lands beneath the ROI

The ROI overlies several small towns and cities in Wisconsin varying in population from as few as 850 residents to as many as approximately 27,000 residents (U.S. Census Bureau 2012a). The largest of these towns, not currently underlying existing military airspace include Marshfield, Wisconsin and Stevens Point, Wisconsin, which would be located beneath the proposed expanded Volk East MOA.

In addition to the underlying small towns and cities there are numerous federally and state managed lands and associated visual resources underlying the ROI, including two NWRs, as well as numerous state wildlife areas, state parks, and state forests. County forest lands also comprise a very large area of land in the western region underlying the ROI. Together, the Clark, Jackson, Juneau, and Wood county forests comprise approximately 307,929 acres (Clark County 2014; Jackson County 2010; Juneau County 2012; Wood County 2014). Based on their biological value as well as their value for recreation and public use, these Federal, state, and local lands generally constitute potential sensitive land uses and sensitive visual resources. Viewsheds within the ROI vary substantially, as the ROI encompasses such a large area; however, forestland, open space, and other natural settings are typically dominant features of viewsheds within the ROI.

<u>Volk Falls MOA</u>

The proposed Volk Falls MOA is located over portions of Clark, Eau Claire, Jackson, Monroe, and Trempealeau counties in central Wisconsin, which currently underlie the existing Falls 1 MOA and Falls 2 MOA. Similar to the rest of the ROI, land uses beneath the proposed Volk Falls MOA consist primarily of agricultural uses, forested lands, some wetlands, and other types of open space land. Sensitive land uses and scenic resources managed by state agencies include substantial areas underlying the airspace, consisting of 15 State Natural Areas, 11 areas of WDNR-Managed Lands, and four County Forests (see Table 3-8).

Table 3-8. Federal, State, and County Lands underlying the Proposed Volk Falls MOA

State Natural Areas	
Arbutus Oaks	Coon Fork Barrens
Bauer-Brockway Barrens	East Fork of the Black River
Bauer-Brockway Barrens	North Fork Eau Claire River
Brockway Ponds	Pea Creek Sedge Meadow
Buffalo River Trail Prairies	South Fork Barrens
Canoe Landing Prairie	Upper Black River
Castle Mound Pine Forest	Vosse Coulee
Catfish Eddy Terraces	
WDNR-Managed Lands	
Augusta Wildlife Area	North Branch Trempealeau River Fishery Area
Big Creek Fishery Area	Rem-Washington Coulee
Black River State Forest	Smith Pond Fishery Area
Buffalo River Fishery Area	South Beaver Creek Wildlife Area
Halls (Stockwell) Creek Fishery Area	Tank Creek Fishery Area
Lakes Coulee Wildlife Area	
County Forests	
Clark County Forest	Monroe County Forest
Jackson County Forest	Eau Claire County Forest

Source: WDNR 2014i.
Note: Excludes state trails, public access trails, easements, plant nurseries, aquatic hatcheries, maintained aquatic intermittent reproduction areas (REMs), and stations.

The Black River State Forest, located in eastern Jackson County beneath the proposed Volk Falls MOA is the largest state managed land area beneath the Volk Field SAA, comprising approximately 68,000 acres (Jackson County 2010). The forest consists largely of white pine (*Pinus strobes*), red pine (*Pinus resinosa*), jack pine (*Pinus banksiana*), and aspen (*Populus* spp.); however, the Black River State Forest supports a wide range of plant and wildlife species including 48 rare plant species and 119 rare wildlife species (Jackson County 2010). It offers recreational opportunities such as camping, hunting, canoeing, skiing, hiking, and All Terrain Vehicle (ATV) riding. The Black River State Forest contains over 100 campsites and serves over 300,000 visitors annually (Jackson County 2010).

<u>Volk West MOA</u>

The proposed Volk West MOA, which includes portions of the existing Falls 2 MOA and Volk South MOA as well as the existing Volk West MOA, is located over portions of Clark, Jackson, Juneau, Monroe, and Wood counties in central Wisconsin. Similar to the rest of the ROI, land uses beneath the proposed Volk West MOA consist primarily of agricultural uses, forested lands, some wetlands, and other types of open space land. Sensitive land uses and scenic resources managed by Federal and state agencies include substantial areas underlying the airspace, consisting of one NWR, one Federal Wildlife Management Area, 25 State Natural Areas, six WDNR-Managed Lands, and five County Forests (see Table 3-9).

The Necedah NWR is located approximately nine miles north of Volk Field CRTC in Juneau and Monroe counties and comprises approximately 43,700 acres of sedge meadow, savanna, prairie, and pine oak forest habitat (U.S. Fish and Wildlife Service [USFWS] 2014b). Necedah NWR, which is a known avoidance area within the existing Volk Field SAA (refer to Section 3.2, *Noise*, Section 3.4, *Biological Resources*, and Section 3.7, *Safety*) is home to over 110 species of migratory birds, three species of amphibians, 14 types of reptiles, and 44 species of butterflies in central Wisconsin. This refuge represents the largest federally managed land in the ROI. Recreational activities in the refuge include hunting, fishing, wildlife viewing, photography, and foraging.

The Clark County forest comprises approximately 133,000 acres and is certified to the standards of the Forest Stewardship Council (Clark County 2014). The forest hosts a variety of species, including the Federal- and state-listed species such as the endangered Karner blue butterfly (*Lycaeides melissa samuelis*). Recreational opportunities within the forest includes ATV and snowmobile riding, fishing, hunting, horseback riding, skiing, hiking, camping, wildlife observation, foraging, and mountain biking (Clark County 2014). Other County Forests in surrounding and mountain biking (Clark County 2014). Other County Forests in surrounding counties provide similar recreational opportunities. The Clark County Forest and the Jackson County Forest are the two largest in the ROI.

Table 3-9. Federal, State, and County Lands underlying the Proposed Volk West MOA

Federal Lands	
Necedah National Wildlife Refuge	Necedah Wildlife Management Area
State Natural Areas	
Bear Bluff	Necedah Oak-Pine Savanna
Blueberry Trail	Owl Creek Fen Savanna
Cranberry Creek Mound Group	Powers Bluff Maple Woods
Deer Island	Red Oak Bottoms
Glenn Creek Barrens	Robinson Creek Pines
Hiles Wetlands	Skunk Creek Woods
Hog Island Tamaracks	Spaulding Fen
Jay Creek Pine Forest	Starlight Wetlands
Ketchum Creek Pines	Suk Cerney Wetlands
Kingston Pines and Fen	Washburn Marsh
Meadow Valley Barrens	Wildcat Ridge
Millston Sand Barrens	Yellow River Floodplain Forest
Necedah Oak-Pine Forest	
WDNR-Managed Lands	
Black River State Forest	Mill Creek Fishery Area
Jay Creek State Natural Area	Sandhill Wildlife Area
Meadow Valley Wildlife Area	Wood County Wildlife Area
County Forests	
Clark County Forest	Monroe County Forest
Jackson County Forest	Wood County Forest
Juneau County Forest	

Source: WDNR 2014i.
Note: Excludes state trails, public access trails, easements, plant nurseries, aquatic hatcheries, maintained aquatic intermittent reproduction areas (REMs), and stations.

Volk South MOA

The proposed Volk South MOA, which includes the southern portion of the existing Volk South MOA as well as an area not currently underlying existing military airspace, is located over portions of Juneau and Monroe counties in central Wisconsin. Similar to the rest of the ROI, land uses beneath the proposed Volk South MOA consist primarily of agricultural uses, forested lands, some wetlands, and other types of open space land. Sensitive land uses and scenic resources managed by Federal and state agencies include substantial areas underlying the airspace, consisting of one NWR, one Federal Wildlife

Management Area, eight State Natural Areas, seven WDNR-Managed Lands, and two County Forests (see Table 3-10).

Table 3-10. Federal, State, and County Lands underlying Volk South MOA

Federal Lands	
Necedah National Wildlife Refuge	Necedah Wildlife Management Area
State Natural Areas	
Buckhorn Barrens	Quincy Bluff and Wetlands
Dells of the Wisconsin River	Sohlberg Silver Lake
Lemonweir Bottomland Hardwood Forest	Suk Cerney Wetlands
Mill Bluff	Yellow River Oxbows
WDNR-Managed Lands	
Buckhorn State Park	Mill Bluff State Park
Buckhorn Wildlife Area	Quincy Bluff and Wetlands Natural Area
Dells of the Wisconsin River Natural Area	Yellow River Wildlife Area
Meadow Valley Wildlife Area	
County Forests	
Juneau County Forest	Monroe County Forest

Source: WDNR 2014i.
Note: Excludes state trails, public access trails, easements, plant nurseries, aquatic hatcheries, maintained aquatic intermittent reproduction areas (REMs), and stations.

<u>Volk East MOA</u>

The proposed Volk East MOA is located over portions of Adams, Columbia, Dodge, Green Lake, Marquette, Portage, Washara, Waupaca, Winnebago, and Wood counties in east-central Wisconsin, including areas to the north of the existing Volk East MOA, which are not currently underlying existing military airspace. Land uses beneath the proposed Volk East MOA consist primarily of agricultural uses; however, forested lands, some wetlands, and other types of open space land are also present. Sensitive land uses and scenic resources managed by Federal and state agencies include substantial areas underlying the airspace, consisting of one NWR, four Federal Waterfowl Production Areas, 41 State Natural Areas, 39 WDNR-Managed Lands, and two County Forests (see Table 3-11).

Table 3-11. Federal, State, and County Lands underlying Volk East MOA

Federal Lands	
Adams County Waterfowl Production Area	Waushara County Waterfowl Production Area
Fox River National Wildlife Refuge	Winnebago County Waterfowl Production Area
Marquette County Waterfowl Production Area	
State Natural Areas	
Bass Lake Fen	Myklebust Lake
Berlin Fen	Observatory Hill
Bohn Lake	Page Creek Marsh
Brooks Bluff	Pickerel Lake
Buena Vista Prairie Chicken Meadow	Plainfield Tunnel Channel Lakes
Buena Vista Quarry Prairie	Pope Lake
Comstock Bog-Meadow	Powers Bluff Maple Woods
Dells of the Wisconsin River	Princeton Prairie
Emmons Creek Barrens	Puchyan Prairie
Fountain Creek Wet Prairie	Quincy Bluff and Wetlands
French Creek North	Roche-a-Cri Mound
Germania Wet Prairie	Roche-a-Cri Woods
Karner Blue Meadow	Rush Lake
Koro Railroad Prairie	Skunk and Foster Lakes
Lawrence Creek	Snake Creek Fen
Little Bear Hemlocks	Summerton Bog
Lunch Creek Wetlands	Upper Fox Headwaters
Mecan River Pine Oak Forest	Wedde Creek Savanna
Mecan Springs	White River Prairie/Tamaracks
Mud Lake-Radley Creek Savanna	White River Sedge Meadow
Muir Park	
WDNR-Managed Lands	
Andrew Krakow Public Access and Fishery Area	Mecan River Fishery Area
Big Roche A Cri Fishery Area	Myklebust Lake Natural Area
Buena Vista Wildlife Area	Paul Olson Wildlife Area
Caves Creek Fishery Area	Pine River System Fishery Area
Central Wisconsin Grassland Conservation Area	Poygan Marsh Wildlife Area
Colburn Wildlife Area	Quincy Bluff and Wetlands Natural Area
Dells of the Wisconsin River Natural Area	Radley Creek Fishery Area
Deppe Wildlife Area	Rat River Wildlife Area

Table 3-11. Federal, State, and County Lands underlying Volk East MOA (Continued)

WDNR-Managed Lands (Continued)	
Emmons Creek Fishery Area	Richard A. Hemp Fishery Area
French Creek Wildlife Area	Roche A. Cri State Park
Germania Wildlife Area	Rogers Memorial Habitat preservation
Grand River Marsh Wildlife Area	Trout-Nace Creek Fishery Area
Greenwood Wildlife Area	Upper Neenah Fishery Area
Hartman Creek State Park	Waupaca River Fishery Area
John A. Lawton Fishery Area	White River Fishery Area
Lawrence Creek Wildlife Area	White River Marsh Wildlife Area
Leola Marsh Wildlife Area	Willow Creek Fishery Area
Little Plover River Fishery Area	Wolf River Bottoms Wildlife Area
Lower Wolf River Bottomlands Natural Resource Area	Wolf River Wildlife Area
Mead Wildlife Area	
County Forests	
Juneau County Forest	Wood County Forest

Source: WDNR 2014i.
Note: Excludes state trails, public access trails, easements, plant nurseries, aquatic hatcheries, maintained aquatic intermittent reproduction areas (REMs), and stations.

The Fox River NWR, located in Marquette County, is comprised of approximately 1,054 acres of wetland and upland habitat along the Fox River (USFWS 2013a). The Fox River NWR is closed to the public, with the exception of deer hunters during designated archery and gun seasons. The refuge contains upland habitats of white, black, and bur oak, oak savanna, and dry prairie. Additionally, the refuge contains wetlands habitats consisting of sedge meadow, wet prairie, shallow marsh, fens, lowland forest, shrub-carr thicket, and deep marsh. The Fox River NWR emphasizes the management of these special habitat resources, along with the iconic species they support, such as the greater sandhill crane (*Grus canadensis tabida*) and butterfly milkweed (*Asclepias tuberosa*) (USFWS 2013a).

3.3.2.3 Hydrologic Features beneath the Volk Field SAA

In addition to small streams and wetlands features, there are a number of rivers within the ROI including the Eau Claire River, Fox River, and Yellow River. There are two wild and scenic rivers in Wisconsin, including the Wolf River, which is located beneath the proposed Volk East MOA expansion area (USFWS 2015a). These riverine features, including the wild and scenic Wolf River, originate from or drain into a number of large lakes which also occur beneath the ROI. Lake Winnebago is the largest lake in central Wisconsin. This lake, which spans Calumet, Fond du Lac, and Winnebago counties, is approximately 131,939 acres in size and reaches depths of up to 21 feet (WDNR 2013a). Petenwell Lake, the largest lake in the ROI, comprises approximately 23,173 acres within Wood County. Further, Castle Rock Lake is located just south of Petenwell Lake, in Juneau County, and is approximately 12,981 acres (WDNR 2013a). Lake Butte Des Morts and Lake Poygan, beneath the proposed Volk East MOA, are two smaller lakes just west of Lake Winnebago. Lake Butte Des Morts comprises approximately 8,581 acres within Winnebago County, while Lake Poygan is approximately 14,024 acres and is located farther west, in Waushara County.

3.3.2.4 Tribal Lands within the Vicinity of the Volk Field SAA

As described in greater detail in Section 3.5, *Cultural Resources*, federally recognized tribes with potential interests in Wisconsin include Bad River Band of Lake Superior Chippewa Indians, Ho-Chunk Nation, Keweenaw Bay Indian Community, Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wisconsin, Lac du Flambeau Band of Lake Superior Chippewa Indians, Lac Vieux Desert Band of Lake Superior Chippewa Indians Menominee Indian Tribe of Wisconsin, Oneida Nation of Wisconsin, Red Cliff Band of Lake Superior Chippewa, and Stockbridge-Munsee Community Band of Mohican Indians (National Conference of State Legislatures 2014).

Of these federally recognized tribes only the Ho-Chunk Nation, Oneida Nation of Wisconsin, and Menominee Tribe of Wisconsin are known to have tribal lands within the vicinity of the ROI. The Ho-Chunk Nation does not have a contiguous reservation; however, the Ho-Chunk owns various parcels of land in many different counties in central Wisconsin (Wisconsin State Tribal Relations Initiative [WSTRI] 2010). The Ho-Chunk's lands in Tomah and Black River Falls represent the closest tribal lands to the Volk Field SAA (see Section 3.5, *Cultural Resources*). The Oneida Reservation is a 65,400-acre reservation located approximately 100 miles to the northeast of Volk Field CRTC, in Brown and Outagamie counties (WSTRI 2011). This reservation is the closest contiguous tribal reservation to Volk Field SAA (see Figure 3-6 in Section 3.5, *Cultural Resources*).

3.4 BIOLOGICAL RESOURCES

3.4.1 Definition of Resource

3.4.1.1 Federally and State Threatened and Endangered Species

Biological resources include native or naturalized plants and wildlife and the habitats in which they occur. Sensitive biological resources are defined as those plant and wildlife species listed as threatened or endangered, or proposed as such, by the USFWS and WDNR. The Federal Endangered Species Act (ESA) of 1973 protects listed species against take, which includes killing, harming, harassing, or any action that may damage their habitat. Federal Species of Concern are not protected by the Federal ESA; however, these species warrant consideration because they could become listed and protected at any time.

Wisconsin State Statute (WSS) 29.604 defines and further outlines regulations concerning threatened and endangered species in the State of Wisconsin. A state list of threatened and endangered species is maintained by the Office of Endangered and Nongame Species (OENS), WDNR under Wisconsin Administrative Code (WAC) NR 27.

3.4.1.2 Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act

The Bald and Golden Eagle Protection Act (BGEPA) of 1940 (Public Law [PL] 87-884; 16 U.S. Code [USC] §668a-d) prohibits the taking or harming (i.e. harassment, sale, or transportation) of bald eagles or golden eagles, including their eggs, nests, or young, without appropriate permit.

Migratory birds, as listed in 50 Code of Federal Regulations (CFR) 10.13, are ecologically and economically important to recreational activities in the U.S., including bird watching, studying, feeding, and hunting. The Migratory Bird Treaty Act (MBTA) of 1918 (PL 65-186; 16 USC §703 et seq.) provides for regulations to control taking of migratory birds, their nests, eggs, parts, or products without the appropriate permit and provides enforcement authority and penalties for violations. Additionally, in 2001, Executive Order (EO) 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, was issued to focus attention of Federal agencies on the environmental effects to migratory bird species and, where feasible, implement policies and programs, which support the conservation and protection of migratory birds. For further discussion regarding Bird/Wildlife Aircraft Strike Hazard (BASH) and avoidance measures incorporated into flight procedures, see Section 3.7, *Safety*.

3.4.2 Existing Conditions

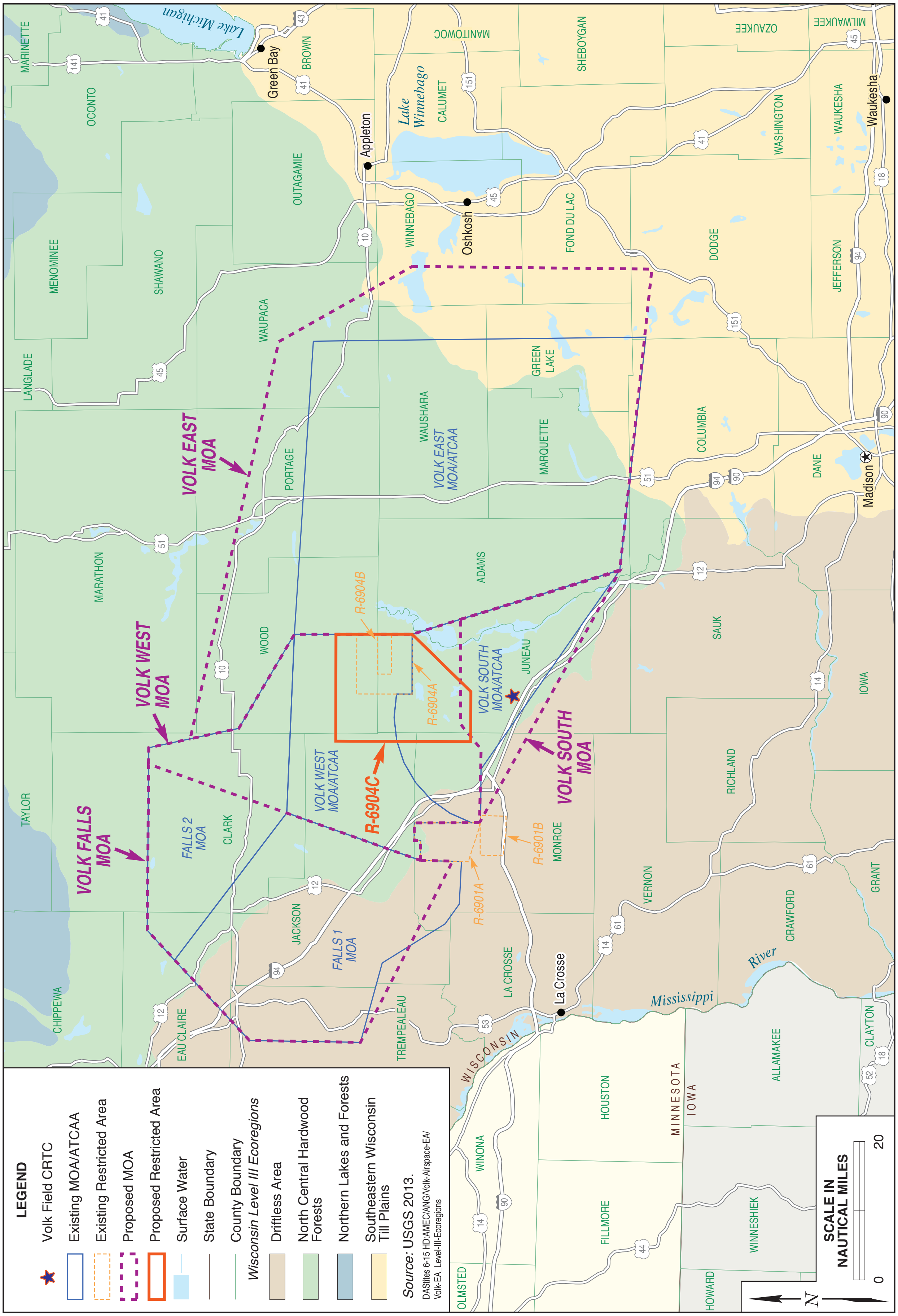
3.4.2.1 Regional Biological Setting

USEPA Ecoregions

Central and east-central Wisconsin encompasses various ecoregions including the Southeastern Wisconsin Till Plains, North-Central Hardwood Forest, and a small portion of the Driftless Area, as well as Lake Michigan (U.S. Geological Survey [USGS] 2013) (see Figure 3-5). The Southeastern Wisconsin Till Plains contain a mosaic of vegetation types and represent a transition between the hardwood forests and oak savannas of the ecoregions to the west and the tall-grass prairies of the Central Corn Belt Plains to the south; however, it is mostly used as cropland.

The North-Central Hardwood Forest consists of nearly level to rolling till plains, lacustrine basins, outwash plains, and rolling to hilly moraines comprise the physiography of this region. Land use in this ecoregion consists of forests, wetlands and lakes, cropland agriculture, pasture, and dairy operations. The Driftless Area consists of hilly uplands and a loess-capped plateau with deeply dissected streams and few lakes. Much of the land use is dedicated to livestock and dairy farming.

Within these ecoregions there are a variety of regional landscape ecosystems with characteristic vegetation communities and wildlife. Regional vegetation and common wildlife species are described below for the entire ROI. The ecosystems within the ROI are described in the following sections by airspace area using the descriptions provided in the *Regional Landscape Ecosystems of Michigan, Minnesota, and Wisconsin: A Working Map and Classification* (Albert 1994).



Biological Resources within the Vicinity of the ROI

FIGURE 3-5

EA

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

Regional Vegetation

Vegetation communities underlying the ROI have largely been developed for agricultural use (i.e., cultivated crops or grassland used for livestock grazing). However, the following describes the dominant native vegetative communities included within the ROI.

Oak Savanna dominates much of the central and southern portions of Wisconsin and much of the ROI that is not developed for agricultural use. Dominate plant species in this community include bur oak (*Quercus macrocarpa*), white oak (*Quercus alba*), and bluestem (*Andropogon gerardii*).

Pine Barrens constitutes a small region in central Wisconsin that is included in the ROI beneath the proposed Volk West, Volk South, and Volk East MOAs. Dominant plant species in this community include Jack pine (*Pinus banksiana*) and various prairie grasses.

Sedge Meadows are found in small fragmented areas throughout southern Wisconsin, some of which lie within the ROI. Dominant plant species in this community include sedges, blue joint (*Calamagrostis canadensis*), and cordgrass (*Spartina* spp.).

Northern Mesic Forest constitutes a majority of northern Wisconsin and the northern-most border of the ROI. Dominant plant species in this community include maple (*Acer* spp.), hemlock (*Tsuga* spp.), and yellow birch (*Betula alleghaniensis*).

Southern Mesic Forest is found in the southeastern portion of the ROI, beneath the proposed Volk East MOA. Dominant plant species in this community include sugar maple (*Acer saccharum*), basswood (*Tilal americana*), and elm (*Ulmus* spp.).

Pine Forests occur in small fragmented portions throughout central Wisconsin. Dominant plant species in this community include white pine (*Pinus strobus*) and red pine (*Pinus resinosa*).

Conifer Swamps occur in small fragmented areas throughout central and northern Wisconsin. Dominant plant species within this community include black spruce (*Picea mariana*), tamarack (*Larix laricina*), and cedar (*Cedrus* spp.).

Regional Wildlife

As described above, the ROI overlies a variety of habitat types that support a diverse range of wildlife species. Wildlife species commonly found within the ROI include brown bat (*Myotis lucifugus*), black bear (*Ursus americanus*), beaver (*Castor* spp.), eastern chipmunk (*Tamias striatus*), coyote (*Canis latrans*), white-tailed deer (*Odocoileus virginianus*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), deer mouse (*Mus musculus*), western harvest mouse (*Reithrodontomys megalotis*), meadow jumping mouse (*Zapus hudsonius*), mink (*Neovison vison*), eastern mole (*Scalopus aquaticus*), star nosed mole (*Condylura cristata*), masked shrew (*Sorex cinereus*), short-tailed shrew (*Blarina carolinensis*), muskrat (*Ondatra zibethicus*), cottontail rabbit (*Sylvilagus* spp.), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), southern flying squirrel (*Glaucomys volans*), thirteen-lined ground squirrel (*Ictidomys tridecemlineatus*), red squirrel (*Sciurus vulgaris*), least weasel (*Mustela nivalis*), gray wolf (*Canis lupus*), and woodchuck (*Marmota monax*).

Federally Threatened and Endangered Species

A number of federally listed threatened and endangered species occur within the ROI. Each of these species currently experience military flight activity in existing military airspace within their distribution, including the Karner blue butterfly, which is known to occur within the Hardwood Range (WIANG 2008). Each of these federally listed species is described in more detail below.

Karner Blue Butterfly. The Karner blue butterfly (*Lycaeides melissa samuelis*), which was federally listed as an endangered species in 1991, is found in the majority of the counties within the ROI, including within the Hardwood Range (WIANG 2008). This butterfly is found in dry and sandy habitats, including oak savanna and jack pine barrens, and less often, in dune communities (see Table 3-12). Wild lupine (*Lupinus* spp.) is the only known larval food plant for this species, and therefore is closely tied to the butterfly's ecology and distribution (WIANG 2008; USFWS 2012a). A variety of other understory plants associated serve as nectar sources for adults. The USFWS prepared a recovery plan for the Karner blue butterfly (2003) that describes and prioritizes actions needed to conserve and restore this species. The recovery plan was last updated in 2011 and

Table 3-12. Karner Blue Butterfly

Species	Description	Distribution/Habitat	Diet
Karner Blue Butterfly	• Males have a blue dorsal side with narrow black margins • Females have grayish brown dorsal side with irregular banks of orange on the upper wings	• Occur in dry and sandy habitats	• Larvae depend on wild lupine as a food source • Adults feed on nectar in oak savanna and Jack pine barrens

is currently being implemented by the USFWS and its partners. Wisconsin has implemented a Statewide Habitat Conservation Plan that permits human activities (such as roadside maintenance and timber harvests) in areas that support Karner blue butterflies but ensures that these activities are conducted in ways that conserve and protect the species and its habitat (WDNR 2014b).

Poweshiek Skipperling. The poweshiek skipperling (*Oarisma poweshiek*) was proposed to be listed as an endangered species in October, 2013, and is listed as endangered in the State of Wisconsin (WDNR 2014g). In Wisconsin, the poweshiek skipperling is found in Green Lake and Waukesha counties and requires wet mesic prairie habitat with native grasses, sedges, and a significant number of plants from the sunflower family (see Table 3-13). Larvae are reported to feed primarily on prairie dropseed (*Sporobolis heterolepis*) and little bluestem (*Schizachyrium scoparium*). The poweshiek is a univoltine species. Adults are present mid-June through July, peaking the first two weeks of July; eggs and larvae are present on host plants from late June through the winter until pupation in late May (WDNR 2014g).

Table 3-13. Poweshiek Skipperling

Species	Description	Distribution/Habitat	Diet
Poweshiek Skipperling	• Wings have a triangular shape and are pointed at the tips. Upper sides of the wings are grayish-brown with a slightly lavender cast, and have orange lines at the edges and sometimes on the veins. Underwing veins are lined silvery white.	• Green Lake and Waukesha counties • Wet mesic prairie	• Larvae depend on prairie dropseed and little bluestem as a food source

Kirtland's Warbler. Kirtland's warbler (*Dendroica kirtlandii*) is listed as federally endangered and is also listed as endangered by the State of Wisconsin. It has breeding populations in Adams and Marinette counties; however, it is also found in Bayfield, Douglas, Jackson, Vilas, and Washburn counties in Wisconsin. Kirtland's warblers prefer dense, patchy jack pines forests with limited hardwood components (see Table 3-14). Typically, Kirtland's warblers breed in young jack pine strands interspersed with many small openings and minimal ground cover consisting of dense thickets and grassy openings; however, the primary breeding site in Wisconsin is a red pine plantation in Adams County (WDNR 2014d; WDNR 2014e). Minimum suitable patch sizes range from 12 to 32 hectares. The USFWS prepared a recovery plan for Kirtland's warbler that describes and prioritizes actions needed to conserve and restore this species. The recovery plan was last updated in August 2012 and is currently being implemented by the USFWS and its partners (USFWS 2012b). Additionally, the WDNR prepared and updates a species guidance document (WDNR 2014e).

Table 3-14. Kirtland's Warbler

Species	Description	Distribution/Habitat	Diet
Kirtland's Warbler	• A large warbler, with blue-grey upperparts, a yellow belly, and dark steaks on the back. Individuals have white eye crescents, under-tail coverts, and wing bars. • Males contain black coloration on the head, which females lack	• Adams, Bayfield, Douglas, Jackson, Marinette, Vilas, and Washburn counties • Jack pine forest	• Adult and larval moths, grasshoppers, sawflies, and flies • Jack pine budworm (*Choristoneura pinus*) • Small seasonal fruits (e.g., blueberries)

Whooping Crane. The Whooping crane (*Grus americana*) is listed as federally endangered but in the region is listed as an Experimental Population, Non-Essential and is also listed as a special concern species by the State of Wisconsin, although also not as a state endangered species (WDNR 2014m)[7]. It has breeding

[7] Because the Whooping crane is identified as an Experimental Population, that is Non-Essential to the federally endangered classification in this region, it is not characterized on the Federally Listed Species with Potential to Occur in Counties tables discussed under Section 3.4.2.2. Instead, it is factored under the State-Listed Threatened and Endangered Species with Potential to Occur

populations in and around the Necedah National Wildlife Refuge (NWR) found in Juneau and Adams counties and likely other counties as the species has been identified within 43 counties statewide between 2002 and 2007 (WDNR 2012b). Whooping cranes prefer shallow waters and emergent wetland vegetation which tend to border the managed impoundments around the Necedah NWR, while others utilize the natural sedge meadows. In addition to the emergent vegetation zones, the birds use palustrine and upland scrub-shrub areas associated with the marshes for daytime foraging and loafing activities (see Table 3-15). Typically, Whooping Cranes nest and breed in shallow diatom ponds that contain aquatic plants, these habitats are found within Necedah NWR, Meadow Valley State Wildlife Area, and surrounding wetlands of Monroe, Jackson, Wood, Marathon, Adams, and Marquette counties. As whooping cranes spread throughout the state, it is also reasonable to assume that nesting may occur in similar suitable habitat along the lower Wisconsin and Mississippi Rivers and near Horicon Federal and State Wildlife Refuges. (WDNR 2006; WDNR 2014m). Whooping cranes usually nest in the same general vicinity year to year, in territories termed "composite nesting areas that average 410 hectares (WDNR 2006). The WDNR prepared a recovery plan for the Whooping crane that describes and prioritizes actions needed to conserve and restore this species. The recovery plan was last updated in 2007 and is currently being implemented by the International Whooping Crane Recovery Team with the Whooping Crane Eastern Partnership, a partnership with nine government and private sector organizations tasked with the mission of restoring a second self-sustaining migratory population of the species (WDNR 2006).

in Counties tables. The Necedah NWR where the WDNR recovery program currently monitors nests is located in northern Juneau County and the species is identified in 43 counties statewide.

Table 3-15. Whooping Crane

Species	Description	Distribution/Habitat	Diet
Whooping Crane	• A large five foot tall crane, with wingspans seven- to eight feet. • Adult whooping cranes are almost entirely white with black wingtips, facial markings and legs and feet, with a bare patch of red skin on the top of their heads.	• Juneau, Adams, and 41 other counties • Marshes and shallow wetlands associated with rivers, ponds, and other areas with standing water, and seasonal use of mudflats and oak savannah	• grain, tubers, rhizomes, blueberries, and terrestrial insects, especially grasshoppers • fish, frogs, and aquatic invertebrates

Snuffbox. The snuffbox (*Epioblasma triquetra*) is a freshwater mussel that is federally and state listed as endangered in Wisconsin. Within the State of Wisconsin, it is found in Outagamie, Pierce, Polk, St. Croix, Shawano, Waupaca, and Waushara counties. It is generally found in gravel riffles in clean waters of medium-sized streams within the drainages of Lake Michigan and the Mississippi River (USFWS 2014d; WDNR 2014j) (see Table 3-16). In Wisconsin, the snuffbox occurs in the Embarrass, St. Croix, Wolf, and Little Wolf rivers. Adult mussels usually bury deep into sand, gravel, and/or cobble substrates, expect when they are spawning (USFWS 2014d). The host fish of this species is the logperch (*Percina caprodes*) (WDNR 2014j). Breeding takes place from May through July.

Table 3-16. Snuffbox

Species	Description	Distribution/Habitat	Diet
Snuffbox	• A small to medium-sized freshwater mussel with a yellowish, green, or brown shell. The shell may also have green rays, blotches, or lines. Shells become darker with age. Shells are more triangular in females and more ovate in males.	• Pierce, St. Croix, Shawano, Outagamie, Waupaca, and Waushara counties • Gravel, sand, and/or cobble in medium-sized streams and freshwater environments	• Algae, bacteria, detritus, microscopic animals, and dissolved organic materials

Higgins' Eye. Higgin's eye (*Lampsilis higginsi*) is a freshwater mussel that is federally and state listed as endangered within the State of Wisconsin. This species occurs within the western and south-western portions of Wisconsin, within the Mississippi, Lower Wisconsin, and St. Croix rivers (WDNR 2014b) (see Table 3-17). It is found in larger rivers within deeper water and moderate currents (USFWS 2012c). The mussels bury themselves in sand and gravel bottoms and partially expose the edge of their slightly-open shells so that water can pass through. They filter the water and siphon food such as algae and bacteria. The sauger (*Sander canadensis*), walleye (*Sander vitreus*), yellow perch (*Perca flavescens*), largemouth (*Micropterus salmoides*) and smallmouth bass (*Micropterus dolomieu*), and freshwater drum are suitable hosts for the reproduction of this mussel (USFWS 2012c).

Table 3-17. Higgins' Eye

Species	Description	Distribution/Habitat	Diet
Higgin's Eye	• Higgin's eye have rounded to slightly oval shells of a yellowish brown color. The shell can reach up to four inches long. Males have a pointed side while females have a squared side.	• Mississippi, Lower Wisconsin, and St. Croix rivers • Gravel, sand, and/or cobble in larger streams and freshwater river environments	• Algae, bacteria, and other microscopic animals

Bullhead. The bullhead mussel (*Plethobasus cyphyus*) also commonly referred to as a sheephead mussel, is a freshwater mussel that is federally listed as endangered and is listed as endangered by the State of Wisconsin (WDNR 2014n). This species occurs within the western and south-western portions of Wisconsin, within the Illinois, Cumberland, Mississippi and Tennessee River basins (USFWS 2012e) (see Table 3-18). It is found in larger rivers and streams, usually in shallow areas with moderate to swift currents (USFWS 2012e). The mussels bury themselves in sand and gravel bottoms and partially expose the edge of their slightly-open shells so that water can pass through. They filter the water and siphon food such as algae and bacteria. The sauger (*Stizostedion canadense*) is the only confirmed wild host for the sheepnose, although fathead minnow (*Pimephales promelas*), creek chub (*Semotilus atrromaculatus*), central stoneroller (*Campostoma anomalum*) and brook stickleback (*Culaea inconstans*) are suitable hosts for the reproduction of this mussel (USFWS 2012e).

Table 3-18. Bullhead Mussel

Species	Description	Distribution/Habitat	Diet
Bullhead Mussel	• A medium-sized mussel that grows to about 5 inches in length. The shell is thick and solid, and the overall shape is slightly longer than wide and somewhat inflated.	• Western and south-western portions of Wisconsin, and within the Illinois, Cumberland, Mississippi and Tennessee River basins • Gravel, sand, and/or cobble in larger streams and freshwater river environments	• Algae, bacteria, and other microscopic animals

Northern Monkshood. Northern monkshood (*Aconitum noveboracense*) is federally listed as a threatened plant species, and is also listed as threatened by the State of Wisconsin. Northern monkshood is a perennial that reproduces from both seed and small tubers, and is usually found on moist moss ledges and cliff bases with cold air drainage, preferring cool soil environments that are moist and slightly acidic (WDNR 2014f) (see Table 3-19). It is also sometimes found on partially shaded sandstone cliffs and talus slopes. In Wisconsin, northern monkshood occurs in the south-western portion of the state, including Monroe County; however, the western coulee and ridge landscape which it prefers also occurs in Jackson and Juneau counties (WDNR 2014f). Blooming takes place from late June to late September and fruiting occurs in early August through late September.

Table 3-19. Northern Monkshood

Species	Description	Distribution/Habitat	Diet
Northern Monkshood	• Dark purple to blue (and occasionally white) flowers which are dome-like, hooded and born at the top of the plant • Broad leaves divided into five to seven lobes and deeply clefted	• Grant, Monroe, Vernon, Richland, and Sauk counties • Moist cliffs and algific talus slope	• N/A

Fassett's Locoweed. Fassett's locoweed (*Oxytropis campestris* var. *chartacea*) is listed as federally threatened and is also listed as endangered by the State of Wisconsin. It is found exclusively in Bayfield, Douglas, Portage and Waushara counties in Wisconsin. Fassett's locoweed is typically found in sandy, fluctuating lakeshore environments and prefers sandy, rocky and gravelly soils (WDNR 2014a) (see Table 3-20). Blooming occurs in early May through late June, while fruiting occurs in late June through late July. Its appearance is sporadic, and occurs during the spring from underground perennial tap roots (USFWS 2003a). The species reproduces by seed, and is thought to be dependent on the open habitat provided during low lake levels and a large seed bank or dormant seeds for long-term population maintenance.

Table 3-20. Fassett's Locoweed

Species	Description	Distribution/Habitat	Diet
Fassett's Locoweed	• Flowers occur in dense spikes • Densely hairy leaves at first with long hairs with limited spreading. Later hairs are thinner and partly smooth.	• Bayfield, Douglas, Portage, and Waushara counties • Sandy; Inland beach	• N/A

Prairie White-fringed Orchid. The prairie white-fringed orchid (*Platanthera leucophea*) is listed as federally threatened and endangered in the State of Wisconsin. It is found in several counties in Wisconsin, including Green Lake and Winnebago counties (WDNR 2014h). These orchids typically occur in mesic or wet tallgrass prairies and meadows. They have also been found in old fields, roadside ditches, bogs, fens, and sedge meadows (USFWS 2014c) (see Table 3-21). They prefer moist to wet, and sometimes calcareous soils. The species relies on fragrant flowers to attract hawkmoths (*Sphingidae*) in order to transfer pollen from flower to flower. Blooming occurs in early June through early August. The species also has a symbiotic relationship with soil-inhabiting fungus on which it relies for proper water and nutrient uptake (WDNR 2014h; USFWS 2014c).

Table 3-21. Prairie White-fringed Orchid

Species	Description	Distribution/Habitat	Diet
Prairie White-fringed Orchid	• Flower stalks of up to 47 inches tall, with up to 40 white flowers approximately an inch long. Pedals are toothed; the 'teeth' originate from three wedge-shaped lobes.	• Many counties, including Green Lake and Winnebago counties • Mesic or wet tallgrass, prairies, bogs, fens, and sedge meadows.	• N/A

Northern Long-eared Bat. The northern long-eared bat (*Myotis septentrionalis*) is a federally threatened species and is also listed as threatened and critically imperiled by the State of Wisconsin (WDNR 2014n). The species is found statewide, although never abundant, and have a larger distribution from Alaska to Florida, and is absent from western states. Northern long-eared bats hibernate deep in crevices in caves and abandoned mines in winter. They prefer to hang alone rather than in clusters and generally roost in tall trees with a dynamic forest structure that are in close proximity to wetlands or other riparian habitat (see Table 3-22). Typically, northern long-eared bats breed before hibernation in the Fall, and then after hibernation, females will form small maternity colonies along the trunks of trees (WDNR 2014o).

Table 3-22. Northern Long-eared Bat

Species	Description	Distribution/Habitat	Diet
Northern Long-eared Bat	• A small bat with light to dark brown fur • The ears are long and when folded alongside the head, and extend longer than 3 mm past the tip of the nose.	• Roost alone in tall trees in close proximity to wetlands or other riparian habitat • In winter they hibernate deep in crevices in caves and abandoned mines	• Beetles, moths and flies • Prefer prey that is sitting on leaves and twigs rather than insects that are flying

Eastern Massasauga. The eastern Massasauga (*Sistrurus catenatus*) is proposed for listing as a federally threatened species and is also listed as endangered and critically imperiled by the State of Wisconsin (WDNR 2014n, USFWS 2013b). It has breeding populations ranging from western New York and southern Ontario to southern Iowa, and is found present in the Necedah NWR. Eastern Massasauga prefer to live in wet areas including wet prairies, marshes and low areas along rivers and lakes, and hibernate alone in crawfish burrows, under logs and tree roots or in small mammal burrows (see Table 3-23). While there is no specific recovery plan for the species, there is a Candidate Conservation Agreements with Assurance conservation plan for the species at the Tiffany Wildlife Area in the Lower Chippewa River Bottoms in Wisconsin (USFWS 2015b).[8]

Table 3-23. **Eastern Massasauga**

Species	Description	Distribution/Habitat	Diet
Eastern Massasauga	• Adults are gray or light brown with large brown blotches on the back and on the sides. Young are more brightly colored • The belly is marbled dark gray or black and there is a narrow, white stripe on its head. Its tail has several dark brown rings and is tipped by gray-yellow horny rattle	• Wet areas including wet prairies, marshes and low areas along rivers and lakes • Hibernation occurs alone in crawfish burrows, under logs and tree roots or in small mammal burrow	• Small rodents like mice and voles • Sometimes eat frogs and other snakes

<u>Migratory Birds</u>

The Volk Field SAA is located on the eastern edge of the Mississippi Flyway and the western edge of the Atlantic Flyway, both major bird migration corridors (see Figure 3-7 in Section 3.7, *Safety*), and large numbers of birds, particularly waterfowl, fly through the region (including the affected airspace) during spring and fall migrations, using water bodies and wildlife refuges as habitat along the way. Necedah NWR is located beneath the Volk West and South MOAs and is a temporary habitat for migrating birds. Consequently, per Volk Field CRTC SOPs, military aircraft utilizing Volk Field SAA are required to avoid Necedah NWR overflight below 1,000 feet AGL annually and below 2,000 feet AGL from the dates

[8] Because the eastern Massasauga is proposed for listing as a federally threatened species, it is not yet categorized as threatened or endangered, and is therefore not identified on the Federally Listed Species with Potential to Occur in Counties tables discussed under Section 3.4.2.2. Instead, it is factored under the State-Listed Threatened and Endangered Species with Potential to Occur in Counties tables.

15 September through 30 November. For additional discussion regarding migratory birds in relation to aircraft operation and military airspace use, see Section 3.7, *Safety*.

3.4.2.2 Biological Resources within the ROI

<u>Volk Falls MOA</u>

Ecosystems underlying the proposed Volk Falls MOA include Eau Claire, Neillsville Sandstone Plateau, Marshfield, and Black River Falls (Albert 1994). Characteristic vegetation within these ecosystems is described below. Additionally, federally and state-listed species with potential to occur below the proposed Volk Falls MOA are also described below.

Vegetation

Vegetation in the Eau Claire region, located in the western portion of the proposed Volk Falls MOA consists of heavily developed agricultural land uses on the ridge tops and in the alluvial valleys, while steep side slopes remain largely forested (Albert 1994). The northern-most region of the proposed Volk Falls MOA overlies of the Marshfield region. Vegetation within this ecosystem has mostly been converted to dairy farms and crop lands. Just south of the Marshfield is the Neillsville Sandstone Plateau. Large parts of this ecosystem remain forested, either because of low soil fertility or poor drainage. However, some lands have been converted to either pasture or crop land. The southern-most portion of the proposed Volk Falls MOA includes the Black River Falls ecosystem, which contains prevalent Jack pine-northern pin oak barrens, with some expanses of oak forest. While most of the dry barrens remain dominated by native vegetation, these areas are believed to have been altered by fire suppression (Albert 1994).

Threatened and Endangered Species

The proposed Volk Falls MOA overlies Clark, Eau Claire, Jackson, Monroe, and Trempealeau counties. Federally listed species with potential to occur in each of these counties are listed in Table 3-24 below.

Table 3-24. Federally Listed Species with Potential to Occur in Counties underlying the Proposed Volk Falls MOA

Scientific Name	Common Name	State Status	Federal Status
Clark			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Eau Claire			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Plethobasus cyphyus	Bullhead	E	E
Jackson			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Setophaga kirtlandii	Kirtland's warbler	-	E
Monroe			
Aconitum noveboracense	Northern monkshood	-	T
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Trempealeau			
Lampsilis higginsii	Higgins' Eye	E	E
Myotis septentrionalis	Northern long-eared bat	T	T

Source: USFWS 2014a.

In addition to the federally listed species with potential to occur within the footprint of proposed Volk Falls MOA, there are a number of state-listed threatened and endangered species with potential to occur in this area. State-listed species for each county within the footprint of the proposed Volk Falls MOA are presented in Table 3-25 below. For a full list of threatened and endangered species found in each county, see Appendix D, *Biological Resources*.

Table 3-25. State-Listed Threatened and Endangered Species with Potential to Occur in Counties underlying the Proposed Volk Falls MOA

County	Number of State-Listed Endangered Species	Number of State-Listed Threatened Species.
Clark	3	3
Eau Claire	9	12
Jackson	10	23
Monroe	6	22
Trempealeau	11	18

Note: Many of these state-listed species are found in multiple counties, so the numbers in the table overlap.

Volk West MOA

The northern-most region of the area underlying the proposed Volk West MOA consists of Marshfield ecosystem, which has been largely converted to dairy farms and crop lands as described above. The Neillsville Sandstone Plateau stretches across the central region beneath the proposed Volk West MOA. Immediately south of the Neillsville Sandstone Plateau region is the Black River Falls region in the west and Camp Douglas region in the east. Additionally, part of the Eau Claire ecosystem is located in the southwest corner of the Volk West MOA area (Albert 1994).

Vegetation

Vegetation within the Marshfield ecosystem has mostly been converted to dairy farms and crop lands. Within the Neillsville Sandstone Plateau ecosystem, large areas remain forested, either because of low soil fertility or poor drainage. However, some lands have been converted to either pasture or crop land. The Black River Falls ecosystem contains prevalent jack pine-northern pin oak barrens, with expanses of oak forest. The Camp Douglas region remains mostly dominated by native vegetation, consisting of a broad zone of conifer-dominated swamp forest and a several-mile-wide zone of marsh and sedge meadow along the lake plane. Vegetation in the Eau Claire region in the western portion of the area underlying the proposed Volk Falls MOA consists of heavily developed land uses on the ridge tops and in the alluvial valleys, while steep side slopes remain largely forested (Albert 1994).

Threatened and Endangered Species

The proposed Volk West MOA overlies Adams, Clark, Jackson, Juneau, Monroe, and Wood counties. The federally listed species with potential to occur in each of these counties are listed in Table 3-26 below.

Table 3-26. Federally Listed Species with Potential to Occur in Counties underlying the Proposed Volk West MOA

Scientific Name	Common Name	State Status	Federal Status
Adams			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Setophaga kirtlandii	Kirtland's warbler	-	E
Clark			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Jackson			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Setophaga kirtlandii	Kirtland's warbler	-	E
Juneau			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Monroe			
Aconitum noveboracense	Northern monkshood	-	T
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Wood			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T

Source: USFWS 2014a.

In addition to the federally listed species with potential to occur within the footprint of proposed Volk West MOA, there are a number of state-listed threatened and endangered species with potential to occur in this area. State-listed species for each county within the footprint of the proposed Volk West MOA are presented in Table 3-27 below. For a full list of threatened and endangered species found in each county, see Appendix D, *Biological Resources*.

Table 3-27. State-Listed Threatened and Endangered Species with Potential to Occur in Counties underlying the Proposed Volk West MOA

County	Number of State-Listed Endangered Species	Number of State-Listed Threatened Species
Adams	11	11
Clark	3	3
Jackson	10	23
Juneau	8	18
Monroe	6	22
Wood	6	9

Note: Many of these state-listed species are found in multiple counties, so the numbers in the table overlap.

Volk South MOA

The Black River Falls in the west and Camp Douglas in the east comprise the majority of ecosystems underlying the proposed Volk South MOA (Albert 1994).

Vegetation

As previously described, the Black River Falls ecosystem consists of prevalent jack pine-northern pin oak barrens, with some dominance by oak forest. While most of the dry barrens remain dominated by native vegetation, they are believed to have been altered by fire suppression. The Camp Douglas region also remains mostly dominated by native vegetation, consisting of a broad zone of conifer-dominated swamp forest and a several-mile-wide zone of marsh and sedge meadow along the lake plane (Albert 1994).

Threatened and Endangered Species

The Volk Falls South MOA overlies Monroe, Juneau, and Adams counties. The federally listed species with potential to occur in each of these counties are listed in Table 3-28 below.

Table 3-28. Federally Listed Species with Potential to Occur in Counties underlying the Proposed Volk South MOA

Scientific Name	Common Name	State Status	Federal Status
Adams			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Setophaga kirtlandii	Kirtland's warbler	-	E
Juneau			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Monroe			
Aconitum noveboracense	Northern monkshood	-	T
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T

Source: USFWS 2014a.

In addition to the federally listed species with potential to occur within the footprint of proposed Volk South MOA, there are a number of state-listed threatened and endangered species with potential to occur in this area. State-listed species for each county within the footprint of the proposed Volk South MOA are presented in Table 3-29 below. For a full list of threatened and endangered species found in each county, see Appendix D, *Biological Resources*.

Table 3-29. State-Listed Species with Potential to Occur in Counties underlying the Proposed Volk South MOA

County	Number of State-Listed Endangered Species	Number of State-Listed Threatened Species.
Adams	11	11
Juneau	8	18
Monroe	6	22

Note: Many of these state-listed species are found in multiple counties, so the numbers in the table overlap.

<u>Volk East MOA</u>

The affected area beneath the proposed Volk East MOA consists mostly of the Stevens Point ecosystem in the east, the Waupaca ecosystem in the central region, and the Madison ecosystem in the west (Albert 1994).

Vegetation

Vegetation in the Stevens Point ecosystem has largely been converted to agriculture. Within the Waupaca ecosystem, irrigation has allowed farming of large areas of level sandy land. Some of these soils are prone to erosion by wind after removal of vegetation cover. Many of the present forests are dominated by a mix of white, red, and bur oaks. The majority of land in within the Madison ecosystem has been intensively farmed. However, forested areas persist primarily on steeper end moraines and in poorly drained depressions (Albert 1994).

Threatened and Endangered Species

The proposed Volk Falls East MOA overlies Adams, Columbia, Dodge, Fond du Lac, Green Lake, Marquette, Portage, Waupaca, Waushara, Winnebago, and Wood counties. The federally listed species with potential occur in each of these counties are listed in Table 3-30 below.

In addition to the federally listed species with potential to occur within the footprint of proposed Volk East MOA, there are a number of state-listed threatened and endangered species with potential to occur in this area. State-listed species for each county within the footprint of the proposed Volk East MOA are presented in Table 3-31 below. For a full list of threatened and endangered species found in each county, see Appendix D, *Biological Resources*.

Table 3-30. Federally Listed Species with Potential to Occur in Counties underlying the Proposed Volk East MOA

Scientific Name	Common Name	State Status	Federal Status
Adams			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Setophaga kirtlandii	Kirtland's warbler	-	E
Columbia			
Lampsilis higginsii	Higgins' Eye	E	E
Myotis septentrionalis	Northern long-eared bat	T	T
Plethobasus cyphyus	Bullhead	E	E
Dodge			
Myotis septentrionalis	Northern long-eared bat	T	T
Fond du Lac			
Myotis septentrionalis	Northern long-eared bat	T	T
Green Lake			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Oarisma Poweshiek	Poweshiek skipperling	E	PT
Platanthera leucophaea	Prairie White-fringed Orchid	E	T
Marquette			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Portage			
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Oxytropis campestris var. *chartacea*	Fassett's Locoweed	E	T
Waupaca			
Epioblasma triquetra	Snuffbox	E	E
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T

Table 3-30. Federally Listed Species with Potential to Occur in Counties underlying the Proposed Volk East MOA

Scientific Name	Common Name	State Status	Federal Status
Waushara			
Epioblasma triquetra	Snuffbox	E	E
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Myotis septentrionalis	Northern long-eared bat	T	T
Oxytropis campestris var. *chartacea*	Fassett's Locoweed	E	T
Winnebago			
Platanthera leucophaea	Prairie White-fringed Orchid	E	T
Wood			
Karner blue butterfly	-	E	-

Source: USFWS 2014a.

Table 3-31. State-Listed Threatened and Endangered Species with Potential to Occur in Counties underlying the Proposed Volk East MOA

County	Number of State-Listed Endangered Species	Number of State-Listed Threatened Species
Adams	11	11
Columbia	24	32
Dodge	6	11
Fond du Lac	7	22
Green Lake	9	17
Juneau	8	18
Marquette	7	21
Portage	6	9
Waupaca	2	18
Waushara	7	15
Winnebago	10	13
Wood	6	9

Note: Many of these state-listed species are found in multiple counties, so the numbers in the table overlap.

3.5 CULTURAL RESOURCES

3.5.1 Definition of Resource

Cultural resources represent and document activities, accomplishments, and traditions of previous civilizations and link current and former inhabitants of an area. Depending on their conditions and historic use, these resources may provide insight to living conditions in previous civilizations and may retain cultural and religious significance to modern groups.

Archaeological resources comprise areas where prehistoric or historic activity measurably altered the environment or deposits of physical remains (e.g., lithic materials, ceramics, historic refuse, etc.) discovered therein. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic significance. Architectural resources generally must be more than 50 years old to be considered for inclusion in the National Register of Historic Places (NRHP), an inventory of culturally significant resources identified in the U.S.; however, more recent structures, such as Cold War-era resources, may also warrant protection if they have the potential to gain significance in the future. Traditional cultural resources can include archaeological resources, structures, neighborhoods, prominent topographic features, habitats, plants, wildlife, minerals that Native Americans or other groups consider essential for the persistence of traditional culture and properties.

A traditional cultural property is a property that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that are rooted in that community's history, and are important in maintaining the continuing cultural identity of the community. Properties eligible for inclusion must possess integrity of location, design, setting, materials, workmanship, feeling, and are associated with events that have made a significant contribution to the broad patterns of our history; or are associated with the lives of significant persons in or past; or embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or have yielded or may be likely to yield, information important in history or prehistory.

The principal Federal law addressing cultural resources is the National Historic Preservation Act (NHPA) of 1966, as amended (54 USC 300101 et seq.), and its implementing regulations (36 CFR Part 800). Compliance with these regulations, commonly referred to as the Section 106 process, involves identifying and evaluating historic or potentially historic properties; assessing the effects of Federal actions on historic properties; and consulting to avoid, reduce, or minimize adverse effects. As part of the Section 106 process, proponent agencies are required to consult with the State Historic Preservation Office (SHPO).

The term "historic properties" refers to cultural resources that meet specific criteria for eligibility for listing in the NRHP; however, to warrant protection historic properties need not be formally listed in the NRHP. According to the *National Register Bulletin #15, How to Apply the National Register Criteria for Evaluation,* historical significance is assigned to a property based on its association with individuals or events significant in local, state, or national history (Criteria A and B); its ability to embody the distinctive characteristics of a type, period, or method of construction (Criterion C); or its potential to yield information important to prehistory or history (Criterion D). Properties less than 50 years of age must possess exceptional historical importance to be included on the NRHP (Criterion G). Section 106 of the NHPA does not require the preservation of historic properties, but ensures that the decisions of Federal agencies concerning the treatment of these places result from meaningful considerations of cultural and historic values and of the options available to protect the properties. The implementation of the Proposed Action (Preferred Alternative) or any of its alternatives comprises an undertaking, as defined by 36 CFR 800.3, and is therefore subject to requirements outlined in Section 106 of the NHPA.

Department of Defense Instruction (DoDI) 4710.02, *Department of Defense Interactions with Federally Recognized Tribes* (14 September 2006) established parameters outlining the DoD's interactions with federally recognized tribes. The policy outlines DoD trust obligations, communication procedures with tribes on a government-to-government basis, consultation protocols, and actions to recognize and respect the significance that tribes ascribe to certain natural resources and properties of traditional cultural or religious importance. The policy also requires consultation with federally recognized tribes when proposed activities could impact tribal resources or interests.

The ROI for cultural resources is considered to be the area within which actions have the potential to affect existing or potentially occurring archaeological or historical resources. The ROI for cultural resources would encompass areas beneath the proposed airspace.

3.5.2 Existing Conditions

Existing buried cultural resources, artifacts, and other subsurface resources would not be impacted by implementation of the Proposed Action (Preferred Alternative) or any of its alternatives as the proposed airspace modification would not include any ground-disturbing activities (i.e., the Proposed Action and its alternatives are limited to changes to airspace areas and aircraft activities therein). Therefore, no field studies were conducted as a part of the Environmental Impact Analysis Process (EIAP), and existing subsurface archaeological resources are not described in detail in the discussion below.

As ground-disturbing activities would not occur as a result of the Proposed Action or its alternatives, the only physical cultural resources with the potential to be indirectly impacted would be historic structures, which could be damaged during aircraft overflights at altitudes low enough to generate significant noise vibrations. A study conducted by Wyle, an acoustic research consulting firm, found that "only sound lasting more than one second above a sound level of 130 dB is potentially damaging to structural components" due to noise-generated vibrations (Wyle 2008).[9] Consequently, all federally and state recognized historic resources within counties below the affected or proposed airspaces were identified.

3.5.2.1 Regional Setting

The first known inhabitants of Wisconsin were the Paleo-Indians, believed to have inhabited the state between 10,000 and 6,500 Before the Common Era (BCE). Paleo-Indians hunted mega-fauna and used stone tools, which by 5,000 BCE, were used more commonly throughout the state (Wisconsin Historical Society [WHS] 2014a).

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[9] The sound level resulting from the take off of a military jet at a distance of 50 feet from the receptor ranges from approximately 120 to 130 dBs (refer to refer to Table 3-4 in Section 3.2, *Noise*).

During the Woodland period (700 BCE to 1,300 Common Era [CE]), the inhabitants of Wisconsin were able to make pottery, domesticate plants, and build earthen burial mounds. The bow and arrow were also adopted during this time. These cultures also began burying their dead in uniquely shaped effigy mounds, hence the rise of the "Effigy Mound Culture" (WHS 2014a).

About 1,000 CE people from what is present-day St. Louis migrated to the area, marking the beginnings of the Mississippian Culture (WHS 2014a). These inhabitants are known for building fortified towns consisting of an open plaza surrounded by platforms and enclosed with wooden palisades. The Mississippians left Wisconsin around 1,200 CE and were succeeded by the Oneota culture. The Oneota culture is believed to have given rise to the Menominee, Ho-Chunk, and Dakota cultures, which still persist in Wisconsin to date. Additionally, during the mid-1600s, tribal warfare to the east forced migrant tribes from the surrounding areas in Canada, New York, Ohio, and Michigan into the Wisconsin area (WHS 2014a).

Early European and native interactions in the Great Lakes region was characterized by the fur trade (WHS 2014b). However, by 1830 over-hunting had already nearly exterminated fur-bearing mammals in Wisconsin (WHS 2014b). Eventually, conflict over resources and land led to the escalation of the Iroquois Wars, which involved several tribes as well as English and French presence in the area.

3.5.2.2 Tribal Lands

Federally recognized tribes with current potential interests in Wisconsin include Bad River Band of Lake Superior Chippewa Indians, Ho-Chunk Nation, Keweenaw Bay Indian Community, Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wisconsin, Lac du Flambeau Band of Lake Superior Chippewa Indians, Lac Vieux Desert Band of Lake Superior Chippewa Indians Menominee Indian Tribe of Wisconsin, Oneida Nation of Wisconsin, Red Cliff Band of Lake Superior Chippewa, and Stockbridge-Munsee Community Band of Mohican Indians (National Conference of State Legislatures 2014).

Of these federally recognized tribes only the Ho-Chunk Nation, Oneida Nation of Wisconsin, and Menominee Tribe of Wisconsin are known to have tribal lands within the vicinity of the ROI (see Figure 3-6). The Ho-Chunk Nation does not have a contiguous reservation; however, the Ho-Chunk owns various parcels of land in many different counties in central Wisconsin. Within the ROI, the Ho-Chunk Nation has land in Adams County (beneath the Volk East MOA), Wood County (beneath the Volk East and Volk West MOAs), and Jackson and Clark counties (beneath the Volk Falls MOA). While the Monimee Indian Reservation is located outside of the ROI, there is an approximately 10-acre plot of off-reservation trust land in Winnebago County east of the proposed expanded Volk East MOA. Additionally, the Oneida Reservation is a 65,400-acre reservation located approximately 100 miles to the northeast of Volk Field CRTC, in Brown and Outagamie counties (WSTRI 2011). This reservation is the closest contiguous tribal reservation to Volk Field SAA (see Figure 3-6) (WSTRI 2011).

3.5.2.3 Records Searches and Background Research

An initial record search in support of the EIAP for the Proposed Action (Preferred Alternative) was conducted by Amec Foster Wheeler Environment and Infrastructure, Inc. (Amec Foster Wheeler) in June 2014, utilizing the state historic site databases for Wisconsin. The state record search identified previously recorded buildings and structures within each of the counties underlying the affected or proposed airspaces (WHS 2014c). Additionally, the NRHP was searched for sites that have been nationally recognized as having historical significance within each of the affected counties. Due to the nature of random flight activities within the Volk Field SAA, all historic properties beneath the airspace would be affected in the same ways. Consequently, historic records were looked at for counties beneath the each airspace in the ROI.

Record search results indicate that there are 445 historic sites recorded in Wisconsin counties within the ROI. Additionally, 508 sites were also identified in the NRHP (see Table 3-32; WHS 2014c). However, only a fraction of the federally and state and recognized historic sites would have a potential to be impacted by new aircraft operations with the expanded areas of the Volk West, Volk South, and Volk East MOAs. All other historic sites exist under current military airspace.

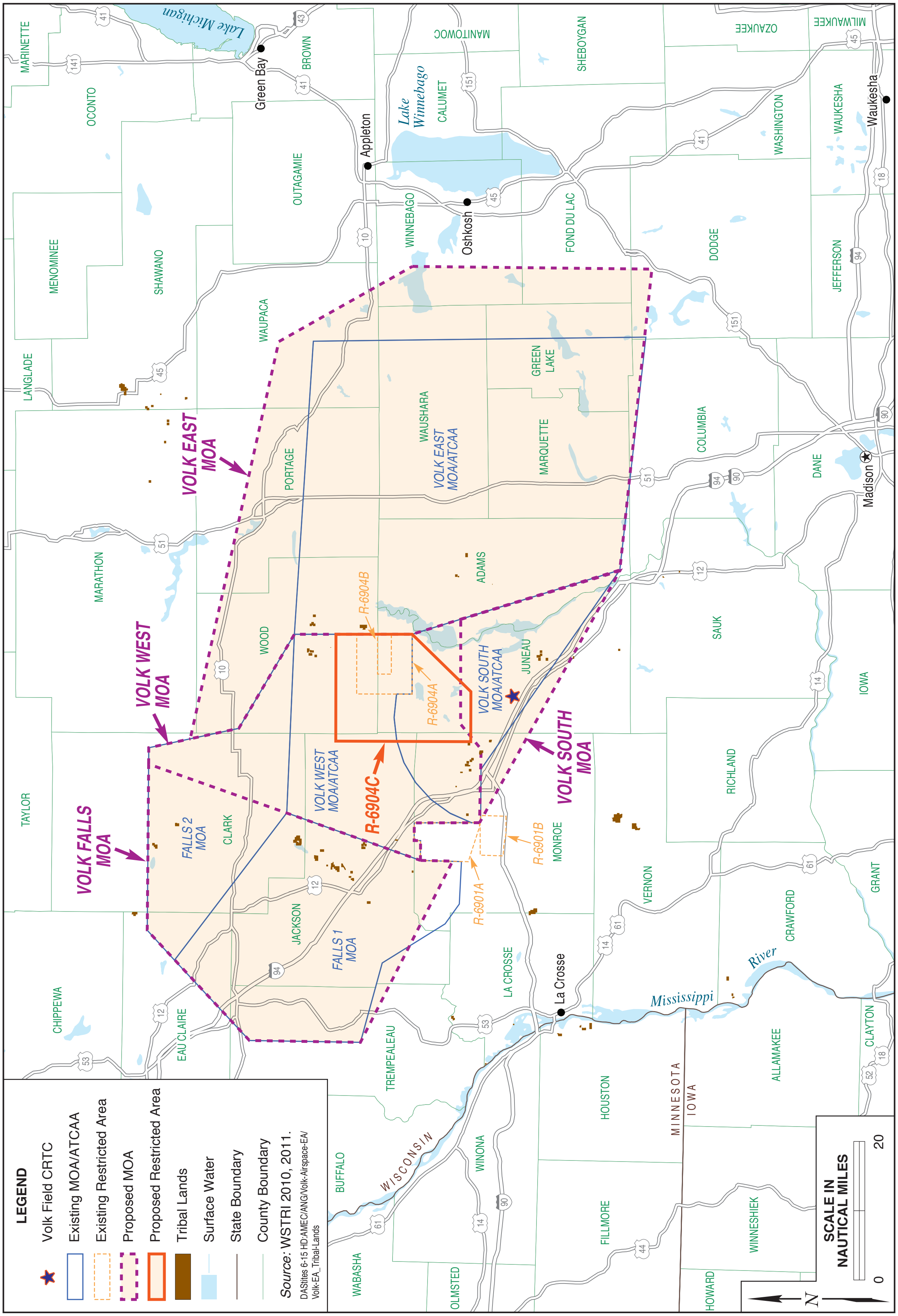


FIGURE 3-6

Tribal Lands within the Vicinity of the ROI

EA

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

Table 3-32. State and Federally Recognized Historic Sites

County	State Records	NRHP Records
Clark	21	22
Eau Claire	65	67
Jackson	3	5
Monroe	10	11
Trempealeau	12	17
Volk Falls MOA	**111**	**122**
Clark	21	22
Jackson	3	5
Juneau	5	8
Monroe	10	11
Wood	19	20
Volk West MOA	**58**	**66**
Adams	1	2
Juneau	5	8
Monroe	10	11
Volk South MOA	**16**	**21**
Adams	1	2
Columbia	52	58
Dodge	29	36
Fond du Lac	40	44
Green Lake	12	14
Juneau	5	8
Portage	18	18
Marquette	5	6
Waushara	2	3
Winnebago	77	90
Wood	19	20
Volk East MOA	**260**	**299**
Total	**445**	**508**

Source: WHS 2014c
Note: This table presents a full list of all historic properties within the counties underlying or partially underlying the ROI. Consequently, this list is conservative and may include properties that do not underlie the ROI.

3.6 AIR QUALITY

3.6.1 Definition of Resource

Air quality in a given location is evaluated based on the concentration of various pollutants in the atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the USEPA for criteria pollutants, including: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter equal to or less than ten microns in diameter (PM_{10}) and 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare.

3.6.1.1 Criteria and Hazardous Air Pollutants

Air quality is affected by stationary sources (e.g., industrial development) and mobile sources (e.g., motor vehicles). Air quality at a given location is a function of several factors, including the quantity and type of pollutants emitted locally and regionally, and the dispersion rates of pollutants in the region. Primary factors affecting pollutant dispersion are wind speed and direction, atmospheric stability, temperature, the presence or absence of inversions, and topography.

Ozone (O_3). The majority of ground-level (i.e., terrestrial) O_3 is formed as a result of complex photochemical reactions in the atmosphere involving volatile organic compounds (VOCs), nitrogen oxides (NO_x), and oxygen. O_3 is a highly reactive gas that damages lung tissue, reduces lung function, and sensitizes the lung to other irritants. Although *stratospheric* O_3 shields the earth from damaging ultraviolet radiation, terrestrial O_3 is a highly damaging air pollutant and is the primary source of smog.

As of June 2004, the USEPA issued the final rule for 8-hour O_3, revising the 1-hour O_3 NAAQS standard. The 8-hour standard is more protective of public health and more stringent than the 1-hour standard, and non-attainment areas for 8-hour O_3 are now designated.

Carbon Monoxide (CO). CO is a colorless, odorless, poisonous gas produced by incomplete burning of carbon in fuel. The health threat from CO is most serious for those who suffer from cardiovascular disease, particularly those with angina and peripheral vascular disease.

Nitrogen Dioxide (NO_2). NO_2 is a highly reactive gas that can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Repeated exposure to high concentrations of NO_2 may cause acute respiratory disease in children. Because NO_2 is an important precursor in the formation of O_3 (or smog), control of NO_2 emissions is an important component of overall pollution reduction strategies. The two primary sources of NO_2 in the U.S. are fuel combustion and transportation.

Sulfur Dioxide (SO_2). SO_2 is emitted primarily from stationary source coal and oil combustion, steel mills, refineries, pulp and paper mills, and from non-ferrous smelters. High concentrations of SO_2 may aggravate existing respiratory and cardiovascular disease; asthmatics and those with emphysema or bronchitis are the most sensitive to SO_2 exposure. SO_2 also contributes to acid rain, which can lead to the acidification of lakes and streams and damage vegetation.

Particulate Matter (PM_{10} and $PM_{2.5}$). Particulate matter (PM) is a mixture of tiny particles that vary greatly in shape, size, and chemical composition, and can be comprised of metals, soot, soil, and dust. PM_{10} includes larger, coarse particles, whereas $PM_{2.5}$ includes smaller, fine particles. Sources of coarse particles include crushing or grinding operations, and dust from paved or unpaved roads. Sources of fine particles include all types of combustion activities (e.g., motor vehicles, power plants, wood burning) and certain industrial processes. Exposure to PM_{10} and $PM_{2.5}$ levels exceeding current standards can result in increased lung- and heart-related respiratory illness. The USEPA has concluded that finer particles are more likely to contribute to health problems than those greater than 10 microns in diameter.

Airborne Lead (Pb). Airborne lead can be inhaled directly or ingested indirectly by consuming lead-contaminated food, water, or non-food materials such as dust or soil. Fetuses, infants, and children are most sensitive to Pb exposure. Pb has been identified as a factor in high blood pressure and heart disease. Additionally, direct exposure to Pb can lead to poisoning in fetuses, infants, and children and can cause permanent neurological disorders and damage to internal organs. Exposure to Pb has declined dramatically in the last 10 years as a result of the reduction of Pb in gasoline and paint, and the elimination of Pb from soldered cans.

Hazardous Air Pollutants (HAPs). Hazardous air pollutants (HAPs) are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effect. Unlike criteria pollutants, HAPs are primarily chemical-specific pollutants (versus classes of pollutants) and many of the HAPs are actually constituent chemicals that are a subset of a criteria pollutant emission rate. This is found primarily with the VOCs (numerous constituent chemicals considered HAPs) and PM_{10} (primarily heavy metals). Pb is both a criteria pollutant and HAP.

3.6.1.2 Clean Air Act Amendments

The Clean Air Act Amendments (CAAA) of 1990 place most of the responsibility to achieve compliance with NAAQS on individual states. To this end, USEPA requires each state to prepare a State Implementation Plan (SIP). A SIP is a compilation of goals, strategies, schedules, and enforcement actions that will lead the state into compliance with all NAAQS. Areas not in compliance with a standard can be declared *nonattainment* areas by USEPA or the appropriate state or local agency. In order to reach *attainment*, NAAQS may not be exceeded more than once per year. A *nonattainment* area can reach *attainment* when NAAQS have been met for a period of 10 consecutive years. During this time period, the area is in *transitional attainment*, also termed *maintenance*.

Under the CAAA, the Title V Operating Permit Program and the Aerospace National Emission Standards for Hazardous Air Pollutants (NESHAP) Program, impose requirements for air quality permitting on emission sources of air pollutants. Only stationary source emissions are included when determining eligibility for the Title V Operating Permit Program and the Aerospace NESHAP Program. Therefore, existing aircraft operations do not influence the Wisconsin

ANG's eligibility for participation in either the Title V Operating Permit Program or the Aerospace NESHAP Program.[10]

3.6.2 Existing Conditions

3.6.2.1 Regional Setting

Climate

The climate of Wisconsin is generally described as continental, with slight differences attributed to Lake Michigan and Lake Superior, which are in close proximity. Winters are typically cold and snowy, while summers have warm enough temperatures to attract summer tourists. Average temperatures range from 14.5 degrees Fahrenheit (°F) in January to 70.2 °F in July. Precipitation in central Wisconsin averages from a little more than one inch in February to more than four inches in July. Most of the precipitation falls in the frost-free period, which ranges from 80 to 180 days of the year. This variation can be attributed to the presence of Lakes Michigan and Lake Superior as well as differences resulting from relative latitudinal position. Southern Wisconsin, for example, typically has longer frost-free periods than northern Wisconsin. Snow may start to fall in central Wisconsin as early as October and continue until April. Central Wisconsin experiences the most snowfall in January, averaging approximately 12.5 inches during the month (Wisconsin State Climatology Office [WSCO] 2006; University of Wisconsin-Extension [UWE] 2013).

Regional Air Quality

The WDNR Air, Waste, and Remediation and Redevelopment Division is responsible for air quality monitoring in the State of Wisconsin. The state maintains a monitoring network with approximately 40 stations located in throughout the state (WDNR 2014k). As of 2013, there were 13 counties within the

[10] An installation would qualify as a major source under the Title V Program if potential emissions from stationary sources exceed 100 tons per year (tpy) of any of the criteria pollutants; or 10 or 25 tpy of any single or combination of HAPs, respectively. An installation would qualify for the Aerospace NESHAP Program if potential emissions of any HAP equals or exceeds 10 tpy or any combination of HAPs equals or exceeds 25 tpy.

state designated as either nonattainment or maintenance areas for one or more criteria pollutants (USEPA 2013).

3.6.2.2 Attainment Status within the ROI

As described in Section 1, *Introduction*, the ROI is located entirely within 19 counties in central and east-central Wisconsin (refer to Table 1-1). Of the 40 air quality monitoring stations across the state, four are located within or near the ROI, with three sites located in Appleton, Fond du Lac, Newport counties, and one site located within the Horicon NWR. Criteria pollutants monitored at these sites include O_3, $PM_{2.5}$, PM_{10}, NO_x, SO_2, CO, Pb, mercury (Hg), volatile organic compounds (VOCs), and polycyclic aromatic hydrocarbons (PAH) (WDNR 2012a).

The 19 counties within the ROI span five separate Air Quality Control Regions (AQCR). Columbia and Dodge counties are part of the Southern Wisconsin Intrastate Air Quality Control Region. Adams, Juneau, Portage, and Wood counties are located in the North Central Wisconsin Intrastate Air Quality Control Region. Calumet, Fond du Lac, Green Lake, Marquette, Outagamie, Waupaca, Waushara, and Winnebago counties are in the Lake Michigan Intrastate Air Quality Control Region. The remaining six counties - Clark, Eau Claire, Jackson, Monroe, and Trempealeau - are included in the Southeast Minnesota-La Crosse Interstate Air Quality Control Region (WDNR 2011). Each of the counties included in the ROI are designated as attainment areas for all criteria pollutants (USEPA 2013).

3.6.2.3 Existing Emissions within the ROI

This section presents the existing air quality conditions encompassed by the airspace boundaries. Mobile emission sources are not included in the determination for an entity's participation in the Title V Permitting Regulations of the CAA. Consequently, allocated flight hours for units that use the existing Volk Field SAA, including the 115th Fighter Wing (115 FW), 148th Fighter Wing (148 FW), or 114th Fighter Wing (114 FW), do not contribute to their Title V requirements.

Aircraft operated within each of the existing airspaces within the Volk Field SAA include A-10, B-1B, C-12, C-135, F-16, KC-135R, PC-12, C-130, CH-47, UH-60, E-3 (refer to Section 1.4, *Primary Aircraft Operated within the Airspace Complex*). However, as the primary users of the Volk Field SAA operate F-16s, this aircraft type represents approximately 90 percent of the operations within the airspace complex (see Table 3-33). Combustion emissions from these aircrafts utilizing the existing airspace are largely related to JP-8, the type of fuel generally used by the USAF. JP-8 is a kerosene-based fuel used in part because of its lower vapor pressure and reduced potential for fire and explosion. Emissions generated during the combustion of JP-8 include CO, NO_x, SO_x, HAPs, and VOCs.[11] JP-8 is essentially commercial grade Jet-A aviation kerosene with three additives: Corrosion Inhibitor/Lubricity Enhancer, Fuel System Icing Inhibitor, and Static Dissipater Additive. In addition to combustion emissions, exercises involving chaff and flare also contribute to pollutants generated within the airspaces (see Section 3.8, *Hazardous Materials and Wastes*).

Table 3-33. Summary of Existing Mobile Source (Aircraft) Emissions within the ROI

Airspace	Total Usage (hours)	CO (tpy)	VOC (tpy)	NO_x (tpy)	SO_x (tpy)	PM (tpy)	HAP (tpy)
Falls 1 MOA	860.8	4.1	0.5	122.9	4.6	1.5	4.1
Falls 2 MOA	857.3	4.1	0.5	122.4	4.5	1.5	4.1
Volk West MOA	875.3	4.2	0.5	125.0	4.6	1.6	4.2
Volk South MOA	821.8	3.9	0.4	117.4	4.3	1.5	3.9
Volk East MOA	792.2	3.8	0.4	113.1	4.2	1.4	3.8
R-6904A/B	843.0	4.0	0.4	120.4	4.5	1.5	4.0

Source: AMEC 2014a; see Appendix C, *Air Quality*.
Note: This summary is an estimate as the total usage was modeled for F-16 aircraft, which are the primary users of the Volk Field SAA. Emissions from other aircraft do not contribute substantially to the total mobile emissions within the Volk Field SAA.

Emission factors for JP-8 combustion were derived from studies employing JP-4 aviation fuel because of their similarities in combustion emissions.[12] Summaries of individual military flight-related airspace emissions are located in the

[11] VOCs generated by JP-8 combustion are Ethylbenzene, Benzene, Xylenes, and Toluene.
[12] A comparison study of emissions for JP-8 and JP-4 anticipated slight differences in CO production and slightly increased VOC production, neither of which was considered to be significant amounts. Smoke production (PM) is anticipated to increase due to JP-8's lower volatility and higher aromatic content; however, technology incorporated on newer aircraft engines mitigates this increase.

corresponding airspace sections below. The emission estimates were generated using maximum sortie rates and aircraft operational data obtained from personnel responsible for scheduling the airspace (refer to Table 2-7; WIANG 2014b). Emissions occur over a wide area and at a range of altitudes; emissions dispersed throughout the region do not impact the state's ability to comply with NAAQS, and therefore, do result in noncompliance with its SIPs.

Chaff and flare emissions are only generated during exercises featuring chaff and flare release (i.e., the routine storage and handling or chaff and flare do not inherently result in pollutant emissions). Previous studies have concluded that the use of chaff and flare does not result in a significant impact within the area or in areas adjacent to where the chaff and flares are deployed (National Guard Bureau [NGB] 2002; Air National Guard Readiness Center [ANGRC] 2003; USAF 1997). Additionally, given the large area of airspace utilized, the contribution of chaff and flare to the total quantity of pollutants generated is negligible. The use of chaff and flare is conducted in accordance with AFI 11-214, AFI 11-2MDS series, and local directives. AFI 11-214 allows chaff and flare use only in approved airspace and establishes a minimum altitude of 2,000 feet AGL for release of a flare over non-government-owned or controlled property.

3.7 SAFETY

3.7.1 Definition of Resource

The primary safety concern associated with military training flights, including patterned flights in the airfield environmental as well as training activities within established MOAs, is the potential for aircraft mishaps, which may be caused by mid-air collisions with other aircraft or objects, weather difficulties, or bird-aircraft strikes. Safety of aircraft operations is often described in terms of the aircraft's "mishap rate," represented by the number of mishaps per 100,000 flying hours for each aircraft type, the interval between mishaps as calculated by comparing mishap rate with the proposed number of hours to be flown annually, and the calculated BASH.

Mishaps are categorized by the USAF based on the severity of injury and the amount of damage measured in monetary value resulting from the mishap. A mishap resulting in a human fatality or permanent total disability with a total cost in excess of $2 million for injury, occupational illness, or destruction of an aircraft is considered a Class A mishap. A mishap resulting in permanent partial disability or a total cost in excess of $500,000, but less than $2 million for injury, occupational illness, and property damage or inpatient hospitalization of three or more personnel is considered a Class B mishap. A Class C mishap is defined as a mishap that results in total damage in excess of $50,000 but less than $500,000, an injury resulting in any loss of time from work beyond the day or shift on which it occurred, occupational illness that causes loss of time from work at any time, or an occupational injury or illness resulting in a permanent change of job. Mishaps not meeting the requirements for Class A, B, or C are categorized as High Accident Potentials (AFI 91-204).

In addition to aircraft safety issues, safety issues associated with chaff and flare use, including fire risk and strike risk, have also been included for analysis. Additional analyses regarding the potentially hazardous chemical components of chaff and flare can be found in Section 3.8, *Hazardous Materials and Wastes*.

3.7.2 Existing Conditions

3.7.2.1 BASH-Related Safety

Bird-aircraft strikes present a potential safety issue for both the Volk Field CRTC as well as operators within the Volk Field SAA due to resident and migratory bird populations. The Volk Field SAA is located between the eastern edge of the Mississippi Flyway and the western edge of the Atlantic Flyway, both major bird migration corridors. Major water bodies in the area are conducive to year-round congregation of resident and migratory bird species within the ROI. Historically, bird-strikes have presented an operational constraint to aircraft operations, particularly during peak migration periods (i.e., mid-November through March). Wildlife refuges in the area (refer to Section 3.3, *Land Use* and Section 3.4, *Biological Resources*) serve as migratory stopover for waterfowl species. For example, the Necedah NWR, which is characterized by a habitat of sedge meadow, savanna, prairie, and pine-oak forest, provides habitat for more than 110 species of migratory birds. Among other objectives, this area is managed to provide resting, nesting, feeding and wintering habitat for waterfowl and other migratory birds (USFWS 2014b). Consequently, per Volk Field CRTC SOPs military aircraft utilizing Volk Field SAA are required to avoid Necedah NWR overflight below 1,000 feet AGL annually and below 2,000 feet AGL from the dates 15 September through 30 November.

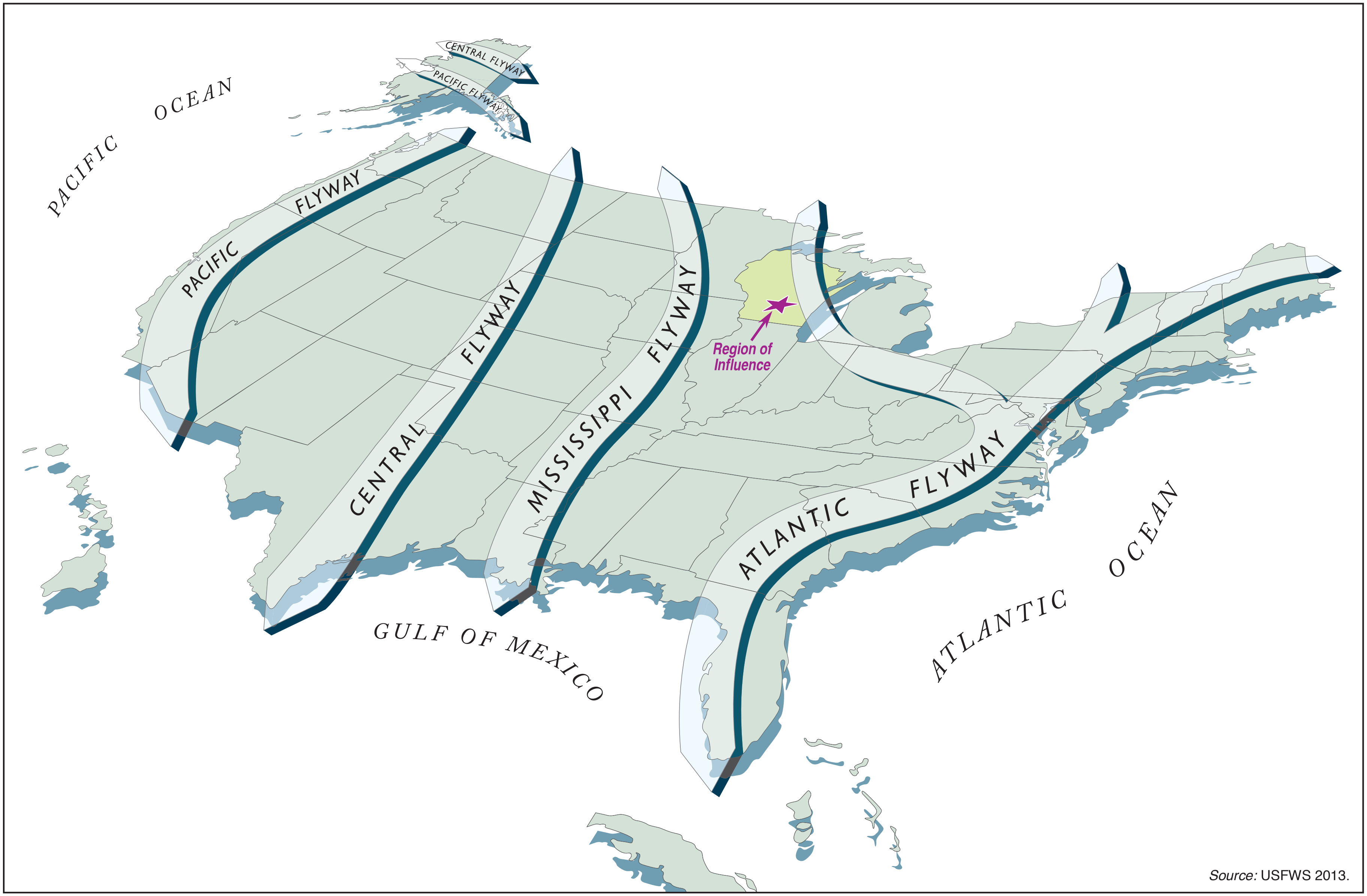
In-flight bird collision risks have been addressed by the ANG through the development of the Avian Hazard Advisory System (AHAS), a Bird Avoidance Model (BAM) used to generate projected and geospatially confirmed bird data for use in military airspace, including MOAs, ranges, visual routes, instrument routes, slow routes, and International Civil Aviation Organization (ICAO) airspaces (e.g., Class A, B, C, etc.). The AHAS uses Geographic Information System (GIS) technology combined with data associated with bird habitat, migration, and breeding characteristics to create a visual tool for analyzing bird aircraft collision risk. This information, in tandem with responsible planning can reduce the likelihood of collisions, though complete elimination of mishaps is not possible.

In order to minimize the potential for bird-aircraft strikes, all ANG installations are required to develop and implement a BASH Plan (AFI 91-202 and AFI 91-212). Key elements common to the required by AFI 91-202, include:

- Establishment of a Bird Hazard Working Group that designates responsibilities and establishes procedures that aid supervisors in preventative actions intended to reduce bird-strike hazards;
- Establishment of procedures for reporting hazardous bird activity and altering or discontinuing flying operations;
- Provision of appropriate channels for timely dissemination of bird hazard information and procedures for avoidance of such hazards (e.g., migratory flocks);
- Establishment of procedures to eliminate or reduce environmental conditions that attract birds and other wildlife to the airfield; and
- Incorporation of standardized guidelines for reporting bird sightings and strikes.

Flyways are routes that migratory birds have historically used as they move between seasonal habitats. Four primary flyways are generally recognized in the U.S.: the Atlantic, Mississippi, Central (or Rocky Mountain), and Pacific Flyways (see Figure 3-7). During the spring and autumn migratory seasons, migratory birds can often be found in higher concentrations along these routes than elsewhere in the country. Although flyways are often referred to and sometimes depicted as single pathways with well defined boundaries, they are in reality composed of numerous smaller migratory routes that are subject to change based on environmental factors. Consequently, it is difficult to accurately determine the precise physical boundaries of flyways at a given point in time and the highest numbers or concentrations of migrating birds are not always confined within the boundaries of mapped flyways.

The Mississippi Flyway and Atlantic Flyway are the principal flyways in close proximity to the affected and proposed airspace areas. The Mississippi Flyway is generally understood to follow the Mississippi River and along with the Atlantic Flyway is understood to include much of the Great Lakes region. These flyways include the Volk Field SAA, and consequently, many species of waterfowl, passerines, and raptors migrate through these airspaces. Migration altitudes vary by species and further depend on migration distance (long distance migrants fly higher to reduce drag and conserve energy), time of day (nocturnal migrants typically fly at higher altitudes), and weather (poor weather conditions can cause



EA

Migratory Flyways over the United States

FIGURE 3-7

migrants to fly lower). Inland waterfowl commonly migrate at lower altitudes (near the surface to several hundred feet AGL), while migratory shorebirds will fly over the ocean as high as 15,000 to 20,000 feet MSL (Lincoln et al. 1998).

3.7.2.2 Other Aircraft Related Safety Issues

Accident Potential

Class A mishaps result in a loss of life, permanent total disability, a total cost in excess of $1 million, destruction of an aircraft, or damage to an aircraft beyond economical repair. Class B and C mishaps represent progressively less serious losses, in terms of human injury and cost. The final class of mishap is High Accident Potential, which represents minor incidents that do not meet the criteria for classifications A through C. Class C mishaps and High Accident Potential incidents are the most common types of accidents and generally involve minor damages and injuries that rarely affect the public.

Most aircraft accidents involve a take-off or landing incident. The general category of USAF flying activity with the highest mishap rate other than takeoffs and landings is high-performance maneuvering, such as operations typically occurring in a MOA. Mishap rates by aircraft utilizing Volk SAA are presented in Table 3-34.

Table 3-34. General Mishap Rates by Aircraft Type

Aircraft Type	Class A Rate (10 Year Average)	Class B Rate (10 Year Average)	Total Hours Flown (as of FY 2013)
A-10	0.77	8.54	5,161,601
B-1	5.89	35.35	653,844
C-12	0.56	0.28	762,335
C-135	0.40	0.17	14,940,178
F-16	**5.20**	**3.40**	**10,084,953**
C-130	0.70	8.50	257,673
CH-47	-	-	-
UH-60	-	-	-
E-3	0.54	5.37	830,782

Source: USAF 2014, 2015.
Note: F-16 operations constitute over 90 percent of flight activity within the Volk Field SAA. Safety data was not available for the CH-47 or UH-60; however, combined operations within the Volk Field SAA constitute a negligible fraction of total airspace operations.

According to range personnel, three Class C mishaps occurred within the Volk Field SAA from 2009-2013, one occurring 2009 and two occurring in 2010. However, no Class A or B mishaps occurred within this five-year period (WIANG 2014a).

Airfields beneath or near the existing Volk Field SAA are shown in Figure 3-3. Fond du Lac County Airport, Sheboygan County Memorial Airport, and Whittman Regional Airport all experience large numbers of general aviation flights; however, current use of the Volk Field SAA does not present a conflict with air traffic at these airports. Figure 3-3 also shows the Class E Airspace low-altitude Federal airways that pass over or near the Airspace Complex. At current usage levels, aircraft operating within the Volk Field SAA do not present a conflict with the aircraft on these airways.

Hazardous Weather Conditions

Aircraft mishaps are sometimes caused by hazardous weather. Weather conditions may pose a safety hazard and may require a pilot to alter a flight plan. The Flight Service Station provides preflight briefings and in-flight weather information. In-flight advisories notify pilots of the possibility of encountering hazardous flying conditions that may not have been forecast at the time of the preflight briefing. In the event of severe inclement meteorological conditions after the controlling authority releases the airspace to the using agency, the using agency through their DoD weather services has the responsibility to cancel scheduled flights in the MOAs. Range personnel will close the range if visibility is poor or if other meteorological conditions (e.g., high wind, rain, snow) make range use unsafe.

Weapons and Munitions Safety

The Hardwood Air-to-Ground Gunnery Range training facility supports a variety of ordnance delivery. Additionally, the range is equipped with ground-based threat simulators, as well as a simulated laser target used for acquisition training. Target scoring is accomplished either electronically or visually.

Hardwood Range Air-to-Ground Gunnery Range has the capacity to accommodate night flying; however, the majority of operations do not occur after 10:00 p.m., except for emergencies, operational inspections, or special exercises.

Aircraft Collisions

In order to avoid non-participating aircraft, sorties are flown only when see-and-avoid tactics can be used (i.e., VFR conditions). See-and-avoid refers to the practice of locating other aircraft by sight and avoiding them using right-of-way rules established by Federal regulations at 14 CFR §91. All military aircraft operations in MOAs at all altitudes utilize see-and-avoid tactics as civilian VFR aircraft can transition through an active MOA at any altitude.

Additionally, while there are 13 airports located beneath the affected and proposed airspace (refer to Table 3-4), operations within the Volk Field SAA recognize each airport's exclusion zone (three 3 NM radius horizontal and 1,500 feet AGL vertical), which is maintained and excluded from the overlying MOAs (FAA Order 7400.2K).

Collisions with Surface Objects

The current flight floor (i.e., the lowest extent) of the existing Volk Field SAA varies with each component MOA (refer to Table 2-6). However, in general, flight operations within the MOAs do not occur below 500 feet AGL. Additionally, the floor of the Volk East MOA is 8,000 feet MSL. Consequently, there are no known conflicts with surface objects beneath the existing MOAs. Additionally, Volk Field SAA includes the Hardwood Range, R-6904A/B. These RAs are generally activated together with R-6904B extending from the surface to Flight Level (FL) 230 (23,000 feet MSL) and R-6904A extending from 150 feet AGL to FL 230 (23,000 feet MSL). However, the area beneath these RAs is characterized by open space and agricultural fields which do no conflict with use of the Hardwood Range.

Fire Risk

The units operating in the Volk Field SAA, including the 115 FW, 148 FW, and 114 FW, release self-protection flares within existing MOAs during military training operations. Existing military regulations (FAR 91.15 and AFI 11-202) require precautions to be taken to avoid injury or damage to persons or objects. This includes precautions for activities that increase the potential for fires, such as the release of flares. Based on information reported by Air Combat Command (ACC), fires are rare when release altitude and restrictions are based on site-specific conditions. AFI 11-214 allows chaff and flare use only in approved airspace.

Flare Strike Risk

Flare materials that are not completely consumed during ignition and descent, create the risk of striking a person or property. Given a set of assumptions regarding reliability rate, aircraft speed, aircraft height above ground, and behavior of the flare after release, USAF (1997) calculated the probability of a dud flare hitting a person in an area with a population density of 100 persons per sq mi would be one in 5.8 million (NGB 2002). Consequently, safety hazards resulting from flare strike risk are also considered negligible.

3.8 HAZARDOUS MATERIALS AND WASTES

3.8.1 Definition of Resource

Hazardous materials are defined as substances with strong physical properties of ignitability, corrosivity, reactivity, or toxicity, which may cause an increase in mortality, a serious irreversible illness, incapacitating reversible illness, or pose a substantial threat to human health or the environment. Hazardous wastes are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes, which pose a substantial present or potential hazard to human health or the environment.

To protect habitats and people from inadvertent and potentially harmful releases of hazardous substances, DoD has dictated that all facilities develop and implement *Hazardous Waste Management Plans* and *Spill Prevention and Response Plans*. Also, DoD has developed the Environmental Restoration Program (ERP), intended to facilitate thorough investigation and cleanup of contaminated sites located at military installations. These plans and programs, in addition to established legislation (e.g., the Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA] and Resource Conservation and Recovery Act [RCRA]) effectively form the "safety net" intended to protect the human and natural environment.

Issues associated with hazardous materials and wastes typically center around ground disturbing activities in the vicinity of underground storage tanks; aboveground storage tanks; and areas used for the storage or transport of pesticides, bulk fuel, and petroleum, oils, and lubricants (POL). When such resources are improperly handled, they can threaten the health and well-being of vegetation, soil systems, water resources, wildlife species, and people. However, as no change in ground disturbing activities are included in the Proposed Action (Preferred Alternative) or its alternatives, these issues are not discussed in detail. Additionally, existing siting requirements for explosive materials storage, Explosives Safety Quantity-Distance (ESQD) arcs, Runway Protection Zones (RPZs), and emergency services provided on the ground are not included as part of this analysis because there would be no change in Hardwood Range operations or other ground-based operations.

3.8.2 Existing Conditions

3.8.2.1 Emergency Fuel Dump Operations

Under extremely rare emergency circumstances where potential exists for loss of life for the pilot, excess aircraft fuels must be dumped as a safety precaution to facilitate landings during in-flight emergencies. If the fuel load is not jettisoned prior to an emergency landing, it can cause the aircraft to land too heavy, resulting in critical damage to the aircraft and potential loss of life for the pilot operating the aircraft. Emergency fuel dumping is not a part of routine training missions and occurs only during emergency circumstances (FAA Order JO 7110.65U Section 4, *Fuel Dumping*).

3.8.2.2 Chaff and Flare

Chaff and flares are passive, defensive countermeasures deployed by military aircraft. Their purpose is to confuse and divert radar-guided or infrared-guided anti-aircraft missiles fired by other aircraft or from ground installations. Deployment of chaff and flare is a regular element of realistic, mission-oriented training exercises conducted within the Volk Field SAA. Volk Field CRTC has not received any complaints from the public, Federal or state agencies, or Federal or state land managers regarding the use of chaff or flare above the areas underlying the Volk Field SAA (WIANG 2014a).

<u>Effects of Chaff Use</u>

Chaff utilized by units training within the Volk Field SAA is composed of aluminum or zinc coated fibers stored on-board the aircraft in tubes. When an aircraft is threatened by radar tracking missiles, the pilot ejects the contents of these tubes into the turbulent wake of air behind the plane. The chaff reacts with the turbulent air and blooms into a decoy cloud of metallic material with a radar signature much larger than the aircraft itself. Depending on the altitude of release and wind speed and direction, the chaff from a single bundle can be spread over distances ranging from less than a quarter mile to over 100 miles (USAF 1997). The most confined distribution would be from a low-altitude release in calm conditions.

The principal components of chaff (i.e., aluminum, silica glass fibers, and stearic acid) do not pose an adverse risk to human and environmental health, based upon the general low-level toxicity of the components, their dispersion patterns, and the unlikelihood that the components would interact with other substances in nature to produce synergistic toxic effects (USAF 1997). The materials in chaff are generally nontoxic except in exorbitantly large quantities that humans or wildlife would not encounter as a result of chaff use associated with WIANG operations.

Effects of Flare Use

Chemical flares comprise magnesium pellets ejected from tubes to ignite in the wake behind the aircraft. Countermeasure flares are designed to burn out before reaching the ground in order to minimize fire hazards (refer to Section 3.7, *Safety*). Even when deployed at 500 feet AGL, most system debris would decelerate to terminal velocity before reaching the ground surface (refer to Section 3.7, *Safety*).

The primary components of flare combustion are magnesium oxide, magnesium chloride, and magnesium fluoride. These components, similar to chaff, do not pose an adverse risk to human and environmental health at the concentrations experienced in flare use (USAF 1997).

Flares used during training operations burn out shortly after being deployed. Individual emissions from a single flare are negligible. Additive emissions from flare usage within an airspace occur over large areas and over long periods of time, and therefore have not previously resulted in any violations (i.e., declarations of nonattainment status) with regard to NAAQS (refer to Section 3.6, *Air Quality*). Flare ash is widely dispersed by wind, and the likelihood that a sufficient quantity would accumulate in a particular pond, stream, or estuary to measurable affect its chemical make-up is also remote (USAF 1997).

3.9 SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S HEALTH AND SAFETY

3.9.1 Definition of Resource

<u>Socioeconomics</u>

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Human population is affected by regional birth and death rates as well as net in- or out-migration. Economic activity typically comprises employment, personal income, and industrial growth. Impacts on these two fundamental socioeconomic indicators can also influence other components such as housing availability and public services provision.

Socioeconomic data in this section are presented at the county, state, and national level to analyze baseline socioeconomic conditions in the context of state and national trends. Data have been collected from previously published documents issued by Federal, state, and local agencies (e.g., U.S. Census Bureau) and from state and national databases (e.g., U.S. Bureau of Economic Analysis' [BEA] *Regional Economic Information System*).

<u>Environmental Justice</u>

In 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations,* was issued to focus the attention of Federal agencies on human health and environmental conditions in minority and low-income communities and to ensure that disproportionately high and adverse human health or environmental effects on these communities are identified and addressed. Additionally, because children may suffer disproportionately from environmental health and safety risks, EO 13045, *Protection of Children From Environmental Health and Safety Risks,* was introduced in 1997 to prioritize the identification and assessment of environmental health risks and safety risks that may affect children and to ensure that Federal agencies' policies, programs, activities, and standards address environmental health and safety risks to children.

Similar to socioeconomics, environmental justice data in this section are presented at the county, state, and national level. Data used for the environmental justice and protection of children analyses were collected from the U.S. Census Bureau 2010 *Census of Population and Housing* and the 2008-2012 *American Community Survey.*

3.9.2 Existing Conditions

3.9.2.1 Regional Setting

The State of Wisconsin had a diverse number of industries that contributed to a gross domestic product (GDP) of approximately $261,548 million for the year 2012. The top three economic contributors were *Manufacturing*, *Real Estate and Rental and Leasing,* and *Government and Government Enterprises*, respectively (U.S. BEA 2013b). An analysis of recent employment trends within the State of Wisconsin is provided in Table 3-36.

3.9.2.2 Socioeconomics within the ROI

<u>Population</u>

The population of Wisconsin has increased by approximately 16.26 percent between 1990 and 2010. This is slightly less than the population of the entire U.S., which increased by approximately 24.10 percent during the same period.

The population of Wood County grew by approximately 1.55 percent between 1990 and 2010. This represents the smallest growth of all the counties underlying the Volk Field SAA. Calumet County experienced the largest growth of 42.81 percent during the same years. Average population growth within the counties included in the ROI was 19.28 percent. Marquette County had the smallest population and Outagamie County had the largest population of all the underlying counties in 2010, reaching over 175,000 individuals. Table 3-37 below provides a population overview of the relevant counties within the ROI.

1 **Table 3-36. Jobs by Industrial Sector, Wisconsin (2005, 2010, 2012)**

Industrial Sector	Total Number of Jobs			Total Percent Change 2005-2012
	2005	2010	2012	
Farm employment	95,600 (2.73%)	92,782 (2.72%)	87,640 (2.50%)	-8.33%
Forestry, fishing, and related activities	14,512 (0.41%)	14,419 (0.42%)	15,149 (0.43%)	4.39%
Mining	4,172 (0.12%)	5,373 (0.16%)	5,612 (0.16%)	34.52%
Utilities	11,749 (0.34%)	11,426 (0.33%)	11,169 (0.32%)	-4.94%
Construction	196,880 (5.63%)	155,543 (4.56%)	152,909 (4.36%)	-22.33%
Manufacturing	520,252 (14.87%)	444,915 (13.03%)	471,279 (13.44%)	-9.41%
Wholesale trade	128,895 (3.68%)	122,742 (3.59%)	128,159 (3.66%)	-0.57%
Retail trade	400,599 (11.45%)	363,846 (10.66%)	368,310 (10.51%)	-8.06%
Transportation and warehousing	117,703 (3.36%)	109,798 (3.22%)	113,318 (3.23%)	-3.73%
Information	57,076 (1.63%)	53,719 (1.57%)	54,249 (1.55%)	-4.95%
Finance and insurance	167,600 (4.79%)	183,672 (5.38%)	192,221 (5.48%)	14.69%
Real estate and rental and leasing	97,457 (2.79%)	100,061 (2.93%)	105,507 (3.01%)	8.26%
Professional, scientific, and technical services	148,853 (4.25%)	154,686 (4.53%)	160,604 (4.58%)	7.89%
Management of companies and enterprises	42,464 (1.21%)	48,862 (1.43%)	54,614 (1.56%)	28.61%
Administrative and waste management services	161,081 (4.60%)	167,162 (4.90%)	176,601 (5.04%)	9.63%
Educational services	58,227 (1.66%)	67,006 (1.96%)	67,812 (1.93%)	16.46%
Health care and social assistance	363,643 (10.39%)	395,854 (11.59%)	405,332 (11.56%)	11.46%
Arts, entertainment, and recreation	62,225 (1.78%)	66,505 (1.95%)	69,794 (1.99%)	12.16%
Accommodation and food services	241,414 (6.90%)	237,009 (6.94%)	243,945 (6.96%)	1.05%

Table 3-36. Jobs by Industrial Sector, Wisconsin (2005, 2010, 2012) (Continued)

Industrial Sector	Total Number of Jobs			Total Percent Change 2005-2012
	2005	2010	2012	
Other services, except public administration	184,026 (5.26%)	181,696 (5.32%)	189,744 (5.41%)	3.11%
Government and government enterprises	424,933 (12.14%)	437,600 (12.82%)	431,991 (12.32%)	1.66%
Total Employment	**3,499,321**	**3,414,676**	**3,505,959**	**0.19%**

Source: U.S. BEA 2013b

Table 3-37. Population Overview within Counties within the ROI

Jurisdiction	Census 1990	Census 2000	Census 2010	Total Percent Change 1990-2010
United States	248,709,873	281,421,903	308,745,538	24.1%
Wisconsin	4,891,769	5,363,675	5,686,986	16.26%
Adams Co., WI	15,682	18,643	20,875	33.11%
Calumet Co., WI	34,291	40,631	48,971	42.81%
Clark Co., WI	31,647	33,557	34,690	9.62%
Columbia Co., WI	45,088	52,468	56,833	26.05%
Dodge Co., WI	76,559	85,897	88,759	15.94%
Eau Claire Co., WI	85,183	93,142	98,736	15.91%
Fond du Lac Co., WI	90,083	97,296	101,633	12.82%
Green Lake Co., WI	18,651	19,105	19,051	2.14%
Jackson Co., WI	16,588	19,100	20,449	23.28%
Juneau Co., WI	21,650	24,316	26,664	23.16%
Marquette Co., WI	12,321	15,832	15,404	25.02%
Monroe Co., WI	36,633	40,899	44,673	21.95%
Outagamie Co., WI	140,510	160,971	176,695	25.75%
Portage Co., WI	61,405	67,182	70,019	14.03%
Trempealeau Co., WI	25,263	27,010	28,816	14.06%
Waupaca Co., WI	46,104	51,731	52,410	13.68%
Waushara Co., WI	19,385	23,154	24,496	26.37%
Winnebago Co., WI	140,320	156,763	166,994	19.01%
Wood Co., WI	73,605	75,555	74,749	1.55%

Source: U.S. Census Bureau 1990a, 1990b, 2000a, 2000b, 2012b, 2014.

Employment

Wisconsin's labor force totaled just above 3 million in 2013, and had an unemployment rate of approximately 6.9 percent the same year. Detailed employment statistics by industrial sector for the State of Wisconsin may be found in Table 3-36, above.

Outagamie County had the largest labor force of 89,860 during 2012. Adams County had both the smallest labor force and highest unemployment rate (9.9 percent) of all the counties for the year 2012. Trempealeau and Calumet counties had the lowest unemployment rate of 5.4 percent during the same year. Table 3-38 below shows the relevant labor statistics of each county within the ROI.

Table 3-38. 2012 Annualized Labor and Employment in the Counties underlying the ROI

Location	Labor Force	Employed	Unemployed	Unemployment Rate
Wisconsin	3,051,741	2,840,296	211,445	6.9%
Adams Co., WI	9,811	8,836	975	9.9%
Calumet Co., WI	27,193	25,733	1,460	5.4%
Clark Co., WI	17,410	16,170	1,240	7.1%
Columbia Co., WI	31,734	29,607	2,127	6.7%
Dodge Co., WI	46,425	43,019	3,406	7.3%
Eau Claire Co., WI	57,256	53,887	3,369	5.9%
Fond du Lac Co., WI	54,769	51,173	3,596	6.6%
Green Lake Co., WI	9,968	9,207	761	7.6%
Jackson Co., WI	9,867	9,109	758	7.7%
Juneau Co., WI	13,099	11,962	1,137	8.7%
Marquette Co., WI	7,483	6,834	649	8.7%
Monroe Co., WI	24,042	22,428	1,614	6.7%
Outagamie Co., WI	96,145	89,860	6,285	6.5%
Portage Co., WI	41,818	39,063	2,755	6.6%
Trempealeau Co., WI	16,647	15,745	902	5.4%
Waupaca Co., WI	27,646	25,607	2,039	7.4%
Waushara Co., WI	12,572	11,555	1,017	8.1%
Winnebago Co., WI	94,345	88,343	6,002	6.4%
Wood Co., WI	40,850	37,929	2,921	7.2%

Note: Statewide numbers were extrapolated from county data.
Source: U.S. Bureau of Labor and Statistics 2013.

Earnings

The average per capita income of individuals in the State of Wisconsin was approximately $42,121 in 2012. This represents a 22.57 percent increase since 2005. Table 3-39 below summarizes the changes in per capita income for all the affected counties in the ROI between 2005 and 2012. Adams County experienced the largest increase in per capita income of all the counties within the ROI, while Outagamie County experienced the smallest. All but four of the relevant counties, however, experienced growth above the Wisconsin average of 22.57 percent during the same period of time.

Table 3-39. Per Capita Income in Wisconsin and the Counties underlying the ROI

Location	Per Capita Income			Total Percent Change 2005-2012
	2005	2010	2012	
Wisconsin	34,366	38,755	42,121	22.57%
Adams Co., WI	27,335	33,562	37,387	36.77%
Calumet Co., WI	35,242	41,440	46,845	32.92%
Clark Co., WI	25,601	29,025	32,577	27.25%
Columbia Co., WI	35,189	39,859	43,495	23.50%
Dodge Co., WI	29,350	34,089	38,050	29.94%
Eau Claire Co., WI	31,698	37,133	40,469	27.67%
Fond du Lac Co., WI	33,015	35,987	39,459	19.52%
Green Lake Co., WI	31,594	36,108	41,319	30.78%
Jackson Co., WI	28,261	33,485	37,594	33.02%
Juneau Co., WI	25,247	30,155	33,151	31.31%
Marquette Co., WI	25,748	29,698	32,466	26.09%
Monroe Co., WI	27,587	33,125	35,459	28.54%
Outagamie Co., WI	34,658	37,087	40,399	16.56%
Portage Co., WI	31,399	35,983	38,457	22.48%
Trempealeau Co., WI	28,721	34,175	37,494	30.55%
Waupaca Co., WI	31,634	36,329	39,179	23.85%
Waushara Co., WI	25,875	30,788	33,681	30.17%
Winnebago Co., WI	33,360	37,675	40,569	21.61%
Wood Co., WI	33,446	37,834	41,307	23.50%

Sources: U.S. BEA 2013a, 2013c.

Environmental Justice

In 2012, the State of Wisconsin as a whole had a lower percent of residents below the poverty line than the national average. Wisconsin also had a smaller percentage of minorities within the state, which was approximately 19.8 percent less than the nation as a whole.

Waupaca County had the lowest percentage of minorities of all the counties within the ROI in 2012 (see Table 3-40). Minorities represented 12.7 percent of the population of Jackson County, which was the highest of all the relevant counties in 2012. Jackson County also had the highest percentage of persons living below the poverty line, which was approximately 4.0 percent higher than the average for the State of Wisconsin.

Table 3-40. 2012 Minority and Low Income Populations by Counties beneath the ROI

Location	Minority	Below Poverty
United States	37.0%	14.9%
Wisconsin	17.2%	12.5%
Adams Co., WI	9.3%	11.6%
Calumet Co., WI	7.9%	5.6%
Clark Co., WI	5.9%	15.4%
Columbia Co., WI	6.0%	9.0%
Dodge Co., WI	8.7%	8.3%
Eau Claire Co., WI	8.4%	15.7%
Fond du Lac Co., WI	8.5%	9.6%
Green Lake Co., WI	6.4%	10.2%
Jackson Co., WI	12.7%	16.5%
Juneau Co., WI	7.7%	13.1%
Marquette Co., WI	5.1%	13.8%
Monroe Co., WI	7.9%	15.0%
Outagamie Co., WI	10.9%	8.6%
Portage Co., WI	7.7%	13.5%
Trempealeau Co., WI	7.8%	12.0%
Waupaca Co., WI	4.6%	10.5%
Waushara Co., WI	9.9%	12.3%
Winnebago Co., WI	9.8%	11.5%
Wood Co., WI	6.5%	10.1%

Note: The term 'minority' refers to all races except Caucasian-white.
Source: U.S. Census Bureau 2012a.

Protection of Children

Approximately 23.5 percent of the population of the U.S. was below the age of 18 in 2012. The same demographic represented approximately 23 percent of the population of Wisconsin.

Calumet County had the highest percentage of persons below the age of 18 of all the counties within the ROI in 2012. Adams County had the lowest percentage for the same year, which was approximately 7.3 percent less than the average for the State of Wisconsin. Table 3-41 below summarizes the percentages of persons below the age of 18 in each of the affected counties.

Table 3-41. 2012 Percentage of Persons Under 18 Years of Age in Counties Underlying the ROI

Location	Percent Below 18 Years of Age
United States	23.5%
Wisconsin	23.0%
Adams Co., WI	15.7%
Calumet Co., WI	26.0%
Clark Co., WI	28.9%
Columbia Co., WI	22.7%
Dodge Co., WI	21.2%
Eau Claire Co., WI	20.7%
Fond du Lac Co., WI	22.3%
Green Lake Co., WI	22.4%
Jackson Co., WI	22.4 %
Juneau Co., WI	20.8%
Marquette Co., WI	19.8%
Monroe Co., WI	25.5%
Outagamie Co., WI	24.4%
Portage Co., WI	20.1%
Trempealeau Co., WI	24.2%
Waupaca Co., WI	21.8%
Waushara Co., WI	19.2%
Winnebago Co., WI	21.3%
Wood Co., WI	22.2%

Source: U.S. Census Bureau 2012a.

3.10 Dismissed Resource Areas

Per NEPA guidelines and CEQ regulations, those resource areas that are anticipated to experience either no or negligible environmental impact under implementation of the Proposed Action (Preferred Alternative) or its alternatives are not examined in detail in this EA. These environmental resources include:

- Greenhouse Gas Emissions
- Utilities and Infrastructure;
- Ground Transportation;
- Geological Resources; and
- Water Resources and Wetlands.

A brief summary of the rational for not including detailed analyses of these resource areas in the EA is provided below.

Greenhouse Gas Emissions. On 18 December 2014, the CEQ released updated draft guidance on how and when federal agencies should account for the effects of greenhouse gas emissions and climate change impacts under NEPA. The guidance uses projected greenhouse gas emissions as a proxy for assessing an action's potential climate change impacts. The guidance also directs agencies to consider the direct, indirect, and cumulative effects of the greenhouse gas emissions from an action, and take into account the effects of connected actions.

The CEQ recommended that emissions equal to or greater than 25,000 metric tons annually should be included in NEPA assessments (CEQ 2014). Under the Proposed Action (Preferred Alternatives) and its alternatives total operating hours within the Volk Field SAA would not change relative to existing operations. Consequently, the Proposed Action would not result in any measurable increase in greenhouse gas emissions. Rather, existing greenhouse gas emissions would remain unchanged and would be spread over a more diffuse area. Therefore, the Proposed Action would not result in any impacts related to greenhouse gases emissions.

Utilities and Infrastructure. The Proposed Action and its alternatives would be limited to the modification and establishment of airspace only and its implementation would not require or result in any facility construction or modification, infrastructure upgrades, or demolition. Consequently, no additional utility services or modification of existing utility services would be necessitated by the Proposed Action or its alternatives and there would be no impact to utilities and infrastructure. Further, there would be no construction related impacts associated with the Proposed Action or its alternatives.

Ground Transportation. The Proposed Action and its alternatives would be limited to the modification and establishment of airspace only and would not include any project components that would involve or otherwise directly affect the ground surface or existing transportation networks underlying the affected or proposed airspace areas. Local and regional road networks and transportation infrastructure would remain unchanged from their current conditions. Additionally, there would be no short- or long-term change in the volume of traffic experienced on these transportation networks as a result of the Proposed Action or its alternatives. Therefore, there would be no impact to ground transportation networks, carrying capacities, or other important transportation-related metrics associated with the Proposed Action or its alternatives.

Geological Resources. The Proposed Action and its alternatives would be limited to the modification and establishment of airspace only and would not include any project components that would touch or otherwise directly disturb the topographic features, soils, or subgrade geological resources underlying the affected or proposed airspace areas. Geology, topography, and soils, including farmland soils, would remain unchanged from their current conditions. Consequently, there would be no impact to geological resources associated with the Proposed Action or its alternatives.

Water Resources and Wetlands. The Proposed Action and its alternatives would be limited to the modification and establishment of airspace only and would not include any project components that would touch or otherwise directly affect the quantity, flows, percolation rate, or accessibility of regional surface or ground water resources. Consequently, there would be no direct impact to water resources, including wetlands and floodplains, as a result of the Proposed Action or its alternatives. Analyses of potential water quality-related impacts (i.e., potential impacts from chaff and flare on water quality) are presented in Sections 3.8 and 4.8, *Hazardous Materials and Wastes*. Additionally, a presentation and analysis of aquatic habitat impacts as they relate to biological resources can be found in Sections 3.4 and 4.4, *Biological Resources*.

SECTION 4
ENVIRONMENTAL CONSEQUENCES

Environmental impacts that could potentially result from airspace modification and establishment proposed by the Wisconsin Air National Guard (WIANG) are evaluated in this section. Analyses are presented by resource area, as presented in Section 3, *Affected Environment*, which includes:

- Airspace Management;
- Noise;
- Land Use and Visual Resources;
- Biological Resources;
- Cultural Resources;
- Air Quality;
- Safety;
- Hazardous Materials and Wastes; and
- Socioeconomics, Environmental Justice, and Children's Health and Safety.

For a brief discussion of resource areas that are anticipated to experience no environmental impact under implementation of the Proposed Action (Preferred Alternative) or its alternatives refer to Section 3.10, *Dismissed Resource Areas*. These resource areas include:

- Greenhouse Gas Emissions
- Utilities and Infrastructure;
- Ground Transportation;
- Geological Resources; and
- Water Resources and Wetlands.

4.1 AIRSPACE MANAGEMENT

4.1.1 Approach to Analysis

The significance of potential impacts to airspace management depends on the degree to which the proposed modifications to existing Military Operations Areas (MOAs) and Air Traffic Controlled Assigned Airspaces (ATCAAs) as well as the establishment of the new Restricted Area (RA) 6904C (R-6904C) would affect the regional military, commercial, and general aviation airspace environment. Significant impacts could result if the Proposed Action (Preferred Alternative) or its alternatives: 1) substantially affected movement of other air traffic in the area; 2) compromised air traffic control (ATC) systems or facilities; or 3) caused an increase in midair collision potential between military and non-participating civilian operations.

Potential impacts were also assessed to determine the extent to which proposed airspace modifications would change existing relationships with Federal airways, uncharted visual flight rule (VFR) routes, transition areas, and airport-related air traffic operations; as well as the effect the modifications would have on instrument flight rule (IFR) and VFR air traffic.

4.1.2 Impacts

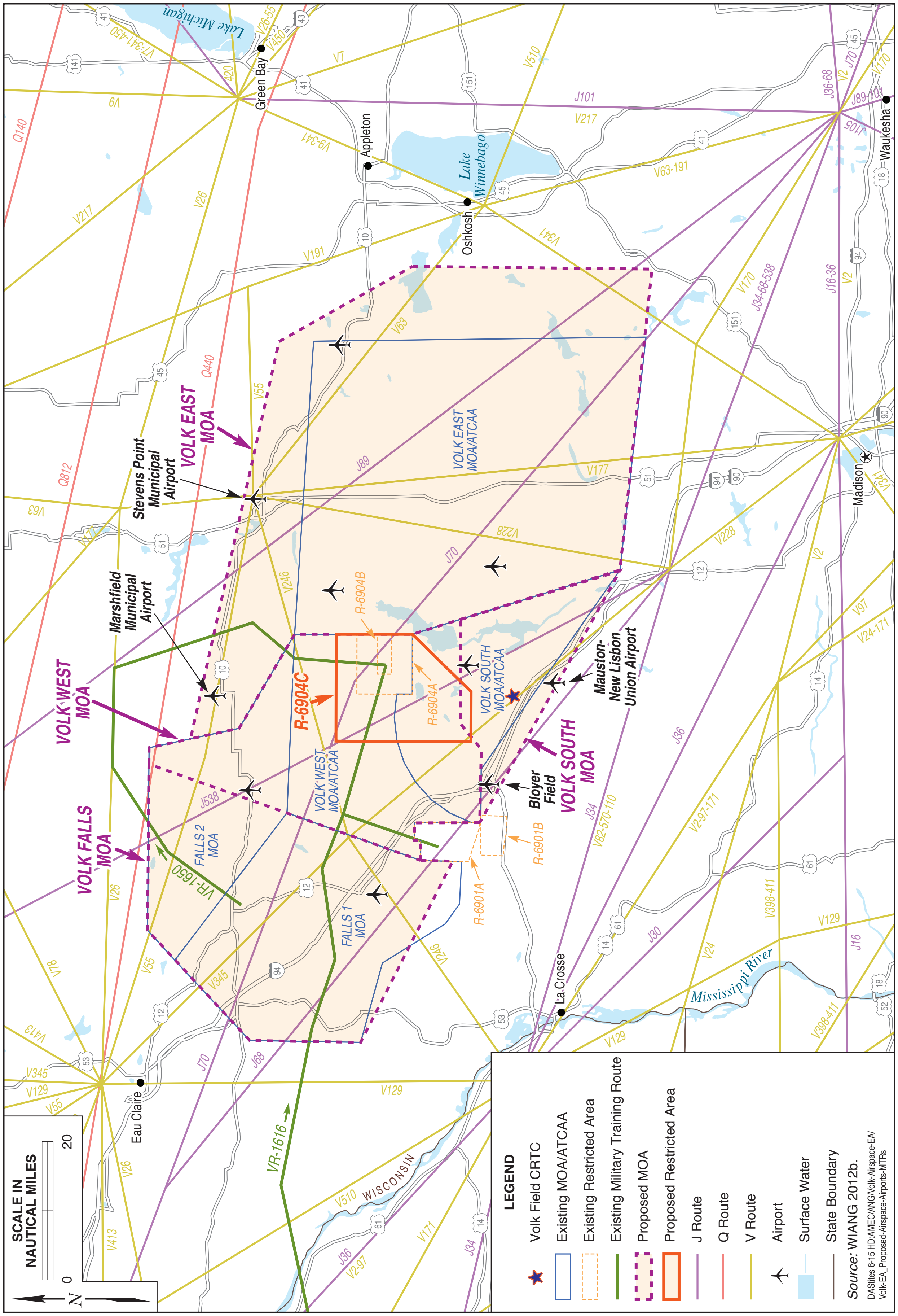
4.1.2.1 Proposed Action (Preferred Alternative)

<u>Airspace Use and Flight Procedures</u>

The Volk Field Combat Readiness Training Center (CRTC) is operationally and organizationally tasked to support Joint Force training requirements. As described in Section 1.5, *Airspace Management and Air Traffic Control*, the Volk Field Special Activity Airspace (SAA) is utilized, scheduled, and coordinated by many different military units through a centralized scheduling process at Volk Field CRTC. Requests for training time in the Volk Field SAA are vetted by Volk Field airspace managers and forwarded to Minneapolis Air Route Traffic Control Center (ARTCC) for Federal Aviation Administration (FAA) coordination within the National Airspace System (NAS).

As described in Section 1.7, *Purpose of the Proposed Action (Preferred Alternative)*, the proposed modifications to the existing Volk Field SAA are intended to address training limitations presented by the existing configuration of the airspace complex and would not include any changes to the current operating hours or activation schedule for the Volk Field SAA. The Proposed Action would include modifications to and expansions of existing MOAs and ATCAAs that comprise the Volk Field SAA as well as the establishment of R-6904C and the Oshkosh and Sheboygan East and West ATCAAs (see Figure 4-1). Following implementation of the Proposed Action, Volk Field SAA would facilitate and support air-to-air and air-to-ground training as well as Large Force Exercises (LFEs) in accordance with Air Force Instruction (AFI) 11-2F-16 V1 (2011) and Air Force Tactics, Techniques, and Procedures (AFTTP) 3-1.F-16 training requirements. Further, the proposed airspace would support Air Intercept Missile (AIM)-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) tactics, Low Altitude Training (LOWAT) tactics, and Advanced Targeting Pod (ATP) stand-off employment in support of Air National Guard Mission Directive (ANGMD) 10.01 direction to establish "a training area that approximates a deployed, combat-oriented operating base." Modifications and additions to current Volk Field SAA would also eliminate the need for temporary airspaces to accomplish the Composite Force Training (CFT)/LFE training required by AFI 11-2F-16V1 and AFTTP 3-1.F-16.

Specifically, establishment of the Volk Falls MOA would simplify existing boundaries and thereby maximize efficient use of the airspace. As currently configured, the existing Falls 1, Falls 2, Volk West, and Volk South MOAs cannot support any training exercises scheduled as individual stand-alone airspace areas due to the risk of aircraft inadvertently flying beyond the existing lateral boundaries; implementation of the Proposed Action would alleviate these conflicts, addressing the "bottleneck" from the R-6901 (Fort McCoy artillery range) and the northeast boundary of the Volk West MOA. The proposed airspace modifications would allow airspace schedulers more flexibility to schedule airspace individually for training exercises, resulting in better stewardship and more efficient use of the airspace complex. Further, the establishment of R-6904C would support the use of long-range, non-eye safe laser training while segregating potentially hazardous activity from non-participating aircraft.



Existing and Proposed Airspace

FIGURE 4-1

EA

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

Potential Effects on Air Traffic

Specific modifications and improvements to military training airspace included under the Proposed Action were initially developed by the WIANG in coordination with Minneapolis ARTCC and Chicago ARTCC as well as the Green Bay and Milwaukee Approach Control facilities. In the process of developing this airspace proposal, the controlling ARTCCs applied evaluative and exclusionary criteria to preliminarily design the placement of airspace boundaries. The resulting proposed airspace establishment and modifications were specifically developed to account for computer modeling of actual aircraft flight path histories in the region, in order to identify the most ideal locations and configurations for the proposed airspace such that the new Volk Field SAA complex would have the least potential to impact surrounding military, commercial, and general aviation.

All proposed airspace segments would only be activated on an as-needed basis – as a whole or individually – allowing for more responsible stewardship of the airspace regionally and helping to minimize conflicts with other users. The ATCAAs would remain under the control of the FAA and, when not in use by military aircraft, all proposed airspace would continue to be used to support civil aviation activities. Further, no changes to operational hours or the number of daily operations associated with Volk SAA would occur; therefore, potential impacts to regional air traffic would be negligible.

While the implementation of the Proposed Action would expand the MOAs by approximately 1,290 square miles (sq mi), more than 90 percent of that area would be within the Volk East MOA, which would have a floor of 8,000 feet above mean sea level (MSL). The altitudes of this operational floor would allow for continued use of local airspace by general aviation pilots beneath the Volk East MOAs, as pilots are permitted to fly beneath MOAs without restrictions. Nonparticipating VFR aircraft can also travel through active MOAs with appropriate coordination; as described in the FAA's Airman's Information Manual, whenever a MOA is being used, nonparticipating IFR traffic may be cleared through a MOA if IFR separation can be provided by ATC and procedures are described in a Letter of Agreement between the unit and the ATC controlling agency (FAA Order 7400.2K). As a result, the overall likelihood of interaction between military and civilian air traffic would remain low.

Regarding Victor Routes within the Proposed SAA, only sections of V55, V63, V228, and V246 pass through the proposed Volk East MOA; however, these four routes currently pass through the existing SAA. The maximum number of annual operations along any of these Victor Routes is 11 (V246). These annual operations represent either VFR or IFR air traffic. Non-military aircraft can elect to operate within an active MOA under VFR. Given that the proposed MOAs would only be activated approximately 4 hours per day over 230 days per year, non-military aircraft can operate under VFR conditions within an activated MOA, and that annual operations along the mentioned Victor Routes on average occur less than once per month, impacts to Victor Routes through implementation of the Proposed Action would not be significant.

Under the Proposed Action, R-6904C would be activated only 60 days per year and only approximately 4 hours per day. Thus, air traffic would not be allowed to transverse this area when activated within the altitude block of 3,000 feet MSL up to but not including 28,000 feet MSL. IFR air traffic utilizing Jet Airway (J-) 70 and J-538, which pass within the proposed boundary and altitude block of R-6904C, would be required to maintain a safe flight level above 28,000 feet MSL when approaching the active R-6904C boundary. Given the low number of activation days of R-6904C and the low number of daily operations (16) within the Volk SAA at altitudes above 18,000 feet MSL (the altitude floor of Jet Airways), impacts to J-70 and J-538 as a result of the Proposed Action would not be significant.

<u>Effects on Air Traffic Control Facilities</u>

Implementation of the Proposed Action would not be expected to compromise or require changes to existing ATC systems, facilities, or procedures. As described in Section 3.1, *Airspace Management* flight plans and schedules within the Volk Field SAA are currently filed monthly with the FAA's Chicago and Minneapolis ARTCCs. Pilots utilizing the Volk Field SAA fly in accordance with Federal Aviation Regulations (FARs) and remain under ATC until reaching a designated location; at that point, clear of conflicting aircraft, pilots are cleared to enter the MOAs or other Special Use Airspace (SUA). Upon returning to base, pilots maintain the same coordination with the Chicago and Minneapolis ARTCCs and ATCs at their respective airfield, entering ATC at a fixed point and remaining under that control until landing. Implementation of the Proposed Action would not require any changes to these procedures or compromise existing regional ATC facilities.

Military aircraft currently use chaff and flares during training operations in the existing Volk Field SAA. These training tools do not interfere with ATC radar or facilities. Under the Proposed Action, there would be no substantial changes to the type of chaff and flare training activities that occur within the existing Volk Field SAA. Consequently, potential impacts to ATC facilities under the Proposed Action would be negligible.

Implementation of the Proposed Action would have the potential to interfere with operations at existing airfields that are not currently located beneath existing airspaces, but would exist under the expanded Volk Field SAA, an expansion that would total approximately 1,290 sq mi. However, as described in Section 2, *Description of Proposed Action and Alternatives*, the two potentially affected airfields would be excluded from the proposed airspaces with an exclusion zone both vertically and horizontally; each exclusion zone would have a radius of three nautical miles (NM) and a height of 1,500 feet above ground level (AGL). These exclusion zones would be established around Bloyer Field and the Mauston-New Lisbon Union Airport. However, there are IFR departure procedures from these airports that would potentially require aircraft to be delayed until the airspace was inactive to allow the ATC to give clearance for the departing aircraft to conduct the procedures. Nevertheless, impacts related to such airspace conflicts would be less than significant. Additionally, the Marshfield Municipal Airport and Stevens Point Municipal Airport would be located beneath the proposed Volk East MOA expansion area; however, because this airspace would be established with a floor of 8,000 feet MSL, operations within would not have the potential to interfere with operations at these airports.

<u>Effects on Collision Potential</u>

Civilian air traffic, including private airport use and general aviation, currently fly under VFR within or adjacent to the existing Volk Field SAA (refer to Section 3.1.2.3, *Affected Airspace Use and Flight Procedures*). Following implementation of the Proposed Action, pilots would continue to comply with established procedures and regulations under which they currently operate within the Volk Field SAA. The military aircraft operating within the Volk Field SAA may terminate training or move to different areas within the airspace if civilian aircraft are detected. When operational, Volk RAPCON is the approving authority for the Volk South MOA and Volk East MOA within the lateral confines of the Volk RAPCON airspace. All or specific portions of the airspace may be released in the MOA on a real-time basis. Volk RAPCON may clear non-participating IFR aircraft through unused portions of the MOA. Therefore, the Proposed Action is not expected to significantly increase the likelihood of mid-air collisions with civilian aircraft, and impacts with regard to collision potential would be negligible.

4.1.2.2 Alternative 1: Eliminate Oshkosh and Sheboygan East and West ATCAAs from Proposed Action

Under this alternative all proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of the Oshkosh and Sheboygan East and West ATCAAs development. While existing limitations of the Volk Field SAA (e.g., bottleneck, complex airspace boundaries, airspace shelves, and inability to support long-range laser operations at the Hardwood Aerial Gunnery Range) would be addressed, the implementation of this alternative would not address aircraft marshalling limitations that arise during CFT/LFEs and specific unit phase training events. During these events Volk Field CRTC airspace schedulers would need to continue to engage in coordination efforts to establish necessary temporary ATCAAs within the Wisconsin ANG A, B, and C ATCAAs. Further, the Wisconsin ANG A, B, and C ATCAA boundaries would need to be reconfigured to line up with the proposed Volk East ATCAA. However, selection of this alternative would have less than significant impacts with regard to airspace management.

4.1.2.3 Alternative 2: Eliminate Restricted Area 6904C from Proposed Action

Under this alternative all of the proposed modifications of and expansions to the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of the establishment of R-6904C. While the majority of existing limitations associated with the Volk Field SAA would be addressed, this alternative would not address limitations to stand-off precision guided munitions employment and target coordinate generation training using long-distance non-eye safe combat lasers. Under this alternative, pilots would only be able to engage in these types of training exercises at shorter distances that do not meet AFTTP requirements and do not approximate realistic mission-oriented scenarios. Selection of Alternative 2 would result in no altitude floor restrictions for J-70 or J-538 in the vicinity of R-6904C given that this element of the Proposed Action would not be implemented and operational status of the area would be designated Volk West MOA with an elevation ceiling of 17,999 feet MSL, thus impacts to airspace management would be less than significant..

4.1.2.4 Alternative 3: Increase Existing Volk ATCAA Ceiling

Under this alternative, none of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented. However, under this alternative the ceiling of the existing Volk West ATCAA would be raised from Flight Level (FL) 230 (23,000 feet MSL) to FL 280 (28,000 feet MSL) in order to reduce the number of airspace shelves in the complex. By eliminating a step-down shelf mid-way through the Volk Field SAA, air-to-air training capabilities would be modestly increased. However, implementation of this alternative would not address the other limitations of the existing airspace, including the complex airspace boundaries, bottleneck conditions, and inability to support long-range laser operations at the Hardwood Aerial Gunnery Range. Further, the Falls 1, Falls 2, Volk West, and Volk South MOAs would continue to be unable to support any training exercises scheduled as individual stand-alone airspace areas due to the risk of aircraft inadvertently flying outside of the existing lateral boundaries. Therefore, selection of this alternative would not result in significant impacts to airspace management.

4.1.2.5 No-Action Alternative

Under the No-Action Alternative, the proposed airspace modifications would not occur. As a result, local and deployed units would continue to lose adequate training opportunities while preparing to deploy in support of Air Expeditionary Force (AEF) responsibilities. The existing Volk Field SAA configuration would continue to restrict current-generation aircraft and tactics, and would limit support for future aircraft, tactics, and techniques. Existing fourth-generation and emerging fifth-generation fighter and bomber units could be forced to deploy to more costly (i.e., more distant), limited-access airspace venues to fulfill training requirements, which would correspondingly reduce the training provided to a number of personnel and compromise readiness and availability for deployment. Ultimately, under this scenario, Volk Field CRTC would not be able to fulfill ANGMD 10.01 directives to remain a cost-effective and advanced combat air forces training location. If this alternative were selected, airspace and aircraft operations would remain as described in Section 3.1, *Airspace Management*, and impacts would be less than significant.

4.2 NOISE

4.2.1 Approach to Analysis

Noise impact analyses typically evaluate potential changes to existing noise environments that would result from the implementation of a proposed action. These potential changes may be beneficial if they reduce the number of sensitive receptors exposed to unacceptable noise levels. Conversely, impacts may be significant if they result in an introduction to unacceptable noise levels or increased exposure to unacceptable noise levels. Noise associated with a proposed action is compared with existing noise conditions to determine the magnitude of potential impacts.

According to FAA Order 1050.1E, Change 1, a significant noise impact would occur if the Proposed Action (Preferred Alternative) or its alternatives would cause noise-sensitive areas to experience an increase in noise of 1.5 decibels (dB) or more at or above the 65 Day-Night Average A-weighted Sound Level (DNL) noise exposure when compared to the No-Action Alternative for the same timeframe. With regard to determining noise levels from aircraft operations within SUA, Onset Rate-Adjusted Monthly Day-Night Average (L_{dnmr}) metric is the accepted noise metric (see Appendix E, *Noise*) and is carried forwarded for use in the analysis of potential noise impacts. The DNL metric is used for RAs as ingress/egress corridors to Hardwood Range have been established and are similar to arrival/departure tracks associated with airfields. As described in Section 3.2, *Noise*, due to the onset penalty associated with the L_{dnmr} metric, L_{dnmr} always equals or exceeds DNL values. Thus, the L_{dnmr} metric used for quantifying noise levels in SUA can be compared to DNL thresholds (e.g., the 65 DNL threshold established via FAA Order 1050.1E, Change 1). This comparison is conservative in that noise levels of 65 L_{dnmr} are often greater than 65 DNL (see Appendix E, *Noise*).

The WIANG has elected to include a discussion of Sound Exposure Level (SEL), which serves as supplemental noise metrics (refer to Section 3.2, *Noise,* and Appendix E, *Noise*). While there are no established thresholds regarding noise exposure from individual flyover events, these metrics have been provided to enhance public understanding of noise impacts from aircraft activity within the proposed and affected airspaces.

4.2.2 Impacts

The noise analysis presented below is based on running operational scenarios through the noise models MRNMAP (version 3.0) and NOISEMAP (version 7.3) to predict noise levels associated with aircraft operations within proposed Volk Field SAA; these modeling results were then compared to existing noise levels within the footprint of the existing Volk Field SAA.[13] The MRNMAP program was used to calculate uniform, distributed L_{dnmr} levels and the average daily number of events that would exceed 65 dB SEL within the MOAs as well as R-6904C. NOISEMAP was used to determine DNL noise contours for the existing R-6094A/B. These RAs were modeled as runways because the ingress and egress routes are not random or evenly spread over the entire area and the route to the range to drop/fire would be along identified routes into R-6904A/B. Conversely, R-6904C was modeled as an airspace because the proposed use of long-range non-eye safe laser would occur randomly within the RA. The analytical parameters considered in these analyses included aircraft type, airspeed, power settings, proposed aircraft operations, vertical training profile, and a conservative estimate of the amount of time spent within each airspace block (see Appendix E, *Noise*). Given the lowest elevation (i.e., the floor) of all ATCAAs (18,000 feet MSL), noise levels associated with military aircraft operating at and above this altitude would have little to no effect on ground-based receptors; therefore, noise levels from military aircraft operating in ATCAAs were not modeled as a part of this analysis.

4.2.2.1 Proposed Action (Preferred Alternative)

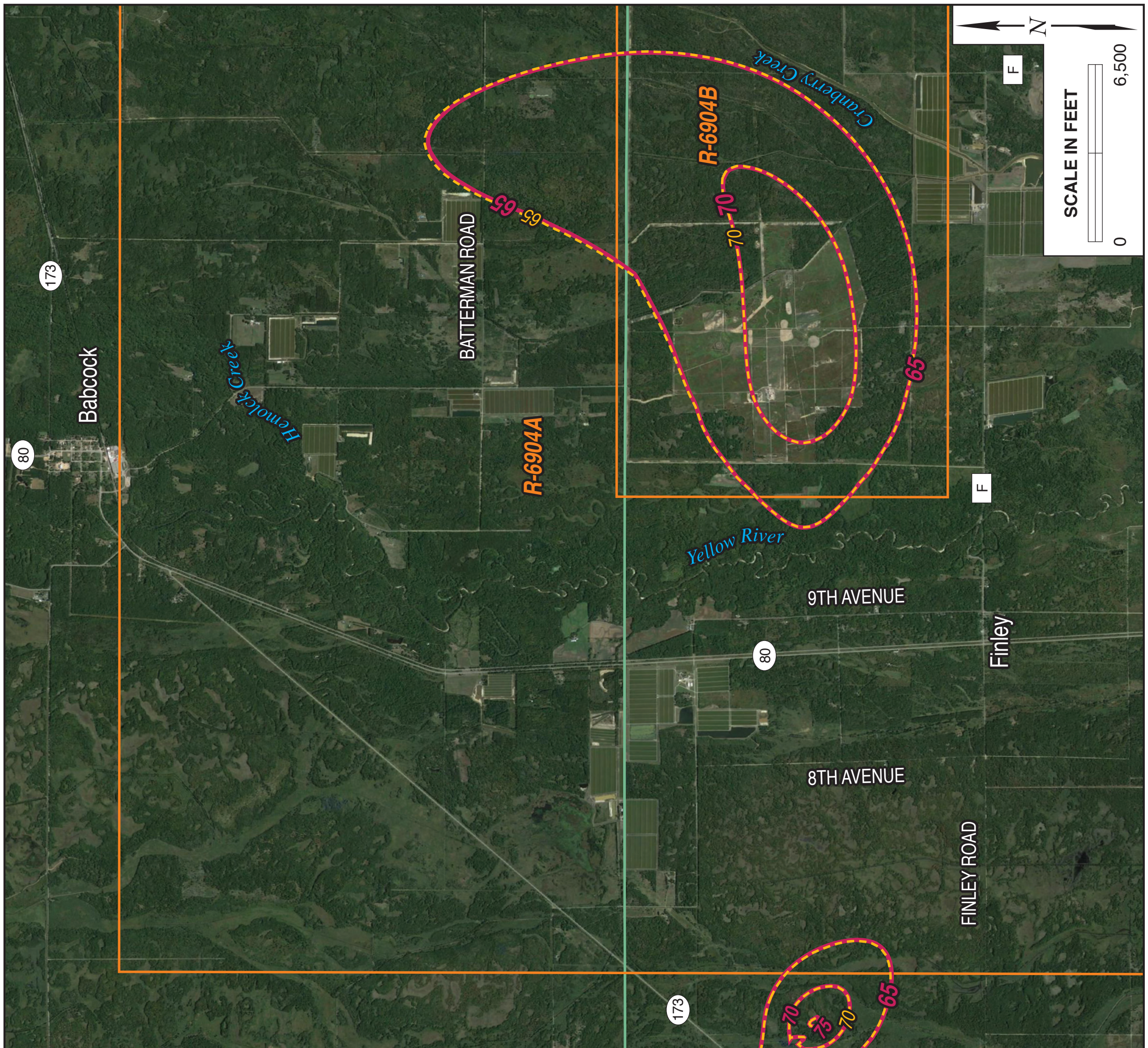
<u>Long-term Operational Impacts</u>

This subsection describes the noise levels under the Proposed Action (Preferred Alternative) associated with aircraft training in modified and newly established airspace areas within the Volk Field SAA. As described in Section 3.2, *Noise*, the L_{dnmr} metric is the most useful single metric for characterizing the long-term noise environment within the proposed Volk Field SAA MOAs as well as the proposed R-6904C, while DNL is the most useful metric for characterizing the long-term noise environment in the immediate vicinity of the Hardwood Aerial Gunnery

[13] Operations within MOAs were modeled using MRNMAP while operations within RAs were modeled using NOISEMAP, as the latter are more “patterned” and routine.

Range (R-6904A/B). Further, the number of events above 65 dB SEL was used to supplement this analysis in the interest of enhancing the public's understanding of single-event aircraft noise levels. However, as previously described, based on subjectivity to single event noise levels and the duration of events associated with a single aircraft flyover, no impact thresholds have been established at the Federal and/or state level; therefore, these data are provided as supplemental information to further describe noise levels associated with aircraft operations.

The results of noise analyses conducted for the proposed airspace modification and establishment are summarized in Table 4-1 and depicted in Figure 4-2 below (see also Appendix E, *Noise*). Through implementation of the Proposed Action, only the Volk South MOA would experience a noise level increase (+1.8 L_{dnmr}). The remaining proposed MOAs would all experience a decrease in noise level based on the increased size of the operating areas when combined with no changes to aircraft operations (e.g., operating altitudes, operations, etc.). Additionally, the Proposed Action would not result in the expansion of the 65 and 70 DNL noise contours associated with R-6904A/B operations. As a result, the noise levels beneath the proposed MOAs would not surpass the 65 DNL threshold and the 65 DNL and 70 DNL noise contours associated with R-6904A/B operations would not result in a 1.5 dB increase to areas currently above 65 DNL (FAA Order 1050.1E, Change 1). Further, implementation of the Proposed Action would not result in new sensitive receptors being exposed to noise levels greater than 65 DNL (see Table 4-2). The area around the Hardwood Range is dominated by wetlands. Public lands constitute a substantial portion of the area west of the Hardwood Range. There are scattered unincorporated settlements at Finley, New Minor, Mather, Warrens, and Babcock, with widely dispersed individual residences; however, residential uses only comprise 0.25 percent of land uses in this area. Woodlands is the overwhelming land cover interspersed with open lands and some farming closer to the Wisconsin River in the Towns of Necedah and Port Edwards, and rather extensive agricultural areas in the northern section of Armenia.



Comparison of Volk SAA Existing and Projected Noise Contours

FIGURE 4-2

EA

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

Table 4-1. Sound Levels Associated with Military Aircraft Operations in the Proposed and Affected Airspaces under the Proposed Action

Airspace	Existing Airspace L_{dnmr}	Proposed Airspace L_{dnmr}	Change L_{dnmr}	Significant Impact	Proposed Number of Daily Events Above 65 dB SEL
Military Operations Area					
Falls 1 MOA	51.1	-	-1.6*	No	-
Falls 2 MOA	53.8	-	-4.3/-3.3†	No	-
Volk Falls MOA	-	49.5	-	No	0.0
Volk West MOA	53.7	50.5	-3.2	No	0.0
Volk South MOA	53.8	55.6	+1.8	No	0.0
Volk East MOA	37.8	36.0	-1.8	No	0.0
R-6904C‡	-	46.4	-	No	0.0

Source: AMEC 2014b; see Appendix E, *Noise*, for full noise modeling criteria and results.
Notes: *The existing Falls 1 MOA would become the Volk Falls MOA. †The western half of the existing Falls 2 MOA would become the Volk Falls MOA, while the remainder would become the Volk West MOA. ‡ R-6904C is modeled similar to a MOA because there are no patterned flights associated with the proposed long-range non-eye safe laser training operations. Conversely R-6904A/B are modeled like runways as the flight activity is patterned within these RAs.
Existing L_{dnmr} levels were only modeled for existing airspace areas. It is assumed that the areas beneath the proposed airspace experience ambient noise characteristic of rural environments, between 30 and 50 DNL (FICON 1992; USEPA 1974).

Table 4-2. Noise Contour Area Associated with Existing and Proposed Operations within R-6904A/B

Airspace	Baseline (Acres)		Proposed (Acres)		Change (Acres)	
	65-70 DNL	70-75 DNL	65-70 DNL	70-75 DNL	65-70 DNL	70-75 DNL
Military Operations Area						
R-6904A/B	6.4	1.4	6.4	1.4	0.0	0.0

Source: AMEC 2014b; see Appendix E, *Noise*, for full noise modeling criteria and results.

A ground-based receptor underneath the proposed Volk Field SAA would be expected to recognize noise associated with aircraft overflights. However, overflights would be randomly distributed throughout the airspace segments. On average, a receptor beneath the airspace complex is not likely to experience SEL above 65 dB and average noise levels resulting from the Proposed Action would not exceed 65 DNL. Under the Proposed Action, the Necedah National Wildlife Refuge (NWR) would continue to be recognized as a known avoidance area for pilots operating within the Volk Field SAA. Per AFI 13-212, to the extent feasible flight activity over Necedah NWR would not occur below 1,000 feet AGL. Predicted noise levels in the Necedah NWR under the Proposed Action would be approximately 49.4 DNL. This would represent a 1.1 dB increase in average noise levels within the Necedah NWR. Predicted noise levels in the Fox River NWR, located below the proposed Volk East MOA, would be approximately 36 L_{dnmr}.[14] As shown in Tables 4-1 and 4-2, noise levels would not exceed the FAA's threshold of significant and the increase would be neither significant nor reportable. Consequently, there would be less than significant impacts as a result of long-term operational noise.

4.2.2.2 Alternative 1: Eliminate Oshkosh and Sheboygan East and West ATCAAs from Proposed Action

Under this alternative, all of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of the Oshkosh and Sheboygan East and West ATCAAs development. Consequently, elimination of these ATCAAs under this alternative would not result in changes to the noise impacts described for the Proposed Action. As described for the Proposed Action, noise impacts under this alternative would be less than significant.

4.2.2.3 Alternative 2: Eliminate Restricted Area 6904C from Proposed Action

Selection of Alternative 2 would include all of the proposed modifications of and expansions to the Volk Field SAA described for the Proposed Action (Preferred Alternative), with the exception of R-6904C development. Under this alternative noise impacts within Adams, Clark, Jackson, Monroe, and Wood counties would decrease slightly as there would be no noise impacts associated with the proposed RA. However, certain areas of Trempealeau and Monroe County would still experience slight increases in noise levels above the existing setting due to reconfiguration of the Volk West MOA. Impacts to noise from selection of Alternative 2 would be less than significant.

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[14] Noise levels above Necedah NWR are described in terms of DNL to include random flights within the overlying MOAs as well as patterned flights associated with R-6904A/B. Noise levels above Fox River NWR are described in terms of L_{dnmr} because the flight activity within the Volk East MOA is random. There are no overlying patterned flight activities above Fox River NWR.

4.2.2.4 Alternative 3: Increase Existing Volk ATCAA Ceiling

None of the proposed modifications to and expansions of to the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented under Alternative 3. However, under this alternative the ceiling of the existing Volk West ATCAA would be raised from FL 230 (23,000 feet MSL) to FL 280 (28,000 feet MSL) in order to reduce the number of airspace shelves in the complex. Aircraft operations above FL 230 (23,000 feet MSL) would not have any influence on the noise environment at the ground level. Consequently, under this alternative noise levels would be similar to those described for the existing setting in Section 3.2, *Noise* and would be less than significant.

4.2.2.5 No-Action Alternative

Under the No-Action Alternative, the proposed airspace modifications and expansion would not occur. As a result, there would be no changes in flight activity within the Volk Field SAA and no impacts with regard to noise would result. Under the No-Action Alternative, conditions would remain as described in Section 3.2, *Noise*.

4.3 LAND USE AND VISUAL RESOURCES

4.3.1 Approach to Analysis

Determination of land use impacts is based on the degree of land use sensitivity in the area. In general, land use impacts would be significant if a proposed action would: 1) be inconsistent or non-compliant with applicable land use plans or policies; 2) preclude an existing land use of concern from continuing to exist; 3) preclude continued use of an area; or 4) be incompatible with adjacent or vicinity land use to the extent that public health or safety is endangered. Additionally, consistent with FAA Order 1050.1E, Change 1, a land use impact would occur if a land use was placed into a noise level greater than what is considered compatible. FAA Order 1050.1E, Change 1 includes a table that presents compatible noise levels associated with a range of land use activities. In general, for most noise sensitive land uses, a significant impact would occur if noise levels increased by 1.5 dB or more at or above 65 DNL. However, the FAA recognizes that there are settings where the 65 DNL standard may not apply (e.g., NWRs or other land uses where natural quiet is an expected attribute). The analysis of potential impacts to land use includes: 1) identification and description of land use areas that may be affected by implementation of a proposed action; 2) examination of the proposed action and its potential effects on land use; 3) assessment of the compatibility of a proposed action with existing zoning; 4) assessment of the significance of potential impacts to land use based on the criteria described above; and 5) provision of mitigation measures to minimize potential adverse impacts.

Per FAA Order 1050.1E, Change 1, Section 6, this Environmental Assessment (EA) does not provide a Section 4(f) analysis in accordance with the Department of Transportation Act. Paragraph 6.1c of the FAA Order describes that designation of airspace for military flight operations is exempt from Section 4(f). The Department of Defense (DoD) reauthorization in 1997 provided that "[n]o military flight operations (including a military training flight), or designation of airspace for such an operation, may be treated as a transportation program or project for purposes of Section 303(c) of Title 49, U.S. Code (USC) (Public Law [PL] 105-85)."

4.3.2 Impacts

Since there would be no construction or demolition associated with the Proposed Action (Preferred Alternative) or its alternatives, land use impacts associated with implementation of the Proposed Action or its alternatives would generally be limited to those associated with changes in noise exposure beneath the proposed Volk Field SAA. Additionally, impacts to land use as a result of chaff and flare use are also discussed. Given the lowest elevation (i.e., the floor) of all ATCAAs (18,000 feet MSL), noise levels associated with military aircraft operating at this altitude would have little to no effect on ground-based receptors; therefore, impacts to land use and visual resources beneath the proposed Volk Field SAA ATCAAs (i.e.., Oshkosh and Sheboygan East and West ATCAAs) were not evaluated in detail as a part of this analysis.

4.3.2.1 Proposed Action (Preferred Alternative)

<u>Noise Related Land Use Impacts</u>

The affected and proposed airspace included in the Proposed Action (Preferred Alternative) extends above a number of areas that are considered sensitive including: 1) private lands; 2) federally and state managed lands; and 3) tribal lands (refer to Section 3.3, *Land Use and Visual Resources*). However, the majority of these areas beneath the existing airspace complex would be negligibly affected by the Proposed Action, as none of the areas beneath the affected or proposed airspaces would experience noise levels greater than or equal to the 65 DNL threshold. Further, noise levels would generally remain similar to the ambient noise level described for residential areas, farms, and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use (U.S. Environmental Protection Agency [USEPA] 1974; refer to Section 4.2, *Noise*). The addition of newly introduced overflights and the periodic occurrence of aircraft-generated noise above sensitive land use settings could be perceived as intrusive. However, no component of the Proposed Action would alter or modify any part of the existing physical landscape and any land use impacts associated with aircraft overflight noise would be temporary and short-term in nature.

A ground-based receptor beneath the proposed expansion areas for the Volk Falls and Volk South MOAs, which would have an airspace floor of 500 feet AGL, as well as the Volk East MOA, which would have an airspace floor of 8,000 feet MSL, would be expected to recognize an increase in aircraft overflights. However, the noise levels resulting from aircraft using the proposed Volk Field SAA would be below 65 DNL. Further, the resulting noise levels would still be within the typical range of sound levels associated with small towns and quiet suburban areas (Federal Interagency Committee on Noise [FICON] 1992). On average, a sensitive receptor beneath the Volk SAA is not likely to experience SEL above 65 dB. Further, sensitive receptors beneath the 33 sq mi area of the existing Falls 1 MOA that would be relinquished under the Proposed Action would experience a decrease in aircraft overflights and associated noise.

As discussed in Section 3.2, *Noise*, avoidance of noise-sensitive areas is emphasized to all flying units utilizing Volk Field SAA and is noted in the Special Operating Procedures (SOPs) established for each MOA within the U.S. SOPs identify areas where overflights at low altitudes should be avoided to the maximum extent practicable (e.g., NWRs, farms and ranches, nesting sites, towns, and recreation areas). The Necedah NWR is the only documented avoidance area beneath the Volk Field SAA and noise levels above this area would be approximately 49.4 DNL. This would represent a 1.1 dB increase in average noise levels within the Necedah NWR. Average noise levels within the Necedah NWR under the Proposed Action would continue to be characteristic of a sensitive, quiet environment. Additionally, under the Proposed Action, Volk Field CRTC would continue to maintain a hotline for noise-related complaints associated with military aircraft operations. Consequently, impacts to land use under the Proposed Action would be less than significant.

<u>Effects of Chaff and Flare on Land Use</u>

The U.S. Air Force (USAF) conducted studies to examine the effects of chaff and flare use on sensitive land use areas. A successive evaluation of impacts to visibility from chaff and incidental debris, which used data from the 1994 field studies, concluded that significant impacts were unlikely (USAF 1997). Chaff debris does not accumulate in quantities that make it objectionable or even noticeable to most persons. Chaff debris is only visible in fairly open contexts where vegetation is sparse, along a road or pathway, or in cleared and maintained areas. Overall, chaff debris has very low visibility and little effect on the quality of the environment (USAF 1997); however, the use of chaff over or immediately adjacent to highly sensitive areas such as NWRs could conflict with land use management objectives established for those areas (USAF 1997). Visitors to these areas and the land managers responsible for them could perceive chaff debris as undesirable and unattractive if it would conflict with expectations of visual character and management objectives established to preserve an appearance of naturalness. However, military installations have the authority to create local procedures that restrict the use of chaff and flares near environmentally sensitive areas or population centers. Agreements between agencies such as the U.S. Fish and Wildlife Service (USFWS) and Bureau of Land Management (BLM), and military installations have limited chaff use over sensitive land uses such as NWRs, Native American reservations, and public lands near military training grounds which have the potential to support sensitive land uses. To date, Volk Field CRTC has received no complaints from the Necedah NWR or other federally or state-managed lands beneath the existing airspace complex. Consequently, no significant adverse land use or visual impacts with regard to chaff use would be anticipated.

Impacts associated with flare debris are consistent with impacts associated with chaff debris based on similarities in size and visibility characteristics once these debris have settled on the ground (USAF 1997). Fire risk associated with the use of flares is low and is addressed in more detail in Section 4.7, *Safety*.

4.3.2.2 Alternative 1: Eliminate Oshkosh and Sheboygan East and West ATCAAs from Proposed Action

Under Alternative 1, all of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of the Oshkosh ATCAA development. The elimination of the ATCAAs under this alternative would not result in changes to the land use or visual impacts described for the Proposed Action, thus impacts to land use and visual resources under this alternative would be less than significant.

4.3.2.3 Alternative 2: Eliminate Restricted Area 6904C from Proposed Action

With selection of Alternative 2, all of the proposed modifications of and expansions to the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of R-6904C development. Under this alternative, land use and visual impacts within Adams, Clark, Jackson, and Monroe counties would decrease slightly as compared to the Proposed Action, as there would be no implementation of the proposed RA. Land use and visual impacts associated with Alternative 2 would be less than described for the Proposed Action and not significant.

4.3.2.4 Alternative 3: Increase Existing Volk ATCAA Ceiling

Under this alternative, none of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented. However, under this alternative the ceiling of the existing Volk West ATCAA would be raised from FL 230 (23,000 feet MSL) to FL 280 (28,000 feet MSL) in order to reduce the number of airspace shelves in the complex and give aircraft more vertical area to operate. Selection of Alternative 3 would result in no significant impacts to land use or visual resources.

4.3.2.5 No-Action Alternative

Under the No-Action Alternative, WIANG would not implement the Proposed Action (Preferred Alternative) and conditions would remain as described in Section 3.3, *Land Use and Visual Resources.* Aircraft activity in the existing MOAs and RAs that comprise the Volk Field SAA would continue as described in Section 3.3.2, *Affected Environment*. Consequently, no impacts to land use or visual resources would result from the selection of the No-Action Alternative.

4.4 BIOLOGICAL RESOURCES

4.4.1 Approach to Analysis

This section evaluates the potential for the Proposed Action (Preferred Alternative) and its alternatives to impact biological resources. Determination of the significance of potential impacts to biological resources is based on applicable legal protection of sensitive resources (e.g., Wisconsin State Law, Federal Endangered Species Act [ESA], Migratory Bird Treaty Act [MBTA], Bald and Golden Eagle Protection Act [BGEPA]). Impacts to biological resources would be considered significant if special status plant or wildlife species or habitats of special concern were adversely affected or disturbances caused substantial reductions in population size or distribution. The Federal ESA further provides that an impact to biological resources would be considered significant if the USFWS determines that the Proposed Action or its alternatives would 1) jeopardize the continued existence of a federally listed threatened or endangered species; or 2) result in the destruction or adverse modification of federally designated critical habitat.

Data from the USFWS and the Wisconsin Department of Natural Resources (WDNR) were reviewed to determine the presence or potential occurrence of sensitive species and habitats in the Region of Influence (ROI) for the Proposed Action (USFWS 2014a; WDNR 2014l). In general, biological resources in the ROI could potentially be affected by implementation of the Proposed Action in two ways: 1) direct impacts associated with bird-aircraft strike hazards (BASH); and 2) indirect impacts of aircraft overflights.

Federal agencies are required to determine whether their actions may affect listed or proposed species and/or designated or proposed critical habitat. Once a "may affect" determination is made, the Federal agency must either request USFWS concurrence with a "may affect, but not likely to adversely affect" finding or request initiation of formal consultation (USFWS 2012d). The findings that could be issued by USFWS with regard to potential effects of a proposed action are defined below.

- *May affect and likely to adversely affect* - Listed resources are likely to be exposed to the action or its environmental consequences and will respond in a negative manner to the exposure. These determinations require written concurrence from the USFWS (USFWS 2012d).

- *May affect, but not likely to adversely affect* - All effects are beneficial, insignificant, or discountable. Beneficial effects have contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact and include those effects that are undetectable, not measurable, or cannot be evaluated. Discountable effects are those extremely unlikely to occur. These determinations require written concurrence from the USFWS (USFWS 2012d).
- *No effect* - there will be no impacts, positive or negative, to listed or proposed resources. Generally, this means no listed resources will be exposed to the action and its environmental consequences. Concurrence from the USFWS is not required (USFWS 2012d).

4.4.2 Impacts

Implementation of the Proposed Action (Preferred Alternative) or any evaluated alternatives would not require or result in construction or ground-disturbing activities beyond those which are already approved and commonly associated with training activities (e.g., those at the Hardwood Aerial Gunnery Range beneath the SAA complex). Potential direct impacts would include bird-aircraft collisions during training operations; however, secondary effects may also include noise impacts to sensitive wildlife species as well as indirect impacts to sensitive biological resources, including sensitive habitats. Existing bird and wildlife strike data provided from BASH, indicate 46 separate incidents since 2003, with the frequency of strikes varying between years, the most recent data indicate only one strike during 2014 (WIANG 2014a). Given the lowest elevation (i.e., the floor) of all ATCAAs (18,000 feet MSL), noise levels associated with military aircraft operating at and above this altitude would have little to no effect on avian or terrestrial species; therefore, impacts to biological resources beneath the proposed Volk Field SAA ATCAAs (e.g., Oshkosh and Sheboygan East and West ATCAAs) are not evaluated in detail as a part of this analysis.

4.4.2.1 Proposed Action (Preferred Alternative)

Bird-Aircraft Strikes

Bird strikes may occur during any phase of flight but are most likely to occur during the take-off, initial climb, approach and landing phases of flight operations due to the greater number of birds flying at lower altitudes. The Volk Field SAA is located on the eastern edge of the Mississippi Flyway and the western edge of the Atlantic Flyway; therefore, the greatest potential for bird strikes under existing and proposed conditions would occur during spring and fall migrations, when the number of birds increase and birds are typically flying at higher altitudes. Necedah NWR would be located beneath and entirely within the lateral limits of the Volk West MOA and is a temporary habitat for migrating birds; therefore, per Volk Field CRTC SOPs, military aircraft utilizing Volk Field SAA are required to avoid overflights above Necedah NWR below 1,000 feet AGL year-round and this lower limit is raised to 2,000 feet AGL from 15 September through 30 November (AFI 90-2001; WIANG 2014a). Approximately 95 percent of bird migration flights occur below 10,000 feet AGL, with the majority below 3,000 feet AGL (Lincoln et al. 2010). While there is considerable variation, most birds fly below 500 feet AGL except during migratory flights, with the favored altitude for most small birds being between 500 and 1,000 feet AGL (Erlich et al. 1988; Naval Facilities Engineering Command Southwest [NAVFAC SW] 2012). Consequently, the expansion of the Volk Falls and Volk South MOAs, which would have an airspace floor of 500 feet AGL, as well as the Volk East MOA, which would have an airspace floor of 8,000 feet MSL, implementation of the Proposed Action would result in negligible increases in strike risk, including potential strike of federally listed species. Further, the establishment of the proposed R-6904C would not be expected to result in increased risk as this area would be established within the existing Volk West and Volk South MOAs.

During migratory flights, birds flying between 500 and 1,000 feet AGL could be at risk for collisions with aircraft. However, most of the existing airspace areas already have a floor of 500 feet AGL, and the Proposed Action would not lower any of these floors. Further, the ANG has developed the Avian Hazard Advisory System (AHAS) to address and mitigate in-flight bird collision risks. The AHAS includes a Bird Avoidance Model (BAM) used to generate projected and actual geospatial bird data for use in airspaces, including MOAs, ranges, visual routes, instrument routes, and slow routes. The AHAS uses Geographic Information System (GIS) technology combined with data on bird habitat, migration, and breeding characteristics to create a visual tool for analyzing bird-aircraft collision risk. Additionally, each installation maintains and implements a BASH Plan that outlines procedures to minimize bird and other wildlife strikes by aircraft. This information, and the effective application of associated planning and management tools, can reduce the likelihood of collisions, though complete elimination of mishaps is not possible. Implementation of existing BASH Plans have minimized bird strikes to only 46 incidents since 2003. Further, of these incidents only 11 occurred since 2011, with only one incident recorded in 2014. Therefore, while complete avoidance of collisions is not possible, direct impacts to biological resources would remain similar to existing conditions and would not be significant.

<u>Potential Effects of Noise on Wildlife</u>

Potential noise impacts on biological resources resulting from airspace modifications, including incremental expansions, were analyzed by comparing baseline sound levels and operations for the existing Volk Field SAA to the sound levels and operations that are projected to result from the Proposed Action. The potential for disturbance was then evaluated based on the projected change in sound level and, where relevant, the predicted or documented response of the species or species groups to similar changes in sound level.

The noise analysis conducted for the Proposed Action (described in detail in Section 4.2, *Noise*) determined that the Proposed Action would result in very minor changes to the current noise environment. Predicted noise levels in the Necedah NWR would be approximately 49.4 DNL. This would represent a 1.1 dB increase in average noise levels within the Necedah NWR. Predicted noise levels in the Fox River NWR would be approximately 36 L_{dnmr}.

Over the past 20 years, numerous studies have been performed to evaluate the impact of aircraft noise and sudden visual appearance of aircraft on wildlife (Katona et al. 2000; Manci et al. 1988; Lamp 1989; Ellis et al 1991; White and Sherrod 1973; Black et al. 1984). These studies have revealed a wide range of behavioral response between species that varies as a function from previous exposure to noise, individual temperament, and, in some instances, the life cycle of the species (National Park Service 1994). Many wildlife species have been reported to exhibit an immediate fright response, while other species show no visible reaction, and some species appear to be influenced more by sight than by sound of low-flying jet aircraft.

The effects of noise on sensitive wildlife are highly variable, both in terms of the response and duration of the response (Katona et al. 2000; Manci et al. 1988; Lamp 1989; Ellis et al 1991; White and Sherrod 1973; Black et al. 1984); however, it is difficult to extrapolate effects from one study to another because the effects of sound are dependent on numerous variables including sound intensity, duration of exposure, and rapid or gradual onset of the noise. Most effects appear to be minor and temporary with no acute (i.e., sudden) effects on reproduction, mortality, or survivorship. However, sound levels above about 90 dB are more likely to result in adverse effects on special status mammal species and are associated with a number of startle responses (Katona et al. 2000; Manci et al. 1988).

Research on the effects of noise on terrestrial wildlife has focused primarily on mammals and birds. Although the potential exists for a variety of physiological and behavioral impacts on special status terrestrial wildlife as a result of the Proposed Action, effects on wildlife underlying the affected and proposed airspaces, would be less than significant. Resident wildlife are already habituated to military air traffic due to the military overflights currently occurring as low as 500 feet AGL in areas beneath the existing Volk Field SAA. Consequently, some special status wildlife species may be temporarily disturbed or startled by noise levels and/or low-level overflights in areas identified as having flights, but based on observational studies of mammals and the reproductive studies of birds referenced below, they would likely acclimatize to low-altitude flight activities and would not suffer any long-term, adverse effects such as reduced reproductive success or reduced fertility, thus impacts would be less than significant.

<u>Potential Effects of Flares on Wildlife</u>

Studies evaluating the environmental effects of the use of flares indicate that they do not significantly affect terrestrial wildlife for the following reasons (USAF 1997):

- Startle effects from flare deployment are minimal or insignificant relative to the noise of the aircraft;
- Birds and bats are unlikely to be struck in flight or on the ground by debris from deployed flares due to the small amount and light weight of material ejected and the visibility of the flare; and

- Inhalation of flare combustion products is unlikely to cause adverse effects because of the nontoxic nature of the materials at the concentrations to which wildlife could be expected to be exposed.

The primary environmental concern related to flares is increased potential for fire. Flare usage under normal conditions is not likely to cause a fire. Extreme precautions are taken with the use of flares, particularly in times of fire hazard conditions. During periods of high fire hazard, the minimum altitude for flare release (2,000 feet AGL) can be raised or use of flares can be suspended entirely to alleviate the risk of flare-induced fires (Air National Guard Readiness Center [ANGRC] 2003). Impacts to biological resources from use of flares would be less than significant.

Potential Effects of Chaff on Wildlife

The USAF (1998) assessed the potential biological effects of chaff on wildlife due to inhalation, ingestion, and direct contact. The USAF reported no adverse impacts from chaff and indicated that chaff is generally nontoxic. The study includes a literature review, field studies, and laboratory analyses of soil samples taken at Nellis and Townsend, the two military range areas studied (USAF 1998). The report also cited a Canada Department of Agriculture (1972) study that found no health hazards to farm animals.

Chaff does not significantly affect wildlife for the following reasons (USAF 1998):

- Animals can inhale chaff particles, but the particles do not penetrate far into the respiratory system and can be easily cleared out.

- Chaff disperses over a large area of land, limiting exposure of grazing animals.

- Little chaff accumulated on the surface of standing water bodies. Surface feeding or bottom-feeding animals and fish may ingest chaff, but this only affects a few individual animals and has a low impact on species populations.

- The numbers of chaff particles are negligible because chaff disperses over a large land area.

- Low concentrations of chaff limit the likelihood that birds would use chaff for nests and expose the young.
- Chaff disintegrates on land. It decomposes slowly in arid areas and has no adverse effects on soil chemistry and plant growth.
- Chaff interference with wildlife is expected to be negligible based on chaff use, characteristics, and observed accumulations.
- Chaff decomposing in water has no adverse impacts on water chemistry and aquatic life.
- In wet areas, chaff is covered by plant growth and dead leaves. Chaff decomposes more rapidly in wet acidic environments, but when doing so it releases only minute amounts of chemicals.
- Lead has not been used in the manufacture of chaff since 1983.

<u>Threatened and Endangered Species</u>

Volk Falls MOA

As described in Section 3.4, *Biological Resources*, federally and state-listed species may potentially occur beneath and within the proposed Volk Falls MOA. Federally listed species with the potential to occur in the counties underlying this airspace include the endangered Karner blue butterfly (*Lycaeides melissa samuelis*) and the endangered Kirtland's warbler (*Setophaga kirtlandii*). Other federally listed species with potential to occur beneath the proposed Volk Falls MOA include the threatened northern long-eared bat *(Myotis septentrionalis*), endangered bullhead (*Plethobasus cyphyus*), endangered Higgins' eye (*Lampsilis higginsii*), and threatened northern monkshood (*Aconitum noveboracense*). While listed as an experimental and non-essential population, and therefore not as a federally endangered species in this region, the whooping crane (*Grus americana*) also has the potential to occur beneath the proposed Volk Falls MOA. However, as the Proposed Action would not result in ground disturbing activities, there would be no effect on these species.

The Proposed Action would not affect the size or quality of any protected sensitive habitat areas, including any federally designated critical habitat. Any impacts resulting from implementation of the Proposed Action would be limited to noise disturbance and startle affect. As discussed above, there is no definitive answer to the question of long-term impacts and habituation of species to low-altitude overflights. Under implementation of the Proposed Action the airspace floor of the proposed Volk Falls MOA would remain at 500 feet AGL, similar to the existing Falls 1 and Falls 2 MOAs, and the area of the Volk Falls MOA would only encompass a relatively small portion of land (approximately 29 sq mi) that was not previously covered by the existing Falls 1 and Falls 2 MOAs. Additionally, as described in Section 4.2, *Noise*, there would be no significant increase in average noise exposure associated with military overflights. Therefore, it is anticipated that the Proposed Action and future operations associated with training conducted in the proposed Volk Falls MOA would have no effect on federally or state-listed species.

Volk West MOA

As described in Section 3.4, *Biological Resources*, federally and state-listed species may potentially occur beneath and within the proposed Volk West MOA. Federally listed species with the potential to occur in the counties underlying the Volk West MOA include the endangered Karner blue butterfly (*Lycaeides melissa samuelis)* and the endangered Kirtland's warbler (*Setophaga kirtlandii*). Other federally listed species with potential to occur beneath the proposed Volk West MOA include the threatened northern long-eared bat *(Myotis septentrionalis*), threatened northern monkshood (*Aconitum noveboracense*), and the whooping crane (*Grus americana*), which while listed as an experimental and non-essential population and therefore not federally endangered is currently under observation at the Necedah NWR in Juneau County. However as the Proposed Action would not result in ground disturbing activities, there would be no effect on these species. Special procedures for future communication of Volk Field SAA with the WDNR would also ensure there would be no impacts to future WDNR whooping crane observations. Similar to the impacts described above for the Volk Falls MOA, there would be no effect on federally listed species potentially occurring beneath the Volk West MOA.

Volk South MOA

As described in Section 3.4, *Biological Resources*, federally and state-listed species may potentially occur beneath and within the proposed Volk South MOA.

Federally listed species with the potential to occur in the counties underlying the Volk South MOA include the endangered Karner blue butterfly (*Lycaeides melissa samuelis)* and the endangered Kirtland's warbler (*Setophaga kirtlandii*). Other federally listed species with potential to occur beneath the proposed Volk Falls MOA include the threatened northern long-eared bat *(Myotis septentrionalis*), threatened northern monkshood (*Aconitum noveboracense*), and the whooping crane (*Grus americana*), which while listed as an experimental and non-essential population and therefore not federally endangered, is currently under observation at the Necedah NWR in Juneau County. However as the Proposed Action would not result in ground disturbing activities, there would be no effect on these species. Additionally, special procedures for future communication of Volk Field SAA with the WDNR would also ensure there would be no impacts to future WDNR whooping crane observations. Similar to the impacts described above for the Volk Falls MOA and the Volk West MOA, there would be no significant effect on federally listed species potentially occurring beneath the Volk South MOA.

Volk East MOA

As described in Section 3.4, *Biological Resources*, federally and state-listed species may potentially occur beneath and within the proposed Volk East MOA. Federally listed species with the potential to occur in the counties underlying the Volk East MOA include the endangered Karner blue butterfly (*Lycaeides melissa samuelis*), proposed threatened Poweshiek skipperling (*Oarisma poweshiek*), and endangered Kirtland's warbler (*Setophaga kirtlandii*). Other federally listed species with potential to occur beneath the proposed Volk East MOA include the northern long-eared bat *(Myotis septentrionalis*), snuffbox (*Epioblasma triquetra*), Higgins' eye (*Lampsilis higginsii*), and bullhead (*Plethobasus cyphyus*), Fassett's Locoweed (*Oxytropis campestris* var. *chartacea*), prairie white-fringed orchid (*Platanthera leucophaea*). While listed as an experimental and non-essential population, and therefore not as a federally endangered species in this region, the whooping crane (*Grus americana*) also has the potential to occur beneath the proposed Volk Falls MOA.

As described above, the Proposed Action would not affect the size or quality of any sensitive habitat or federally designated habitat areas beneath the Proposed Volk East MOA. Therefore, any impacts resulting from implementation of the Proposed Action would be limited to noise disturbance and startle affect. As discussed above, there is no definitive answer to the question of long-term impacts and habituation of species to low-altitude overflights. Under implementation of the Proposed Action, the Volk East MOA would overlie a relatively large portion of land that is not already overlain by the existing Volk Field SAA. However, under implementation of the Proposed Action, the airspace floor of the proposed Volk East MOA would remain at 8,000 feet MSL, which is likely too high to substantially impact wildlife species below. Therefore, implementation of the Proposed Action would have no effect on federally threatened or endangered species below the proposed Volk East MOA.

R-6904C

As described in Section 2, *Description of the Proposed Action and Alternatives*, the proposed R-6904C would be located from 3,000 feet MSL to FL 280 (28,000 feet MSL) and would be centered on the Hardwood Aerial Gunnery Range within the boundaries of the Volk West and Volk South MOAs (refer to Figure 2-1). Consequently, impacts to biological resources beneath the proposed R-6904C would be identical to those described for the Volk West and Volk South MOAs. Therefore, implementation of the Proposed Action would have no effect on federally threatened or endangered species below the proposed R-6904C.

4.4.2.2 Alternative 1: Eliminate Oshkosh and Sheboygan East and West ATCAAs from Proposed Action

Under this alternative, all of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of the Oshkosh and Sheboygan East and West ATCAAs development. As described for the Proposed Action, impacts to biological resources under this alternative would be less than significant.

4.4.2.3 Alternative 2: Eliminate Restricted Area 6904C from Proposed Action

With selection of Alternative 2, all of the proposed modifications of and expansions to the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of R-6904C development. Under this alternative biological impacts within Adams, Clark, Jackson, Monroe, and Wood counties would decrease slightly as there would be no additional operations associated with the proposed RA. Therefore, impacts to biological resources would remain similar and slightly less than those described for the Proposed Action, and would not be significant.

4.4.2.4 Alternative 3: Increase Existing Volk ATCAA Ceiling

Under this alternative, none of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented. However, under this alternative the ceiling of the existing Volk West ATCAA would be raised from FL 230 (23,000 feet MSL) to FL 280 (28,000 feet MSL) in order to reduce the number of airspace shelves in the complex. Aircraft operations above FL 230 (FL 23,000 feet MSL) would not impact biological resources below the Volk Field SAA; thus impacts to biological resources beneath the existing airspace complex would be less than significant.

4.4.2.5 No-Action Alternative

Under the No-Action Alternative, WIANG would not implement the Proposed Action (Preferred Alternative) and conditions would remain as described in Section 3.4, *Biological Resources*. Consequently, implementation of the No-Action Alternative would have no significant impacts on biological resources.

4.5 CULTURAL RESOURCES

4.5.1 Approach to Analysis

Cultural resources are subject to review under both Federal and state laws and regulations. Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, empowers the Advisory Council on Historic Preservation (ACHP) to comment on federally initiated, licensed, or permitted projects that have the potential to affect cultural sites listed or eligible for inclusion in the National Register of Historic Places (NRHP).

Once cultural resources have been identified, the evaluation of their significance is the process by which those resources are assessed in the context of significance criteria for scientific or historic research, for the general public, and for traditional cultural groups (e.g., Native American Tribes). Only cultural resources determined to be significant (i.e., eligible for inclusion in the NRHP) are protected under the NHPA.

Analyses of potential impacts to cultural resources consider both direct and indirect impacts. Direct impacts may occur by any of the following: 1) physically altering, damaging, or destroying all or part of a resource; 2) altering the characteristics of the surrounding environment that contribute to resource significance; 3) introducing visual, audible, or atmospheric elements that are out of character with the property or alter its setting; or 4) neglecting the resource to the extent that it deteriorates or is destroyed. Direct impacts can be assessed by identifying the locations of disturbance and determining if the action would coincide with the locations of identified significant cultural resources and thereby have the potential to result in a direct, adverse impact to that cultural resource.

Indirect impacts can result from the effects of project-induced changes in the local communities or environment. These activities can disturb or destroy cultural resources.

4.5.2 Impacts

Archaeological resources such as surface or subsurface artifacts or other intact cultural deposits would not be disturbed since there would be no ground-disturbing activities (e.g., construction or demolition) associated with any project components included in the Proposed Action (Preferred Alternative). Consequently, the only potential effects of the Proposed Action on cultural resources underlying the affected or proposed airspaces would result from noise and/or noise generated vibrations. Given the lowest elevation (i.e., the floor) of all ATCAAs (18,000 feet MSL), noise levels associated with military aircraft operating at this altitude would have little to no effect on ground based receptors; therefore, impacts to cultural resources (e.g., historic resources, tribal lands, etc.) beneath the proposed Volk Field SAA ATCAAs (e.g., Oshkosh and Sheboygan East and West ATCAAs) were not discussed in detail as a part of this analysis.

4.5.2.1 Proposed Action (Preferred Alternative)

Indirect Impacts to Historic Structures

Implementation of the Proposed Action (Preferred Alternative) would expose some of the underlying cultural resources to increased sound levels. Under the Proposed Action the floor of the Proposed Volk Falls, Volk West, and Volk South MOAs would be established at 500 feet AGL, which would correlate with average noise levels ranging from 49.5 L_{dnmr} (Volk Falls MOA) to 55.6 L_{dnmr} (Volk South MOA). The Volk East MOA would be established at 8,000 feet MSL, which would correlate with an average noise level of 36.0 L_{dnmr}. There would be no potential for structural damage to historical structures located beneath this airspace complex, which can occur at approximately 130 dB (Wyle 2008; National Research Council/National Academy of Sciences 1977). Additionally, while individual flyover events may result in noticeable noise levels at the ground surface, due to the altitude and frequency of these events, historic properties would not be subject to significant increases in average noise levels (refer to Section 4.2, *Noise*); therefore, there would be no significant impacts to the feeling or atmosphere of historic structures located beneath this airspace complex.

In addition, operations within the proposed MOAs would follow random flight paths that vary horizontally and vertically on a daily basis. Such variation prevents consistent exposure of particular locales or significant cultural resources to the projected sound levels. Sound levels would not be sufficient in intensity or duration to degrade the setting of cultural resources. The Proposed Action would introduce visual elements that could be perceived as being out of character with cultural properties in a quiet setting. Visual effects (the presence of military aircraft) on these resources would be negligible since the aircraft would only be visible from any given cultural resource for a few minutes per flying day.

Consultation with the Wisconsin Historical Society is underway to determine if archaeological resources or historic structures that are eligible for or listed in the NRHP would be affected by the proposed undertaking (see Appendix B, *Agency Coordination*).

Tribal Concerns

Since the initiation of the WIANG's Environmental Impact Analysis Process (EIAP), consultation with federally recognized Native American representatives has been underway per Executive Order (EO) 13175. The purpose of this consultation is to identify land, structures, or resources potentially of concern related to the Proposed Action. No significant impacts to Native American sacred or traditional sites have been identified or would be expected.

Based on noise level calculations for tribal lands beneath the affected and proposed airspaces (refer to Section 4.2, *Noise*) as well as feedback received in response to outreach to Native American representatives, no significant impacts to cultural resources, historic structures, or Traditional Cultural Properties would be expected as a result of the implementation of the Proposed Action.

4.5.2.2 Alternative 1: Eliminate Oshkosh and Sheboygan East and West ATCAAs from Proposed Action

Under Alternative 1, all of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of the Oshkosh and Sheboygan East and West ATCAAs development. Elimination of these ATCAAs under this alternative would not result in changes to the impacts to cultural resources described for the Proposed Action, thus impacts to cultural resources under this alternative would be less than significant.

4.5.2.3 Alternative 2: Eliminate Restricted Area 6904C from Proposed Action

With selection of Alternative 2, all of the proposed modifications of and expansions to the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of R-6904C development. Under this alternative, noise levels within Adams, Clark, Jackson, Monroe, and Wood counties would decrease slightly as there would be no aircraft operations associated with the proposed RA. However, each of these counties would still experience slight increases in noise levels above the existing setting due to reconfiguration of and increased operations within the Volk West MOA. Therefore, impacts to cultural resources would remain similar to those described for the Proposed Action and less than significant.

4.5.2.4 Alternative 3: Increase Existing Volk ATCAA Ceiling

Under Alternative 3, none of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented. However, under this alternative the ceiling of the existing Volk West ATCAA would be raised from FL 230 (23,000 feet MSL) to FL 280 (28,000 feet MSL) in order to reduce the number of airspace shelves in the complex. Raising the Volk West ATCAA ceiling and resulting aircraft operations would result in less than significant impacts to historic properties or other cultural resources below the airspace complex.

4.5.2.5 Alternative 4: No-Action Alternative

Under the No-Action Alternative, the proposed airspace modifications would not occur. Existing conditions, including ongoing overflight activity, would remain unchanged. Consequently, implementation of the No-Action Alternative would have no significant impacts on cultural resources.

4.6 AIR QUALITY

4.6.1 Approach to Analysis

The 1990 Amendments to the Clean Air Act (CAA) require that Federal agency activities conform to the State Implementation Plan (SIP) with respect to achieving and maintaining *attainment* of National Ambient Air Quality Standards (NAAQS) and addressing air quality impacts. Consistent with FAA Order 1050.1E, Change 1, an air quality impact would be considered significant if it would exceed one or more of the NAAQS for any of the time periods analyzed. The USEPA General Conformity Rule requires that a conformity analysis be performed which demonstrates that a proposed action does not: 1) cause or contribute to any new violation of any NAAQS in the area; 2) interfere with provisions in the SIP for maintenance or attainment of any NAAQS; 3) increase the frequency or severity of any existing violation of any NAAQS; or 4) delay timely attainment of any NAAQS, any interim emission reduction, goals, or other milestones included in the SIP. Provisions in the General Conformity Rule allow for exemptions from performing a conformity determination only if total emissions of individual *nonattainment* area pollutants resulting from the Proposed Action (Preferred Alternative) and its alternatives fall below the significant threshold values.

With respect to the General Conformity Rule, effects on air quality would be considered significant if a proposed action would result in an increase of the Regional Emissions Inventory above the *de minimis* threshold levels established in 40 Code of Federal Regulations (CFR) §93.153(b) for individual nonattainment or maintenance pollutants.

4.6.2 Impacts

The following air quality analysis is based on air quality modeling conducted to determine the total emissions associated with proposed aircraft operations within the proposed Volk Field SAA; these data were then compared to existing military aircraft-related criteria pollutant emissions within the existing airspace complex. The analytical parameters considered in this analysis include aircraft type, proposed aircraft operations, and a conservative estimate of the amount of time spent within each airspace block (see Appendix C, *Air Quality*). Given the lowest elevation (i.e., the floor) of all ATCAAs (18,000 feet MSL), emissions associated with military aircraft operating at this altitude would have little to no effect on ground-level air quality (FAA 2000); therefore, impacts to air quality associated with operations within the Volk Field SAA ATCAAs (e.g., Oshkosh and Sheboygan East and West ATCAAs) were not discussed in detail as a part of this analysis.

4.6.2.1 Proposed Action (Preferred Alternative)

<u>Aircraft-Related Operations Emissions</u>

Implementation of the Proposed Action (Preferred Alternative) would expand the existing Volk Field SAA by approximately 1,290 sq mi, consistent with those described in Section 2, *Description of the Proposed Action and Alternatives* (refer to Table 2-7). Table 4-3 below shows the estimated emissions associated with projected flying operations within the proposed Volk Field SAA.

Table 4-3. Proposed Mobile Source (Aircraft) Emissions within the ROI

Airspace	Total Usage (hours)	CO (tpy)	VOC (tpy)	NO_x (tpy)	SO_x (tpy)	PM (tpy)	HAP (tpy)
Volk Falls MOA	1,035	4.8	0.5	142.8	5.3	1.8	0.4
Volk West MOA	1,035	4.8	0.5	142.8	5.3	1.8	0.4
Volk South MOA	920	4.3	0.5	128.5	4.8	1.6	0.4
Volk East MOA	1,035	4.8	0.5	142.8	5.3	1.8	0.4
R-6904A/B	800	3.8	0.4	114.3	4.2	1.4	0.3
R-6904C	240	1.2	0.1	35.7	1.3	0.5	0.1

Source: AMEC 2014a; see Appendix C, *Air Quality*, for full air quality modeling criteria and results.
Note: This summary is an estimate as the total usage was modeled for F-16 aircraft, which are the primary users of the Volk Field SAA. Emissions from other aircraft do not contribute substantially to the total mobile emissions within the Volk Field SAA. While the Proposed Action would result in mobile NO_x emissions greater than 100 tpy, these emissions would be spread throughout the entire airspace complex. Further, these emissions would occur within attainment areas or above the average mixing height of 3,000 feet AGL (see *General Conformity* discussion).

Implementation of the Proposed Action would affect multiple counties in central and east-central Wisconsin; however, all counties within the ROI are in attainment for all criteria pollutants (USEPA 2013). The proposed modifications to the MOAs apply to elevations ranging from 500 feet AGL to 180 FL. Further, it is important to note that 80 percent of aircraft operations would be at a sufficient altitude that the emissions would not affect ground-level concentrations of pollutants. A study conducted by the FAA determined that aircraft operations at or above the average mixing height of 3,000 feet AGL have a negligible effect on ground level concentrations and could not directly result in a violation of the NAAQS in a local area (FAA 2000) (see Appendix C, *Air Quality*, for additional information). Based on this information, and with 80 percent of proposed operations occurring at an altitude above 3,000 feet AGL implementation of the Proposed Action would generate a negligible effect on ground level concentrations and would not result in a violation of the NAAQS in a local area.

The significance of a pollutant concentration is determined by comparison with Federal and state air quality standards. USEPA has established NAAQS for ambient air quality within which there are two sets of standards: primary standards and secondary standards. At present, no criteria pollutant concentrations are considered to be in *nonattainment* for the ROI. Additional emissions associated with the use of the proposed Volk Field SAA would be less than significant.

General Conformity

As described above, all of the counties within the ROI are in *attainment* for all criteria pollutants. Consequently, a general conformity determination is not required. Further, the FAA conducted a study of ground-level concentrations caused by elevated aircraft emissions at altitude using USEPA-approved models and conservative assumptions. The study concluded that aircraft operations at or above the average mixing height of 3,000 feet AGL have a negligible effect on ground level concentrations and could not directly result in a violation of the NAAQS in a local area (FAA 2000). Therefore, USEPA's final rule (40 CFR §93.153) exempts as *de minimis* aircraft emissions above the 3,000 foot AGL mixing height, including the subject mobile aircraft emissions resulting from the implementation of the Proposed Action. Consequently, a General Conformity Determination would not be needed for the Proposed Action (see Appendix C, *Air Quality*).

4.6.2.2 Alternative 1: Eliminate Oshkosh and Sheboygan East and West ATCAAs from Proposed Action

Under Alternative 1, all of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of the Oshkosh and Sheboygan East and West

ATCAAs development. Elimination of these ATCAAs under this alternative would not result in changes to the impacts to air quality described for the Proposed Action, thus as described for the Proposed Action, impacts to air quality under this alternative would be less than significant.

4.6.2.3 Alternative 2: Eliminate Restricted Area 6904C from Proposed Action

With selection of Alternative 2, all of the proposed modifications of and expansions to the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of R-6904C development. Consequently, there would be a slight reduction in aircraft operations resulting in reduced air quality impacts relative to the Proposed Action; therefore, impacts to air quality under this alternative would be less than significant.

4.6.2.4 Alternative 3: Increase Existing Volk ATCAA Ceiling

Under this alternative, none of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented. However, under this alternative the ceiling of the existing Volk West ATCAA would be raised from FL 230 (23,000 feet MSL) to FL 280 (28,000 feet MSL) in order to reduce the number of airspace shelves in the complex. Aircraft operations at this altitude would not contribute noticeably to ground level concentrations of criteria pollutants (FAA 2000). Therefore, there would be less than significant impacts to the air quality beneath the existing airspace complex.

4.6.2.5 No-Action Alternative

Under the No-Action Alternative, the proposed airspace modifications would not occur. Conditions would remain as described in Section 3.6, *Air Quality*. No significant impacts to air quality would result from the selection of the No-Action Alternative.

4.7 SAFETY

4.7.1 Approach to Analysis

If implementation of the Proposed Action (Preferred Alternative) or its alternatives would substantially increase risks associated with aircraft mishap potential or flight safety relevant to the public or the environment, it would represent a significant impact. For example, if an action involved an increase in aircraft operations such that mishap potential would increase substantially, air safety would be compromised and impacts would be significant.

Changes in flight tracks or missions can also result in impacts to safety if the Proposed Action and or its alternatives would increase the risk of bird strikes. The BASH risk is determined by comparing BASH data for the routes previously flown to data projected to occur based on conditions following implementation of the Proposed Action or its alternatives.

The Proposed Action and its alternatives do not include any ground disturbances including development or construction, or impacts from air-to-ground training activities. Therefore, an assessment of safety implications that are typically addressed in National Environmental Protection Agency (NEPA)-compliant documentation (e.g., incompatible land use with regard to criteria such as Runway Protection Zones, quantity-distance arcs, or Anti-Terrorism/Force Protection standards) is not included in this EA.

4.7.2 Impacts

4.7.2.1 Proposed Action (Preferred Alternative)

<u>Mishap and BASH Hazards</u>

The Proposed Action would result in modifications to and expansion of the Volk Field SAA. By slightly increasing the amount of training space through the establishment of new airspaces, aircraft would have more room to train in and a greater distance buffer between individual aircrafts. This would reduce the risk of aircraft-to-aircraft collision mishap, though an increased risk of an aircraft mishap resulting from an aircraft malfunction or human error would still exist. This risk of mishap would remain consistent with the current risk of mishap as there is no projected change to training hours, and therefore would be less than significant. Additionally, consolidation of the existing airspace areas would result in a reduced potential for aircraft to "spill out" of the existing boundaries. Consequently, there would be a slightly reduced potential for air-to-air collisions with military and civilian aircraft resulting in a minor beneficial impact to safety.

As implementation of the Proposed Action would expand the footprint of the existing Volk Field SAA, it would increase the potential for civilian pilots to encounter military aircraft conducting training in areas where military aircraft do not currently operate (refer to Section 4.1, *Airspace Management*). However, the proposed modifications to and expansions of the existing Volk Field SAA would not significantly affect safety as 1) civilian pilots in the area are accustomed to sharing airspace with military traffic associated with the existing Volk Field SAA; 2) the Minneapolis and Chicago ARTCCs transmit the location and altitude of all known civilian aircraft to all military aircraft operating in the airspace area; and 3) military pilots are trained to see and avoid aircraft. Therefore, adverse impacts to safety would not be significant

The Proposed Action would slightly increase the amount of overlap between training space and potential bird flight paths within the Mississippi Flyway and the Atlantic Flyway; however the majority of bird flights occur below 500 feet AGL (refer to Section 3.7, *Safety*). Further, Necedah NWR is a temporary habitat for migrating birds and per Volk Field CRTC SOPs, military aircraft utilizing Volk Field SAA are required to avoid Necedah NWR overflight below 1,000 feet AGL annually and below 2,000 feet AGL from 15 September through 30 November. As described under Section 4.4, *Biological Resources* BASH strike data for the Volk Field CRTC includes 11 incidents from 2011 through 2014, with most incidents occurring between June and September, with only one incident in 2014 (WIANG 2014a). There would be no increase in the potential for bird-strike occurrence beyond the slightly increased flight area. Existing safety measures described in Section 3.7, *Safety*, would continue to be implemented and impacts with regards to bird strikes would not be significant.

<u>Non-Eye Safe Laser Use</u>

The existing R-6904A/B allows for aircraft to use non-eye safe lasers for the purpose of identifying targets within Hardwood Aerial Gunnery Range and directing precision guided munitions from armed aircraft within the range. Under the Proposed Action, R-6904C would be established and utilized for long-range non-eye safe laser training. R-6904C would create an envelope to the north, west, and south of Hardwood Aerial Gunnery Range and include a larger area than both R-6904A and R-6904B. The addition of R-6904C would support and segregate this hazardous activity from nonparticipating aircraft (WIANG 2012).[15] Consequently, there would be no significant safety related impacts associated with the use of long-range non-eye safe lasers.

Risks Associated with Flare Use

Fire Risk

Under the Proposed Action, the deployment of ordnance within the Hardwood Aerial Gunnery Range (R-6904A/B) would not change. Additionally, deployment of Mobile Jettison Unit (MJU)-7 flares for training activities would continue to occur throughout the proposed Volk Field SAA. Flare use creates a risk of ignition on the ground if the flare does not burn out prior to making contact with an ignitable material. However, flares typically burn out in 3.5 to 5 seconds and flares deployed at an altitude of the USAF minimum altitude of 700 feet AGL would burn out by 300 feet AGL (USAF 1997) (see Table 4-4). Flare use associated with Volk SAA does not occur below 2,000 feet AGL.

Implementation of these procedures and sensitivity to environmental conditions reduces the risk of flare ignited fire on the ground and impacts would be less than significant.

[15] Establishment of R-6904C under the Proposed Action would not have any effect on munitions delivery area at Hardwood Aerial Gunnery Range (WIANG 2014a). While non-eye safe lasers could be used at a greater distance, the disturbance areas within the range would remain identical to existing conditions.

Table 4-4. MJU-7 Flare Fall Speed and Distance from Ground at Burnout

Time (Seconds)	Drop Distance (Feet)
0.5	4
1.0	16
1.5	36
2.0	64
2.5	101
3.0	145
3.5	197
4.0	258
4.5	326
5.0*	403
5.5	487
6.0	580
6.5	680
7.0	789
7.5	906
8.0	1,030
8.5	1,163
9.0	1,304
9.5	1,453
10.0	1,610

Source: USAF 1997.
Note: MJU-7 flares generally burn out in approximately 3.5 to 5.0 seconds. Consequently, flares deployed at the USAF minimum altitude of 700 feet AGL would burn out approximately 300 feet AGL.

Flare Strike Risk

Upon ejection, if a flare fails to ignite, it is possible that the flare cartridge could contact a person or habitable structure on the ground surface. However, based on a set of assumptions regarding reliability rate, aircraft speed, aircraft height above ground, and behavior of the flare after release, Air Combat Command (ACC) calculated the probability of a dud flare hitting a person in an area with a population density of 100 persons per square mile would be approximately one in 5.8 million (USAF 1997).

Establishment of the Proposed Volk Field SAA would provide improvements in airspace functionality and efficiency through contiguous airspace conducive to safe transitions from one airspace unit to another in order to support realistic air-to-ground, air-to-air, and composite force training. Overall impacts to safety resulting from the establishment of the complex would be beneficial.

4.7.2.2 Alternative 1: Eliminate Oshkosh and Sheboygan East and West ATCAAs from Proposed Action

Under Alternative 1, all of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of the Oshkosh and Sheboygan East and West ATCAAs development. Thus, the proposed Oshkosh or Sheboygan East or West ATCAAs would not be used for marshalling aircraft during LFEs. Consequently, elimination of these ATCAAs under this alternative would not result in changes to the impacts to safety described for the Proposed Action. WIANG would continue coordination efforts to establish necessary temporary ATCAAs within the WIANG A, B, and C ATCAAs. Further, the WIANG A, B, and C ATCAA boundaries would need to be reconfigured to line up with the Proposed Volk East ATCAA. As described for the Proposed Action, impacts to safety under this alternative would be less than significant.

4.7.2.3 Alternative 2: Eliminate Restricted Area 6904C from Proposed Action

With selection of Alternative 2, all of the proposed modifications of and expansions to the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of R-6904C development. Consequently, long-range non-eye safe laser training would not occur; however, existing non-eye safe laser training within R-6904A/B would continue. Under the Proposed Action establishment of R-6904C would not result in safety related impacts; therefore, removal of this element under this alternative would not result in any significant impacts to safety.

4.7.2.4 Alternative 3: Increase Existing Volk ATCAA Ceiling

Under Alternative 3, none of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented. However, under this alternative the ceiling of the existing Volk West ATCAA would be raised from FL 230 (23,000 feet MSL) to FL 280 (28,000 feet MSL) in order to reduce the number of airspace shelves in the complex. Safety conditions associated with Volk Field SAA would be negligibly beneficial to existing conditions described in Section 3.7, *Safety*, through expanded vertical airspace available for aircraft operations.

4.7.2.5 No-Action Alternative

Under the No-Action Alternative, the proposed airspace modifications would not occur. Conditions would remain as described in Section 3.7, *Safety*. No impacts to safety would result from the selection of the No-Action Alternative.

4.8 HAZARDOUS MATERIALS AND WASTE

4.8.1 Approach to Analysis

Numerous local, state, and Federal laws regulate the storage, handling, disposal, and transportation of hazardous materials and wastes; the primary purpose of these laws is to protect public health and the environment. The significance of potential impacts associated with hazardous substances is based on their toxicity, ignitability, and corrosivity. Impacts associated with hazardous materials and wastes would be significant if the storage, use, transportation, or disposal of hazardous substances substantially increases the human health risk or environmental exposure.

4.8.2 Impacts

4.8.2.1 Proposed Action (Preferred Alternative)

<u>Short-term Impacts</u>

Hazardous Materials and Wastes

No ground disturbing activities (e.g., construction or demolition) would occur as a part of the Proposed Action (Preferred Alternative). Consequently, upon implementation of the Proposed Action, there would be no increase in the temporary storage of construction-related hazardous materials and wastes. Therefore, short-term impacts associated with hazardous materials and wastes would not occur as a result of implementation of the airspace initiative.

<u>Long-term Impacts</u>

Hazardous Materials and Wastes

Implementation of the Proposed Action would not result in a change in the handling, storage, or use of petroleum, oils, and lubricants (POL) at Volk Field CRTC. Established safe handling, storage, and use procedures would continue to be implemented. Consequently, long-term impacts associated with hazardous materials and wastes would be less than significant.

Fuel Dumping

Military aircraft operating with the proposed Volk Field SAA would continue to adhere to USAF fuel dumping procedures, when necessary (i.e., in life-threatening emergency situations). As described in Section 3.8, *Hazardous Materials and Wastes*, fuel dumping is not a component of any routine flight training and only occurs during in-flight emergency circumstances with a loss of life potential for the pilot. Fuel dump procedures would remain unchanged under the Proposed Action and fuel venting would not be anticipated to occur within the modified or expanded airspace areas. Therefore, impacts associated with fuel dumping would be less than significant.

Chaff and Flare

Under the Proposed Action, the storage, transport, and use of chaff and flare would continue to be implemented consistent with current procedures and training operation requirements. Consequently, there would be no significant impacts to the physical or human environment as a result of chaff and flare use within proposed airspace areas.

4.8.2.2 Alternative 1: Eliminate Oshkosh and Sheboygan East and West ATCAAs from Proposed Action

With selection of Alternative 1, all of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of the Oshkosh and Sheboygan East and West ATCAAs development. Elimination of these ATCAAs under this alternative would not result in changes to the impacts to hazardous materials and wastes described for the Proposed Action. As described for the Proposed Action, impacts to hazardous materials and wastes under this alternative would be less than significant.

4.8.2.3 Alternative 2: Eliminate Restricted Area 6904C from Proposed Action

Under Alternative 2, all of the proposed modifications of and expansions to the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of R-6904C development. Under the Proposed Action, establishment of R-6904C would not result in hazardous materials and wastes related impacts, therefore, removal of this element under this alternative would not result in a substantial change to the impacts described for the Proposed Action. Thus, impacts would not be significant.

4.8.2.4 Alternative 3: Increase Existing Volk ATCAA Ceiling

Selection of Alternative 3 would not result in proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative). However, under this alternative the ceiling of the existing Volk West ATCAA would be raised from FL 230 (23,000 feet MSL) to FL 280 (28,000 feet MSL) in order to reduce the number of airspace shelves in the complex. Under this alternative, there would be no substantial change to the conditions described in Section 3.8, *Hazardous Materials and Wastes*, and impacts would be less than significant

4.8.2.5 No-Action Alternative

Under the No-Action Alternative, the proposed airspace modifications and expansions would not occur. Conditions would remain as described in Section 3.8, *Hazardous Materials and Wastes*. No significant impacts to hazardous materials and wastes would result from the selection of the No-Action Alternative.

4.9 Socioeconomics, Environmental Justice, and Children's Health and Safety

4.9.1 Approach to Analysis

Significance of population and expenditure impacts are assessed in terms of their direct effects on the local economy and related effects on other socioeconomic resources (e.g., income, housing, etc.). The magnitude of potential impacts can vary depending on the location of a proposed action; for example, implementation of an action that creates 20 employment positions may be unnoticed in an urban area but may have significant impacts in a more rural region. If potential socioeconomic impacts would result in substantial shifts in population trends, or adversely affect regional spending and earning patterns, they would be considered significant. Consistent with FAA Order 1050.1E, Change 1, an impact would be considered significant if required or resulted in: 1) Extensive relocation of residents, but sufficient replacement housing is unavailable; 2) Extensive relocation of community businesses, that would create severe economic hardship for the affected communities; 3) Disruptions of local traffic patterns that substantially reduce the levels of service of the roads serving the airport and its surrounding communities; or 4) Substantial loss in community tax base.

In order to comply with EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, ethnicity and poverty status in the vicinity of the Volk Field SAA have been examined and compared to county, state, and national data to determine if any minority or low-income communities could potentially be disproportionately affected by implementation of the Proposed Action (Preferred Alternative) or alternatives. Similarly, to comply with EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* the distribution of children and locations where numbers of children may be proportionally high on and in the vicinity of the Volk Field SAA were determined to ensure that environmental risks and safety risks to children are addressed.

4.9.2 Impacts

4.9.2.1 Proposed Action (Preferred Alternative)

Employment and Economy

Under the Proposed Action (Preferred Alternative), there would be no long-term changes in economic activity associated with the Volk Field CRTC, as no additional personnel would be added to the installation. Further, the Proposed Action would have negligible impacts on underlying cities and communities. The majority of the existing airspace complex and the proposed minor expansion areas would not cover areas of significant population or economic activity that are not already covered by the existing airspace complex. The proposed Volk East MOA would have an operational floor at 8,000 feet MSL, and the proposed Oshkosh and Sheboygan East and West ATCAAs would be established with an operational floor of FL 180 (18,000 feet MSL), which would separate WIANG training from affected populations such that ground-based economic activity – including employment – would not be impacted. Additionally, the altitudes of these operational floors would allow for continued use of local airspace by general aviation pilots beneath the MOAs, as these pilots are permitted to fly beneath MOAs without restrictions, and even through them. As described in the FAA's Airman's Information Manual, whenever a MOA is being used, nonparticipating IFR traffic may be cleared through a MOA if IFR separation can be provided by ATC and procedures are described in a Letter of Agreement between the unit and the ATC controlling agency (FAA Order 7400.2K). Otherwise, ATC will reroute or restrict nonparticipating IFR traffic. Similarly, VFR traffic may transit through active MOAs and are encouraged to contact the controlling agency before doing so. Consequently, while general aviation pilots may avoid MOAs as a matter of principle, the establishment of the MOAs would not preclude local flight traffic, and would therefore have a negligible economic impact on underlying cities or airfields that benefit from fuel sales or tie-down fees. Thus, impacts to the economy within the ROI would not be significant.

Housing

The counties underlying the proposed Volk Falls, Volk West, and Volk South MOAs already underlie the existing airspace complex. While the proposed Volk

East MOA expansion area would overlie counties that are not currently located beneath the existing airspaces, the flight activity in the proposed Volk East would occur at or above 8,000 feet MSL and would result generally in inaudible sound levels that would not disrupt the activities on the ground or impact regional housing characteristics.

Small portions of the land underlying the proposed Volk Falls MOA and Volk South MOA are not currently covered by the existing MOAs. However, implementation of the Proposed Action would result in only a minor increase in flight activity at altitudes as low as 500 feet AGL within these areas. While aircraft activity within this area may result in additional single event low-altitude flyovers, flight activity in this area would not result in substantial increases in average noise experienced on the ground below the proposed MOA (refer to Section 4.2, *Noise*). Consequently, noise levels would remain well below the recommended sound level thresholds established to protect public health and welfare, including annoyance, in areas where quiet is a recognized resource (USEPA 1974). Impacts to housing within the ROI would not be significant.

Environmental Justice and Protection of Children

No significant, adverse long-term environmental impacts associated with the Proposed Action would occur as a result of its implementation; therefore, no populations (i.e., minority, low-income, or otherwise) would be disproportionately adversely impacted. In addition, implementation of the Proposed Action would not result in an increase in aircraft operations in the vicinity or within concentrations of children. Therefore, no increased environmental health risks or safety risks to children would occur, and no significant impacts with regard to environmental justice or protection of children would result.

4.9.2.2 Alternative 1: Eliminate Oshkosh and Sheboygan East and West ATCAAs from Proposed Action

Under Alternative 1, all of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of the Oshkosh and Sheboygan East and West ATCAAs development. Removal of this element from the Proposed Action and implementation of this alternative would not result in substantial impacts to socioeconomics, environmental justice, or children's health and safety.

4.9.2.3 Alternative 2: Eliminate Restricted Area 6904C from Proposed Action

With the selection of Alternative 2, all of the proposed modifications of and expansions to the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented, with the exception of R-6904C development. Under the Proposed Action establishment of R-6904C would not result in hazardous materials and wastes related impacts; therefore, removal of this element under this alternative would not result in a substantial change to the impacts described for the Proposed Action. Thus, impacts to socioeconomics, environmental justice, or children's health and safety would be less than significant.

4.9.2.4 Alternative 3: Increase Existing Volk ATCAA Ceiling

Under Alternative 3, none of the proposed modifications to and expansions of the Volk Field SAA described for the Proposed Action (Preferred Alternative) would be implemented. However, under this alternative the ceiling of the existing Volk West ATCAA would be raised from FL 230 to FL 280 in order to reduce the number of airspace shelves in the complex. However, the volume of the other airspace would remain the same and there would be no increase in the footprint of the existing Volk Field SAA. Consequently, there would be no significant impact to socioeconomics, and conditions would remain as described in Section 3.9, *Socioeconomic, Environmental Justice, and Children's Health and Safety.*

4.9.2.5 No-Action Alternative

Under the No-Action Alternative, the proposed airspace modifications would not occur. Conditions would remain as described in Section 3.9, *Socioeconomic, Environmental Justice, and Children's Health and Safety* and no significant impacts would result from the selection of the No-Action Alternative.

4.10 DISMISSED RESOURCE AREAS

Per NEPA guidelines and CEQ regulations, those resource areas that are anticipated to experience either no or negligible environmental impact under implementation of the Proposed Action (Preferred Alternative) or any identified alternative were not examined in detail in this EA. These environmental resources include:

- Greenhouse Gas Emissions
- Utilities and Infrastructure;
- Ground Transportation;
- Geological Resources; and
- Water Resources and Wetlands.

A brief summary of the rationale for not including detailed analyses of these resource areas in the EA is provided in Section 3.10, *Dismissed Resource Areas*.

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SECTION 5
CUMULATIVE IMPACTS

Cumulative impacts on environmental resources result from incremental impacts of actions when combined with other past, present, and reasonably foreseeable future projects in an affected area. Cumulative impacts can result from minor, but collectively substantial, actions undertaken over a period of time by various agencies (Federal, state, or local) or persons. In accordance with the National Environmental Policy Act (NEPA), a discussion of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the near future is required.

5.1 APPROACH TO CUMULATIVE IMPACTS ANALYSIS

Per Council on Environmental Quality (CEQ) guidelines for considering cumulative effects under NEPA (CEQ 1997), this cumulative impact analysis includes three major considerations to:

1. Determine the scope of the cumulative analysis, including relevant resources, geographic extent, and timeframe;
2. Conduct the cumulative effects analysis; and
3. Determine the cumulative impacts to relevant resources.

5.1.1 Scope of Cumulative Impact Analysis

The Proposed Action (Preferred Alternative) and its alternatives include modifications to and expansions of existing military airspace, including Military Operations Areas (MOAs) and Air Traffic Control Assigned Airspaces (ATCAAs), as well as establishment of a new Restricted Area (RA) 6904C (R-6904C) for the use of long-range non-eye safe lasers. Implementation of the Proposed Action or its alternatives would not include the development or construction of any facilities, result in or require any ground-disturbing activities, or include any changes to manpower levels at Volk Field Combat Readiness Training Center (CRTC).

5.1.2 Cumulative Projects

CEQ guidelines require that potential cumulative impacts be considered over a specified time period (i.e., from past through future). The appropriate time for considering past, present, and reasonably foreseeable future projects can be the design life of a project, or future timeframes used in local master plans and other available predictive data. Determining the timeframe for the cumulative impacts analysis requires estimating the length of time the impacts of a proposed action would last and considering the specific resource in terms of its history of degradation (CEQ 1997). The Proposed Action (Preferred Alternative) and alternatives include ongoing and anticipated future military training airspace areas and flight training activities conducted within them. While training and testing requirements change over time – in response to world events and several other factors – the general types of activities addressed in this Environmental Assessment (EA) are expected to continue indefinitely, and the potential impacts associated with those operations would also occur consistently and indefinitely. Therefore, the cumulative impacts analysis presented herein is not bound by a specific future timeframe.

Per CEQ guidelines, in order to assess the influence of a given action, a cumulative impact analyses should be conducted using existing, readily available data and the scope of the cumulative impact analysis should be defined, in part, by data availability. Consequently, only past projects or reasonably foreseeable future projects with the potential to contribute to cumulative impacts of the Proposed Action or its alternatives have been evaluated in this section. While the cumulative impacts analysis is not limited by a specific timeframe, it should be recognized that available information, uncertainties, and other practical constraints limit the ability to analyze cumulative impacts for the indefinite future. Consequently, future actions that are speculative are not considered in this EA.

5.1.3 Past, Present, and Reasonably Foreseeable Actions

Below is a list of documents reviewed for past, present, and reasonably foreseeable actions with the region which could interact with the proposed Volk Field CRTC airspace complex.

- Final Environmental Assessment SAC Low-Altitude Flight Operations at the Hardwood Range (June 1989)
- Final Environmental Assessment for the Establishment of the Air Combat Maneuvering Instrumentation (ACMI) and Modification to Airspace for the Wisconsin Air National Guard, Volk Field (June 1990)
- Final Environmental Assessment Proposed Wastewater Treatment Facility for Volk Field Air National Guard Facility (November 1990)
- Final Environmental Impact Statement Addressing the Hardwood Range Expansion and Associated Airspace Actions (November 2000)
- Final Environmental Assessment for Deployment of Chaff and Flares in Military Operations Areas (Phase I) (August 2002)
- Air Installation Compatible Use Zone Study Volk Field Air National Guard Base (May 2008)
- Volk Field Hardwood Range Encroachment Report (May 2008)
- Volk Field Hardwood Range Compatible Use Analysis (August 2010)
- Volk Field Hardwood Range Joint Land Use Study (December 2011)

5.1.4 Cumulative Impact Analysis and Potential Effects

Cumulative effects may occur when there is a relationship between an action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the Proposed Action (Preferred Alternative) or its alternatives could reasonably be expected to have more potential for cumulative effects on "shared resources" than actions that may be geographically separated. Similarly, actions that coincide temporally would tend to offer a greater potential for cumulative effects.

For the purposes of this EA, no projects with the potential to affect or interact with the proposed airspace complex were identified. No other proposed airspace developments are planned or programmed within the reasonably foreseeable future. Additionally, no other projects that typically affect or interact with airspace proposals were identified. For example, review of recently completed, in-progress, and planned projects did not identify any proposed wind towers, proposed federally designated critical habitat, or proposed protected areas (e.g., recreation areas, natural areas, etc.). Consequently, as no other projects have been identified as either in close proximity to the Volk Field SAA or as having a cumulative impact on shared resources, implementation of the Proposed Action or its alternatives would not contribute to any significant adverse cumulative impacts.

SECTION 6
SUMMARY OF FINDINGS

A summary of environmental impacts anticipated to result from implementation of the Proposed Action (Preferred Action) at Volk Field Combat Readiness Training Center (CRTC) are evaluated in this section.

Airspace Management. Implementation of the Proposed Action (Preferred Alternative) would simplify existing boundaries and thereby maximize efficient use of the existing Volk Field Special Activity Airspace. The Proposed Action would also address the "bottleneck" from the Restricted Area (RA) 6901 (R-6901) (Fort McCoy artillery range) and the northeast boundary of the Volk West Military Operation (MOA). Further, the establishment of R-6904C would support the use of long-range, non-eye safe laser training while segregating potentially hazardous activity from non-participating aircraft. The Proposed Action would not include any changes to the current operating hours or activation schedule for the Volk Field SAA. Implementation of the Proposed Action would not significantly impact general aviation pilots, as civilians are permitted to fly beneath MOAs without restriction, and may be cleared through a MOA if Instrument Flight Rules (IFR) separation can be provided by Air Traffic Control (ATC) and procedures are described in a Letter of Agreement between the unit and the ATC controlling agency (FAA Order 7400.2K). Additionally, the Proposed Action would not interfere with ATC facilities or underlying airports which would be excluded from the proposed airspace expansion areas. Impacts with regards to airspace management would not be significant.

Noise. The Proposed Action (Preferred Alternative) would have no significant impact on the noise environment beneath the proposed Volk Field Special Activity Airspace (SAA). In all but one MOA, implementation of the Proposed Action would result in decreased noise levels beneath the proposed MOAs based on the expanding training area. Volk South MOA would experience an increase of 1.8 dB above the baseline of 53.8 $_{\text{Ldnmr}}$. The Proposed Action would not result in an increase in noise levels with the airspace or the expansion of the 65 and 70 DNL noise contours associated with R-6904A/B. Further, the noise levels beneath the proposed MOAs would not surpass the 65 A-weighted day-night average (DNL) threshold (Federal Aviation Administration [FAA] Order 1050.1E, Change 1). The Necedah National Wildlife Refuge (NWR) is the only avoidance area identified within the Volk Field CRTC Standard Operating Procedures (SOPs). Noise levels in the Necedah NWR under the Proposed Action would be approximately 49.4 DNL. This would represent a 1.1 dB increase in average noise levels within the Necedah NWR. Noise levels within the Necedah NWR would continue to be characteristic of a sensitive, quiet environment. No significant impacts to noise would result through implementation of the Proposed Action.

Land Use and Visual Resources. While noise levels would only increase slightly under the Volk South MOA under the Proposed Action (Preferred Alternative), none of the areas beneath the affected or proposed airspaces would experience noise levels greater than or equal to the 65 DNL threshold. Further, noise levels would generally remain under 55 DNL which would be considered ambient in residential areas, farms, and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use (U.S. Environmental Protection Agency [USEPA] 1974). The Necedah NWR is the only avoidance area within the Volk Field SAA identified within the Volk Field CRTC SOPs. Noise levels in the Necedah NWR under the Proposed Action would be approximately 49.4 DNL. This would represent a 1.1 dB increase in average noise levels within the Necedah NWR. Additionally, the continued use of chaff and flare within the Volk Field SAA would not impact underlying land uses. Overall chaff and flares have very low visibility and little effect on the quality of the environment. Consequently, impacts to land use and visual resource under the Proposed Action would be less than significant.

Biological Resources. The expansion of the Volk Field SAA would result in negligible increases in bird strike risk based on the increase of the MOA area coverage and further intrusion to the Atlantic Flyway; most of the existing airspaces already have a floor of 500 feet above ground level (AGL), and the Proposed Action (Preferred Alternative) would not lower any of these floors. Further, the Air National Guard (ANG) has developed the Avian Hazard Advisory System (AHAS) to address and mitigate in-flight bird collision risks. The noise analysis conducted for the Proposed Action (described in detail in Sections 4.2, *Noise*) determined that the Proposed Action would result in very minor changes to the current noise environment. Predicted noise levels in the Necedah NWR under the Proposed Action would be approximately 49.4 DNL. This would represent a 1.1 dB increase in average noise levels within the Necedah NWR.

Predicted noise levels in the Fox River NWR would be approximately 36.0 L_{dnmr}. Additionally, there would be no significant impact on federally listed species beneath the proposed Volk Field SAA. There would be no significant impact to future Wisconsin DNR whooping crane survey flights while R-6904C is being utilized; special procedures call for communication between Volk CRTC and Wisconsin DNR prior to flight operations. Therefore, impacts to biological resources would not be significant.

Cultural Resources. Under the Proposed Action (Preferred Alternative), the floor of the Proposed Volk Falls, Volk West, and Volk South MOAs would be established at 500 feet AGL, which would correlate with average noise levels ranging from 36.0 L_{dnmr} (Volk East MOA) to 55.6 L_{dnmr} (Volk South MOA). The Volk East MOA would be established at 8,000 feet AGL, which would correlate with an average noise level of 36.0 L_{dnmr}. There would be no potential for structural damage to historical structures located beneath this airspace complex, which can occur at approximately 130 dB. The Proposed Action would introduce visual elements that could be perceived as being out of character with cultural properties in a quiet setting. Visual effects (the presence of military aircraft) on these resources would be negligible since the aircraft would only be visible from any given cultural resource for a few minutes per flying day. Further no impacts to Native American sacred or traditional sites have been identified or would be expected. Consequently, impacts to cultural resources as a result of the Proposed Action would be less than significant.

Air Quality. Implementation of the Proposed Action (Preferred Alternative) would affect multiple counties in central and east-central Wisconsin; however, all counties within the ROI are in attainment for all criteria pollutants. Additionally, the majority of the proposed aircraft operations (i.e., 80 percent) would be at a sufficient altitude (above 3,000 feet AGL) that the emissions would not affect ground-level concentrations of pollutants. A study conducted by the FAA determined that aircraft operations at or above the average mixing height of 3,000 feet AGL have a negligible effect on ground level concentrations and could not directly result in a violation of the National Ambient Air Quality Standards (NAAQS) in a local area (FAA 2000). Thus, impacts to air quality would be less than significant.

Safety. This risk of mishap would remain consistent with the current risk of mishap, and therefore would be less than significant. Additionally, reconfiguration of the existing airspace areas would result in a reduced potential for aircraft to "spill out" of the existing boundaries. Consequently, there would be a slightly reduced potential for air-to-air collisions with military and civilian aircraft. Under the Proposed Action (Preferred Alternative), R-6904C would be established for and utilized for long-range non-eye safe laser training. R-6904C would surround the Hardwood Aerial Gunnery Range to the north, south, and west. The addition of R-6904C would support and segregate this hazardous activity from nonparticipating aircraft (Wisconsin Air National Guard [WIANG] 2012b).[16] Consequently, there would be no safety related impacts associated with the use of long-range non-eye safe lasers. Further flare deployment procedures would not change under the Proposed Action; fire risk and flare strike risk would remain low and would be less than significant.

Hazardous Materials and Waste. Implementation of the Proposed Action (Preferred Alternative) would not result in a change in the handling, storage, or use of petroleum, oils, and lubricants (POL) at Volk Field CRTC. Established safe handling, storage, and use procedures would continue to be implemented. Fuel dump locations would remain unchanged under the Proposed Action and fuel venting would not be anticipated to occur within the modified or expanded airspace areas. Therefore, impacts associated with fuel dumping would be less than significant. Under the Proposed Action, the storage, transport, and use of chaff and flare would continue to be implemented consistent with current procedures and training operation requirements. Consequently, there would be no significant impacts to the physical or human environment as a result of chaff and flare use within proposed airspace areas.

Socioeconomics, Environmental Justice, and Children's Health and Safety. Under the Proposed Action (Preferred Alternative), there would be no long-term changes in economic activity associated with the Volk Field CRTC, as no additional personnel would be added to the installation. Further, the Proposed

[16] Establishment of R-6904C under the Proposed Action would not have any effect on the munitions delivery area within the Hardwood Aerial Gunnery Range (WIANG 2014a). While non-eye safe lasers could be used at a greater distance, the disturbance areas within the range would remain identical to existing conditions.

Action would have negligible impacts on underlying cities and communities. The majority of the existing airspace complex and the proposed minor expansion areas would not cover areas of significant population or economic activity that are not already covered by the existing airspace complex. The proposed Volk East MOA would have an operational floor at 8,000 feet MSL, and the proposed Oshkosh and Sheboygan East and West ATCAAs would be established with an operational floor of FL 180 (18,000 feet MSL), which would separate WIANG training from affected populations such that ground-based economic activity — including employment — would not be impacted. Noise levels would remain well below the recommended sound level thresholds established to protect public health and welfare, including annoyance, in areas where quiet is a recognized resource. Impacts to socioeconomics, environmental justice and children's health and safety would be less than significant.

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SECTION 7
SPECIAL PROCEDURES

Impact analyses conducted in support of this Environmental Assessment (EA) have determined that no significant environmental impacts would result from the implementation of the Proposed Action (Preferred Alternative) (refer to Section 4, *Environmental Consequences*). This determination is based on a thorough review and analysis of existing baseline conditions for each resource area, the application of accepted modeling methodologies (refer to Appendix C, *Air Quality* and Appendix E, *Noise*), and coordination with knowledgeable, responsible personnel from the Wisconsin Air National Guard (WIANG), National Guard Bureau (NGB), Federal Aviation Administration (FAA), and relevant Federal, state, and other local agencies.

Implementation of the Proposed Action would not result in any ground-disturbing activity and consequently would not require standard best management practices for construction or demolition (e.g., storm water pollution prevention, safe removal any potentially hazardous materials prior to demolition activities, etc.). However, there are several special procedures that the WIANG currently implement, or propose to implement, that would reduce potential impacts to airspace management, noise, and biological resources resulting from the Proposed Action.

<u>Airspace Stakeholder Coordination</u>

Special procedures in place to ensure airspace safety and coordination between airspace stakeholders, including general aviation pilots, include the following protocols and safety procedures:

- Bloyer Field and the Mauston-New Lisbon Union Airport would be excluded from the proposed Volk South MOA with an exclusion zone, each having a radius of three nautical miles (NM) and a height of 1,500 feet above ground level (AGL). All airports beneath the existing Volk Field SAA would continue to be excluded from the proposed modified Volk Field Special Activity Airspace (SAA).
- Flight plans and schedules for Volk Field SAA are currently filed monthly with Federal Aviation Administration's (FAA's) Minneapolis Air Route

Traffic Control Center (ARTCC), the controlling agency of regional airspace.

- All proposed new Volk Field SAA airspace segments would only be activated on an *as-needed basis* – as a whole or individually – allowing for more responsible stewardship of the airspace regionally, allowing use by others when not needed for training, and helping to minimize potential conflicts with other users.
- Existing and proposed Air Traffic Control Assigned Airspaces (ATCAAs) would also remain under the control of the FAA and, when not in use by military aircraft, would continue to be used to support civil aviation activities.
- Pilots within the Volk Field SAA would terminate training or move to different areas within the airspace if civilian aircraft are detected. Monitor the Avian Hazard Advisory System (AHAS) as part of the standard preflight mission requirements and modify or cancel sorties in areas or periods with "moderate" to "severe" BASH risks.

Noise Abatement Procedures

- The need for avoidance of noise-sensitive areas during training operations would continue to be emphasized to pilots training in the Volk Field SAA. Areas would be identified where overflights at low altitudes should be avoided to the maximum extent practicable (e.g., Necedah National Wildlife Refuge [NWR], farms and ranches, towns, and recreation areas, etc.).

Additionally, under the Proposed Action Volk Field CRTC would continue to maintain a hotline for noise-related complaints associated with military aircraft operations. Avoidance of Necedah National Wildlife Refuge

- Per Volk Field CRTC SOPs, military aircraft utilizing Volk Field SAA are required to avoid overflights above Necedah NWR below 1,000 feet AGL year-round and this lower limit is raised to 2,000 feet AGL from 15 September through 30 November.

Whooping Crane Necedah Procedures

Wisconsin DNR typically observe and survey whooping crane nest sites at 500 feet AGL and are in communication with Volk Approach throughout the survey period. When R-6904C is active and in use, Volk Approach would relay this information to Wisconsin DNR to be aware of military aircraft operating at a minimum of 3,000 feet MSL in the vicinity; thus, both Wisconsin DNR surveys and

R-6904C operations would be able to take place simultaneously with no interruption to operations. Preflight coordination between Volk CRTC and Wisconsin DNR would reduce any potential issues.

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SECTION 8
REFERENCES

AIR NATIONAL GUARD (ANG). 2014a. F-16 Fact Sheet. Available at: http://www.115fw.ang.af.mil/shared/media/document/AFD-081019-007.pdf [Accessed April 17, 2014].

ANG. 2014b. History: 115 Fighter Wing. Available at: http://www.115fw.ang.af.mil/history/index.asp [Accessed April 17, 2014].

ANG. 2010. History: 114 Fighter Wing. Available at: http://www.114fw.ang.af.mil/resources/factsheets/factsheet.asp?id=12983 [Accessed April 17, 2014].

ANG. 2009. History: 148 Fighter Wing. Available at: http://www.148fw.ang.af.mil/history/index.asp [Accessed April 17, 2014].

ANG. 2008. Volk Airspace Complex Joint FAA/ANG Special Use Airspace Review.

ANG. 2010. Air National Guard Mission Directive 10.01. Available at: http://static.e-publishing.af.mil/production/1/ang/publication/angmd10-01/angmd10-01.pdf [Accessed April 17, 2014].

AIR NATIONAL GUARD READINESS CENTER (ANGRC). 2003. Final Environmental Assessment for Deployment of Chaff and Flares in Military Training Airspace (Phase II).

ALBERT, D.A. 1994. Regional Landscape Ecosystems of Michigan, Minnesota, and Wisconsin: A Working Map and Classification. US Forest Service, North Central Forest Experiment Station, St. Paul, MN. Available at: http://www.npwrc.usgs.gov/resource/habitat/rlandscp/index.htm.

AMEC ENVIRONMENT AND INFRASTRUCTURE, INC. (AMEC). 2014a. Aircraft Emissions Air Quality Modeling for F100-220 and F100-229 Engines at Military Power.

AMEC. 2014b. Airspace Noise Modeling, MRNMAP version 3.0 and NOISEMAP version 7.3.

BIES, D., AND C. HANSEN. 1988. Engineering Noise Control.

BLACK, B.B., M.W. COLLOPY, H.F. PERCIVAL, A.A. TILLER, AND P.G. BOHALL. 1984. Effect of Low Level Military Training Flights on Wading Bird Colonies in Florida. Florida Cooperative Fish and Wildlife research Unit, School of Forestry and Resource Conservation, University of Florida, Gainesville.

BRANCH, M.C., AND R.D. BELAND. 1970. Outdoor Noise and the Metropolitan Environment. Department of City Planning, City of Los Angeles.

CANADA DEPARTMENT OF AGRICULTURE. 1972. The Ingestion of Fiberglass Chaff by Cattle. Director of Electronic Warfare, Canadian Forces Headquarters.

CLARK COUNTY. 2014. Clark County Forest. Available at: http://www.co.clark.wi.us/index.aspx?nid=239 [Accessed January 20, 2014].

COUNCIL ON ENVIRONMENTAL QUALITY (CEQ). 2014. Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts. Available at: https://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/ghg-guidance [Accessed October 1, 2015].

CEQ. 1997. Considering Cumulative Effects under the National Environmental Policy Act.

CEQ. 1978. Impact Statement Guidelines 40 CFR Part 1500.

DEPARTMENT OF INTERIOR (DOI). 1984. BLM VRM Manual 8400, Glossary of Terms.

DEPARTMENT OF TRANSPORTATION (DOT). 1994. Federal Aviation Regulations and Airman's Information Manual (FARMAIM95). From the Code of Federal Regulations and Airman's Information Manual. Aviation Supplies and Academics, Inc., Renton, WA.

ELLIS, D.H., C. ELLIS, AND D. MINDELL. 1991. Raptor Responses to Low-level Jet Aircraft and Sonic Booms. *Environmental Pollution* 74: p.53–83.

ERLICH, P., D. DOBKIN, AND D. WHEYE. 1988. Birds in Flight. Audubon Society.

FEDERAL AVIATION ADMINISTRATION (FAA). 2015. Civilian Air Traffic Data Provided via E-mail by Mr. John Witucki. Federal Aviation Administration. 16 October 2015.

FAA. 2014a. Terminal Area Forecast. Available at: http://aspm.faa.gov/apowtaf/ [Accessed September 4, 2014].

FAA. 2014b. Federal Aviation Regulations/Aeronautical Information Manual 2014 (FAR/AIM 2014).

FAA. 2014c. Instrument Procedures Handbook. Available at: http://www.faa.gov/regulations_policies/handbooks_manuals/aviation/instrument_procedures_handbook/ [Accessed October 5, 2015].

FAA. 2006. Order 1050.1E, CHG 1. Available at: http://www.faa.gov/documentLibrary/media/Order/Order1050.1ECHG1.pdf [Accessed June 10, 2014].

FAA. 2000. Consideration of Air Quality Impacts by Airplane Operations at or Above 3,000 feet AGL. Available at: https://www.faa.gov/regulations_policies/policy_guidance/envir_policy/media/catex.pdf [Accessed November 11, 2014].

FEDERAL INTERAGENCY COMMITTEE ON NOISE (FICON). 1992. Federal Agency Review of Selected Airport Noise Analysis Issues. Washington, D.C.

FEDERAL INTERAGENCY COMMITTEE ON URBAN NOISE. 1980. Guidelines for Considering Noise in Land Use Planning and Control (U.S. Government Printing Office Report #1981-337-066/8071). Washington, D.C.

JACKSON COUNTY. 2010. Jackson County Forestry and Parks. Available at: http://www.co.juneau.wi.gov/docview.asp?docid=13868&locid=151 [Accessed January 20, 2014].

JUNEAU COUNTY. 2012. 2012 Annual Report. Available at: http://www.co.juneau.wi.gov/docview.asp?docid=13868&locid=151 [Accessed January 20, 2014].

KATONA, G.Z., R.A. DAVIS, AND G.F. SEARING. 2000. Evaluation of the Efficacy of Various Deer Exclusion Devices and Deterrent Techniques for use at Airports. Aerodrome Safety Branch Transport Canada.

LAMP, R.E. 1989. Monitoring the Effects of Military Air Operations at Fallon Naval Air Station on the Biota of Nevada. Nevada Department of Wildlife.

LINCOLN, F.C., S.R. PETERSON, AND J.L. ZIMMERMAN. 1998. Migration of Birds. DOI, USFWS, Washington, D.C. Available at: http://www.npwrc.usgs.gov/resource/birds/migratio/index.htm [Accessed November 6, 2014].

MANCI, K.M., D.N. GLADWIN, R. VILLELLA, AND M.G. CAVENDISH. 1988. Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis.

NATIONAL CONFERENCE OF STATE LEGISLATURES. 2014. Federal and State Recognized Tribes. Available at: http://www.ncsl.org/research/state-tribal-institute/list-of-federal-and-state-recognized-tribes.aspx#wi [Accessed February 4, 2015].

NATIONAL PARK SERVICE. 1994. Report to Congress: Report on Effects of Aircraft Overflights on the National Park System. Prepared pursuant to Public Law 100-91, The National Parks Overflights Act of 1987. DOI, Washington, D.C.

NATIONAL RESEARCH COUNCIL/NATIONAL ACADEMY OF SCIENCES. 1977. Guidelines for Preparing Environmental Impact Statements on Noise. Committee on Hearing, Bioacoustics, and Biomechanics.

NATIONAL GUARD BUREAU (NGB). 2014. Personal Communication with Mr. Jamie Flanders, Civ USAF ANG NGB/A3A.

NGB. 2002. Final Environmental Assessment for Deployment of Chaff and Flares in Military Operations Areas (Phase I).

NAVAL FACILITIES ENGINEERING COMMAND SOUTHWEST (NAVFAC SW). 2012. Hawaii-Southern California Training and Testing Activities Draft Environmental Impact Statement Overseas Environmental Impact Statement. Available at: http://www.coastal.ca.gov/fedcd/hstt/HSTT%20DEIS_May%202012_Vol.II.pdf [Accessed August 2, 2013].

U.S. AIR FORCE (USAF). 2015. E-3 Flight Mishap History. Transmitted to AMEC via the Internet (http://www.afsec.af.mil/shared/media/document/AFD-150116-051.pdf) 08 January 2015.

USAF. 2014. Aircraft Statistics, Flight Mishap History. Available at: http://www.afsec.af.mil/organizations/aviation/aircraftstatistics/ [Accessed November 23, 2011].

USAF. 2011. Air Force Instruction 11-2F-16, V-1. Available at: http://static.e-publishing.af.mil/production/1/af_a3_5/publication/afi11-2f-16v1/afi11-2f-16v1.pdf [Accessed April 17, 2014].

USAF. 1998. Environmental Protection: DoD Management Issues Related to Chaff. Available at: http://www.fas.org/man/gao/nsiad-98-219.htm. [Accessed February 4, 2015].

USAF. 1997. Environmental Effects of Self-Protection Chaff and Flares Headquarters Air Combat Command. Langley Air Force Base, Virginia.

U.S. BUREAU OF ECONOMIC ANALYSIS (BEA). 2013a. CA05N Personal Income by Major Source and Earnings by NAICS Industry 1/, Wisconsin States. Available at: http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=1#reqid=70&step=30&isuri=1&7028=-1&7040=-1&7083=levels&7031=55000&7022=10&7023=7&7024=naics&7025=4&7026=55001,55015,55017,55019,55035,55039,55047,55053,55057,55071,55077,55081,55087,55097,55117,55121,55135,55137,55139,55141&7027=2012,2010,2005&7001=710&7029=32&7090=70&7033=-1 [Accessed January 16, 2014].

U.S. BEA. 2013b. SA25N Total Full-Time and Part-Time Employment by NAICS Industry. Available at: http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=1#reqid=70&step=30&isuri=1&7028=-1&7040=-1&7083=levels&7031=0&7022=4&7023=0&7024=naics&7025=0&7026=55000&7027=2012,2010,2005&7001=44&7029=30&7090=70&7033=-1 [Accessed January 16, 2014].

U.S. BEA. 2013c. Total Full-Time and Part-Time Employment by NAICS Industry. Available at: http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=1#reqid=70&step=30&isuri=1&7028=-1&7040=-1&7083=levels&7031=0&7022=4&7023=0&7024=naics&7025=0&7026=55000&7027=2012,2010,2005&7001=44&7029=30&7090=70&7033=-1 [Accessed January 16, 2014].

U.S. CENSUS BUREAU. 2014. Profile of General Population and Housing Characteristics: 2010, Wisconsin. Available at: http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_SF1_SF1DP1&prodType=table [Accessed January 16, 2014].

U.S. CENSUS BUREAU. 2012a. Profile of General Population and Housing Characteristics: 2010, States of Wisconsin. Available at: http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_SF1_SF1DP1&prodType=table [Accessed January 16, 2014].

U.S. CENSUS BUREAU. 2012b. State and County Quickfacts- Wisconsin. Available at: http://quickfacts.census.gov/qfd/states/55000.html [Accessed January 16, 2014].

U.S. CENSUS BUREAU. 2000a. Profile of General Demographic Characteristics: 2000, All Counties in Wisconsin. Available at: http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.

xhtml?pid=DEC_00_SF1_DP1&prodType=table [Accessed January 16, 2014].

U.S. CENSUS BUREAU. 2000b. Profile of General Demographic Characteristics: 2000, Wisconsin. Available at: http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_00_110H_DP1&prodType=table [Accessed January 16, 2014].

U.S. CENSUS BUREAU. 1990a. 1990 Census of Population and Housing Public Law 94-171 Data, by State. Available at: http://censtats.census.gov/cgi-bin/pl94/pl94data.pl [Accessed January 16, 2014].

U.S. CENSUS BUREAU. 1990b. 1990 Census Population and Housing Public Law 94-171 Data, by Wisconsin Counties. Available at: http://censtats.census.gov/cgi-bin/pl94/pl94data.pl [Accessed January 16, 2014].

U.S. CLIMATE CHANGE SCIENCE PROGRAM (USCCSP). 2009. Climate Literacy, The Essential Principles of Climate Sciences. A Guide for Individuals and Communities. Available at: http://www.climatescience.gov/Library/Literacy/ [Accessed October 16, 2012].

U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA). 2013. The Green Book Nonattainment Areas for Criteria Pollutants. Available at: http://www.epa.gov/oaqps001/greenbk/index.html [Accessed January 21, 2014].

USEPA. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. U.S. Environmental Protection Agency Office of Noise Abatement and Control, Washington D.C. Available at: http://www.fican.org/pdf/EPA_Noise_Levels_Safety_1974.pdf [Accessed March 13, 2014].

U.S. FISH AND WILDLIFE SERVICE (USFWS). 2015a. National Wild and Scenic Rivers System. Available at: http://www.rivers.gov/maps/conus.php [Accessed February 3, 2015].

USFWS. 2015b. Environmental Conservation Online System, eastern Massasauga (Sistrurus catenatus). Available at: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=C03P [Accessed July 7, 2015].

USFWS. 2015c. Endangered Species by County. U.S. Fish and Wildlife Service. Available at: http://www.fws.gov/endangered/ [Accessed June 24, 2015].

USFWS. 2014a. Federally-Listed Threatened, Endangered, Proposed, and Candidate Species' County Distribution. Available at:

http://www.fws.gov/midwest/endangered/lists/wisc-spp.html [Accessed November 6, 2014].

USFWS. 2014b. Necedah National Wildlife Refuge. Available at: http://www.fws.gov/refuge/Necedah/about.html [Accessed January 20, 2014].

USFWS. 2014c. Prairie Fringed Orchids. Available at: http://www.fws.gov/midwest/endangered/plants/prairief.html [Accessed June 20, 2014].

USFWS. 2014d. Snuffbox (Freshwater Mussel) *Epioblasma triqueta*. Available at: http://www.fws.gov/midwest/endangered/clams/snuffbox/SnuffboxFactSheet.html [Accessed June 20, 2014].

USFWS. 2013a. Fox River National Wildlife Refuge. Available at: http://www.fws.gov/refuge/Fox_River/about.html [Accessed January 20, 2014].

USFWS. 2013b. Eastern Massasauga *Sistrurus catenatus catenatus*. Available at: http://www.fws.gov/midwest/Endangered/reptiles/eama/pdf/eamaFactSheetJan2013.pdf [Accessed July 7, 2015].

USFWS. 2012a. Five Year Review: Karner Blue butterfly. Available at: //www.fws.gov/midwest/endangered/insects/kbb/pdf/kbb5YrReviewSept2012.pdf [Accessed June 13, 2014].

USFWS. 2012b. Five Year Review: Kirtland's Warbler. Available at: http://www.fws.gov/midwest/endangered/birds/Kirtland/pdf/kiwa5YrRevAug2012.pdf [Accessed June 19, 2014].

USFWS. 2012c. Higgin's Eye Pearlymussel. Available at: http://www.fws.gov/midwest/endangered/clams/higginseye/higgins_fs.html [Accessed June 20, 2014].

USFWS. 2012d. Section 7 Consultation Guidance for Preparing a Biological Assessment. Available at: http://www.fws.gov/Midwest/endangered/section7/ba_guide.htlml [Accessed November 6, 2014].

USFWS. 2012e. Sheepnose (a freshwater mussel) Plethobasus cyphyus. Available at: http://www.fws.gov/midwest/endangered/clams/sheepnose/pdf/SheepnoseFactSheetMarch2012.pdf [Accessed July 7, 2015].

USFWS. 2003a. Fassett's Locoweed: Fact Sheet. Available at: http://www.fws.gov/midwest/endangered/plants/fassetts.html [Accessed June 19, 2014].

USFWS. 2003b. Karner Blue Butterfly Recovery Plan. Available at: http://www.fws.gov/midwest/endangered/insects/kbb/pdf/kbb-final-rp2.pdf [Accessed June 13, 2014].

U.S. GEOLOGICAL SURVEY (USGS). 2013. Regional Landscape Ecosystems of Michigan, Minnesota, and Wisconsin. Available at: http://www.npwrc.usgs.gov/resource/habitat/rlandscp/wiscmap.htm [Accessed June 16, 2014].

UNIVERSITY OF WISCONSIN EXTENSION (UWE). 2013. Climate of Wisconsin. Available at: http://www.uwex.edu/sco/stateclimate.html [Accessed January 21, 2014].

WHITE, C.M., AND S.K. SHERROD. 1973. Advantages and Disadvantages of the Use of Rotor-Winged Aircraft in Raptor Surveys. *Raptor Research* 7: p.97–104.

WISCONSIN DEPARTMENT OF NATURAL RESOURCES (WDNR). 2014a. Fassett's Locoweed. Available at: http://dnr.wi.gov/topic/EndangeredResources/Plants.asp?mode=detail&SpecCode=PDFAB2X041 [Accessed June 19, 2014].

WDNR. 2014b. Higgin's Eye. Available at: http://dnr.wi.gov/topic/EndangeredResources/Animals.asp?mode=detail&SpecCode=IMBIV21100 [Accessed June 20, 2014].

WDNR. 2014c. Karner Blue Butterfly Habitat Conservation Plan. Available at: http://dnr.wi.gov/topic/ForestPlanning/hcpText.html [Accessed January 13, 2014].

WDNR. 2014d. Kirtland's Warbler. Available at: http://dnr.wi.gov/topic/endangeredresources/animals.asp?mode=detail&speccode=abpbx03180 [Accessed June 19, 2014].

WDNR. 2014e. Kirtland's Warbler Species Guidance. Available at: http://dnr.wi.gov/files/PDF/pubs/er/ER0687.pdf [Accessed June 19, 2014].

WDNR. 2014f. Northern Wild Monkshood. Available at: http://dnr.wi.gov/topic/EndangeredResources/Plants.asp?mode=detail&SpecCode=PDRAN01070 [Accessed June 19, 2014].

WDNR. 2014g. Poweshiek Skipperling. Available at: http://dnr.wi.gov/topic/EndangeredResources/Animals.asp?mode=detail&SpecCode=IILEP57010 [Accessed June 19, 2014].

WDNR. 2014h. Prairie White-fringed Orchid. Available at: http://dnr.wi.gov/topic/EndangeredResources/Plants.asp?mode=detail&SpecCode=PMORC1Y0F0 [Accessed June 20, 2014].

WDNR. 2014i. Public Access Lands. Available at: http://dnrmaps.wi.gov/sl/?Viewer=Public_Access_Lands [Accessed January 20, 2014].

WDNR. 2014j. Snuffbox. Available at: http://dnr.wi.gov/topic/endangeredresources/animals.asp?mode=detail&speccode=imbiv16190 [Accessed June 20, 2014].

WDNR. 2014k. Wisconsin Department of Natural Resources Air Monitoring Network Plan 2013. Available at: http://dnr.wi.gov/topic/AirQuality/documents/2015NetworkPlanProposed.pdf [Accessed September 3, 2014].

WDNR. 2014l. Wisconsin's Endangered and Threatened Species List. Available at: http://dnr.wi.gov/topic/endangeredresources/etlist.html [Accessed November 6, 2014].

WDNR. 2014m. Whooping Crane (Grus Americana). Available at: http://dnr.wi.gov/topic/endangeredresources/animals.asp?mode=detail&speccode=abnmk01030 [Accessed July 6, 2015].

WDNR. 2014n. Wisconsin's rare animals. Available at: http://dnr.wi.gov/topic/EndangeredResources/Animals.asp [Accessed July 6, 2015].

WDNR. 2014o. Northern Long-eared Bat (Myotis septentrionalis). Available at: http://dnr.wi.gov/topic/EndangeredResources/Animals.asp?mode=detail&SpecCode=AMACC01150 [Accessed July 7, 2015].

WDNR. 2013a. Find a Lake. Available at: http://dnr.wi.gov/lakes/lakepages/Results.aspx [Accessed January 20, 2014].

WDNR. 2013b. Mill Bluff State Park. Available at: http://dnr.wi.gov/topic/parks/name/millbluff/ [Accessed January 16, 2014].

WDNR. 2012a. Wisconsin Department of Natural Resources Air Monitoring Network Plan 2013. Available at: http://dnr.wi.gov/topic/AirQuality/documents/2013NetworkPlanProposed.pdf [Accessed January 21, 2014].

WDNR. 2012b. A Closer Look at Whooping Crane. Available at: http://dnr.wi.gov/files/pdf/pubs/er/er0661.pdf [Accessed July 6, 2015].

WDNR. 2006. Wisconsin Whooping Crane Management Plan. Available at: http://dnr.wi.gov/files/PDF/pubs/ER/ER0650.pdf [Accessed July 7, 2015].

WDNR. 2011. Chapter NR 404: Ambient Air Quality. Available at: http://docs.legis.wisconsin.gov/code/admin_code/nr/400/404.pdf [Accessed January 21, 2014].

WISCONSIN DEPARTMENT OF TOURISM (WDT). 2014. Kennedy Park. Available at: http://www.travelwisconsin.com/campgrounds/kennedy-park-196153 [Accessed January 16, 2014].

WISCONSIN HISTORICAL SOCIETY (WHS). 2014a. Ancient Land and First Peoples. Available at: http://www.wisconsinhistory.org/Content.aspx?dsNav=Ny:True,N:4294963828-4294963805&dsNavOnly=Ny:True,N:1100&dsRecordDetails=R:CS3584 [Accessed May 12, 2014].

WHS. 2014b. The Fur Trade Era: 1650s to 1850s. Available at: http://www.wisconsinhistory.org/Content.aspx?dsNav=Ny:True,N:4294963828-4294963805&dsNavOnly=Ny:True,N:1100&dsRecordDetails=R:CS3585 [Accessed May 12, 2014].

WHS. 2014c. Wisconsin Historic Properties List. Available at: http://www.wisconsinhistory.org/Content.aspx?dsNav=N:4294963828-4294963805&dsRecordDetails=R:CS2836 [Accessed May 14, 2014].

WISCONSIN AIR NATIONAL GUARD (WIANG). 2014a. Personal Communication with Maj. Anthony Hart, USAF ANG WI CRTC/DOTA.

WIANG. 2014b. Personal Communication with Mr. Brendan Smith, Civ USAF ANG WI CRTC/ATO.

WIANG. 2013. Restricted Area and Military Operations Area Annual Utilization Report IRCN: 1412-DOT-AN.

WIANG. 2012a. Integrated Cultural Resource Management Plan for the Volk Field Combat Readiness Training Center and Hardwood Air-to-Ground Weapons Range.

WIANG. 2012b. Test/Training Space Needs Statement ANG 12-01.

WIANG. 2009a. Natural Infrastructure Assessment; Volk Field Combat Readiness Training Center.

WIANG. 2009b. Volk Airspace Utilization Data FY 2009.

WIANG. 2008. Air Installation Compatible Use Zone Study for Volk Field Air National Guard Base.

WISCONSIN STATE CLIMATOLOGY OFFICE (WSCO). 2006. Historical Climate Data-Central Wisconsin. Available at: http://www.aos.wisc.edu/~sco/clim-history/4705-climo.html [Accessed January 21, 2014].

WISCONSIN STATE TRIBAL RELATIONS INITIATIVE (WSTRI). 2011a. Oneida Nation of Wisconsin. Available at: http://witribes.wi.gov/docview.asp?docid=5637&locid=57 [Accessed January 16, 2014].

WSTRI. 2010a. Ho-Chunk Nation. Available at: http://witribes.wi.gov/docview.asp?docid=5638&locid=57 [Accessed January 16, 2014].

WOOD COUNTY. 2014. Wood County Park and Forestry. Available at: http://www.co.wood.wi.us/Departments/Parks/ [Accessed January 20, 2014].

WYLE. 2008. Noise Basics and the Effect of Aviation Noise on the Environment. Available at: http://www.rduaircraftnoise.com/noiseinfo/downloads/NoiseBasicsandEffects.pdf [Accessed November 5, 2014].

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SECTION 9
LIST OF PREPARERS

This report was prepared for and under the direction of NGB/A7AM and NGB/A3A by Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler). Members of the professional staff are listed below

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APPENDIX A

AIRSPACE PROPOSAL

Appendix A

Appendix A contains the Volk Combat Readiness Training Center (CRTC) Special Use Airspace (SUA) Proposal submitted to the Federal Aviation Administration (FAA) and associated with this Environmental Assessment. This proposal addresses recommendations made by the "Volk Airspace Complex Joint FAA/ANG Special Use Airspace Review" Working Group (comprised of representatives from the FAA, the Central Service Area AFREP, and the Air National Guard June 2008). Additional purpose and need information can be found in the "Environmental Assessment for Proposed Volk Field Special Activity Airspace Modification and Establishment."

21-3-3. PROPOSAL CONTENT

a. Proponent's Transmittal Letter. See proceeding**.**

b. Area Description.

<u>Falls 1 MOA, WI</u>		**RESCINDED**
<u>Falls 2 MOA, WI</u>		**RESCINDED**
<u>Volk Falls MOA, WI</u>		**MODIFIED TO READ**
Boundaries.	Beginning	at lat. 44°48'00"N., long. 90°26'00"W.; to lat. 44°08'40"N., long. 90°44'20"W.; to lat. 44°04'00"N., long. 90°44'20"W.; to lat. 44°17'00"N., long. 91°21'00"W.; to lat. 44°33'00"N., long. 91°21'00"W.; to lat. 44°48'00"N., long. 90°59'00"W.; to the point of beginning. Excluding that airspace at and below 1500' AGL within a 3 NM radius of the Black River Falls Muni Airport (44°15'00"N.,90°51'15"W.) and of the Neillsville Airport (44°33'30"N., 90°30'30"W.)
Altitudes.		500 feet AGL up to but not including FL180
Times of use.		Intermittent by NOTAM at least 2 hours in advance
Expected usage		4.5 hours per day; 230 days per year
Controlling agency.		FAA, Minneapolis ARTCC
Using agency.		USAF, Air National Guard, Volk Field Combat Readiness Training Center, WI
<u>Volk West MOA, WI</u>		**MODIFIED TO READ**
Boundaries.	Beginning	at lat. 44°48'00"N., long. 90°26'00"W.; to lat. 44°48'00"N., long. 90°22'00"W.; to lat. 44°35'00"N., long. 90°18'00"W.; to lat. 44°27'00"N., long. 89°59'00"W.; to lat. 44°10'00"N., long. 89°59'00"W.; to lat. 44°03'00"N., long. 89°55'42"W.; to lat. 44°03'00"N., long. 90°17'00"W.;

to lat. 44°00’00”N., long. 90°22’00”W.;
to lat. 44°00’00”N., long. 90°36’50”W.;
to lat. 44°09’36”N., long. 90°36’50”W.;
to lat. 44°09’36”N., long. 90°40’22”W.;
to lat. 44°08’40”N., long. 90°40’22”W.;
to lat. 44°08’40”N., long. 90°44’20”W.;
to the point of beginning.

Excluding that airspace in and around R6904 A/B/C when active. Excluding that airspace at and below 1500’ AGL within a 3 NM radius of the Necedah Airport (44°02’00”N., 90°05’00”W.), of the Bloyer Airport (43°58’30”N., 90°05’00”W.), and of the Neillsville Airport (44°33’30”N., 90°30’30”W).

Altitudes. 500 feet AGL up to but not including FL180

Times of use. Intermittent by NOTAM at least 2 hours in advance

Expected Usage 4.5 hours per day; 230 days per year

Controlling agency. FAA, Minneapolis ARTCC

Using agency. USAF, Air National Guard, Volk Field Combat Readiness Training Center, WI

Volk South MOA, WI **MODIFIED TO READ**

Boundaries. Beginning at lat. 43°40’00”N., long. 89°46’15”W.;
to lat. 43°59’31”N., long. 90°35’19.8”W.;
to lat. 44°00’00”N., long. 90°35’19”W.;
to lat. 44°00’00”N., long. 90°36’50”W.;
to lat. 44°00’00”N., long. 90°22’00”W.;
to lat. 44°03’00”N., long. 90°17’00”W.;
to lat. 44°03’00”N., long. 89°55’42”W.;
to the point of beginning.

Excluding that airspace in and around R6904C when active. Excluding that airspace at and below 1500’ AGL within a 3 NM radius of the Mauston New Lisbon Airport (43°50’15”N., 90°08’15”W.), of the Bloyer Airport (43°58’30”N., 90° 05’° 00”W), and of the Necedah Airport (44°02’00”N., 90°05’00”W.).

Altitudes.	500 feet AGL up to but not including FL180
Times of use.	Intermittent by NOTAM at least 2 hours in advance
Expected Usage	4 hours per day; 230 days per year
Controlling agency.	FAA, Minneapolis ARTCC
Using agency.	USAF, Air National Guard, Volk Field Combat Readiness Training Center, WI

<u>Volk East MOA, WI</u> **MODIFIED TO READ**

Boundaries.	Beginning	at lat. 44°42’00.5”N., long. 90°20’9.6”W.; to lat. 44°35’00”N., long. 90°18’00”W.; to lat. 44°27’00”N., long. 89°59’00”W.; to lat. 44°10’00”N., long. 89°59’00”W.; to lat. 43°40’00”N., long. 89°46’15”W.; to lat. 43°35’30”N., long. 88°46’30”W.; to lat. 44°09’34”N., long. 88°45’15”W.; to lat. 44°29’00”N., long. 89°00’00”W.; to the point of beginning.
Altitudes.		8,000 feet MSL up to but not including FL180
Times of use.		Intermittent by NOTAM at least 2 hours in advance
Expected Usage		4.5 hours per day; 230 days per year
Controlling agency.		FAA, Minneapolis ARTCC
Using agency.		USAF, Air National Guard, Volk Field Combat Readiness Training Center, WI

<u>R6904C Restricted Area, WI</u>

Boundaries.	Beginning	at lat. 44°10’00”N., long. 89°59’00”W.; to lat. 44°01’30”N., long. 90°10’30”W.; to lat. 44°01’30”N., long. 90°20’30”W.; to lat. 44°21’00”N., long. 90°20’30”W.; to lat. 44°21’00”N., long. 89°59’00”W.; to the point of beginning.

Altitudes.	3,000 feet MSL up to but not including FL280
Times of use.	Intermittent by NOTAM at least 4 hours in advance
Expected usage	4 hours per day; 60 days per year
Controlling agency.	FAA, Minneapolis ARTCC
Using agency.	USAF, Air National Guard, Volk Field Combat Readiness Training Center, WI

c. Airspace Statement of Need and Justification.

1. Describe the purpose and need for the proposed airspace.

Modify the existing Volk Field Special Activity Airspace Complex (including the Volk East, South, West, Falls 1, Falls 2 Military Operations Areas, and the R6904 Hardwood Aerial Gunnery Range complex) to meet military training requirements and maximize efficient use of the airspace structure. This proposal addresses recommendations made by the "Volk Airspace Complex Joint FAA/ANG Special Use Airspace Review" Working Group (comprised of representatives from the FAA, the Central Service Area AFREP, and the Air National Guard June 2008). Additional purpose and need information can be found in the "Environmental Assessment for Proposed Volk Field Special Activity Airspace Modification and Establishment."

Volk Field Combat Readiness Training Center (CRTC), located in Camp Douglas, Wisconsin has a requirement under Air National Guard Mission Directive 10-01 to provide an integrated, year-round, realistic training environment (airspace, facilities, and equipment) for units to maintain their combat capability with realistic, mission oriented training. Volk Field CRTC, the VFSAA, and Hardwood Aerial Gunnery Range (R6904A/B) support multiple local and deployed tactical airspace users on a daily basis. The size and design of any new Volk Field Special Activity Airspace complex must be sufficient to accomplish a wide variety of aircrew training in both the Air-to-Air and Air-to-Ground arenas across multiple airframes. In particular the airspace must afford Volk Field CRTC the ability to accomplish Large Force Exercise requirements.

The current VFSAA has several drawbacks. The usable width and length of the current tactical airspace structure does not provide a "realistic training environment" during multiple required Air-to-Air and Air-to-Ground phase-training requirements. This shortfall is primarily caused by a width "bottleneck" between the R6901 (Fort McCoy Army Artillery Range) and the north-east boundary of the Volk West MOA, reducing the width of available airspace to approximately 30 NM. This bottleneck creates predictable and unrealistic adversary maneuvering during Air-to-Air training by forcing adversary aircraft into the narrowed airspace.

The vertical structure of existing airspace impacts multiple required mission types. Altitudes in the VFSAA are "capped" as the result of existing FAA high-altitude jet routes, holding fixes, and approach procedures into Minneapolis. These routes intersect various points of the existing airspace structure, making vertical expansion difficult to achieve without significant impact on commercial traffic flows.

Nine separate ATCAA/MOA altitude transition shelves in the current airspace structure inhibit logical mission flow. These shelves begin at FL280 in the Volk East and South, drop to FL230 in the West, and then drop to FL180 in the Falls 1 & 2. These shelves routinely cause aircrew members to focus more mental resources on maintaining their position within the vertical confines of the airspace (and to ensure safe deconfliction from other participating aircraft) at the expense of realistic training flows.

The current airspace structure does not allow users and schedulers to maximize the airspace activated for specific mission sets that might require less airspace, causing larger than required pieces of airspace to be activated.

Volk Field CRTC needs an airspace configuration that meets the ability to safely and effectively provide aircrew training for the most complex and dynamic mission sets (Large Force Exercises and area fighter squadron Ready Aircrew Program Defensive Counter Air and Offensive Counter Air.) Volk Field CRTC also needs an airspace configuration that supports less complex and dynamic mission sets while reducing impacts on civilian and commercial air traffic in and around the VFSAA.

Modern Advanced Targeting Pod (ATP) capabilities for multiple aircraft, weapons, and delivery systems require stand-off distances in excess of 15 nautical miles from the target area for the employment of Precision Guided Munitions (PGM). Current PGM employment conducted in R6904 (Hardwood Aerial Gunnery Range) is marginally adequate but does not meet realistic Ready Aircrew Program requirements. R6904 also suffers from canned and predictable weapon delivery and ATP laser employment. While weapon delivery parameters must remain unchanged due to the weapon-footprint limitations of the R6904 impact area, more dynamic and realistic stand-off combat laser employment would be possible with an increased R6904 boundary to the west.

As a training base that services a wide variety of aircraft types and non-standard missions, Volk Field has historically activated MOAs and Restricted Areas by NOTAM no less than two hours in advance and ATCAAs no less than 30 minutes in advance. This proposal establishes activation of all MOAs, Restricted Areas, and ATCAAs by NOTAM no less than two hours in advance with the exception of R-6904C which will only be activated no less than four hours in advance via NOTAM. This timeline balances the installation's requirement for airspace scheduling flexibility with advanced notice of airspace activation for other NAS users. Two hour by-NOTAM activation is mitigated through several proactive steps Volk Field takes to keep General and Commercial Aviation stakeholders informed. These include the broadcast of ATIS-like information on the status of the airspace, real-time airspace activation and deactivation through dedicated airspace managers, and radar support by both Volk Field air traffic controllers and FAA air traffic controllers utilizing Volk Field's radar feed. Additionally, technology has provided several methods for pilots to access real-time SUA activation information in the cockpit.

PROPOSED ACTION

Several steps will be taken to address and solve the above limitations with the existing airspace:

The Falls 1 & 2 MOAs will be combined into the Volk Falls MOA. A portion of the current Falls 2 will be absorbed into the Volk West MOA, and the southern-most border of the Falls 1 MOA would be straightened. The Black River ATCAA will be established above parts of the Falls MOA.

The Volk West MOA will absorb a portion of the current Falls 2 MOA and the northern-most portion of the current Volk South MOA. The Volk West ATCAA will encompass the footprint of the expanded Volk West MOA and also absorb the entire footprint of the Volk South MOA. The northern border of the Volk South MOA will be drawn further south of its current location. The southwestern border of the South MOA will be extended further southwest to be in line with the Volk Falls MOA. The northern and eastern borders of the Volk East MOA will be expanded. The Volk East ATCAA will follow the footprint of the Volk East MOA.

The Oshkosh ATCAA will be established to accommodate certain Air-to-Air and Air-to-Ground training events above FL180 where the maximum ranges from the eastern airspaces to the Black River ATCAA/Falls MOA are necessary. In particular, additional airspace for administrative functions such as formation marshalling is required to make maximum effective tactical training use of the Volk East, West, South, Falls/Black River complex.

Establish R-6904C to be activated, by NOTAM only, four hours in advance, to allow stand-off Precision Guided Munition delivery lasing requirements in conjunction with inert training munitions employment from within R6904A/B. The R-6904C addition will allow for the required long-range, non-eye safe laser training from maneuvering aircraft to the Hardwood Range weapons impact areas. The increased dimensions of the Restricted Area will serve to segregate this hazardous training activity from transient civilian aircraft while R-6904C is active.

2. Joint use. The airspace will be available for joint use. The FAA joint-use policy per FAAO 7400.2J para 21-1-8 will be recognized. The Letter of Agreement with Minneapolis ARTCC will outline procedures for scheduling, activating, and de-activating the airspace.

d. Air Traffic Control Assigned Airspace (ATCAA). Yes, the existing ATCAAs will also be modified to support the proposed airspace.

WIANG A ATCAA, WI **RESCINDED**

WIANG B ATCAA, WI **RESCINDED**

WIANG C ATCAA, WI **RESCINDED**

Black River ATCAA, WI

Boundaries. Beginning at lat. 44°43'57"N., long. 91°01'54"W.;
to lat. 44°43'16"N., long. 90°28'08"W.;
to lat. 44°08'40"N., long. 90°44'20"W.;
to lat. 44°04'07"N., long. 90°44'20"W.;
to lat. 44°17'00"N., long. 91°21'00"W.;
to the point of beginning.

Altitudes. FL180 to FL210

Times of use. Intermittent by NOTAM at least 2 hours in advance

Controlling agency. FAA, Minneapolis ARTCC

Using agency. USAF, Air National Guard, Volk Field Combat Readiness Training Center, WI

Volk West ATCAA, WI

Boundaries. Beginning at lat. 44°42'00"N., long. 90°20'09"W.;
to lat. 44°35'00"N., long. 90°18'00"W.;
to lat. 44°27'00"N., long. 89°59'00"W.;
to lat. 44°10'00"N., long. 89°59'00"W.;
to lat. 43°40'00"N., long. 89°46'15"W.;
to lat 43°59'31"N., long. 90°35' 19"W.;
to lat 44°00'00"N., long. 90°35'19"W.;
to lat. 44°00'00"N., long. 90°36'50"W
to lat. 44°09'36"N., long. 90°36'50"W.;
to lat. 44°09'36"N., long. 90°40'22"W.;
to lat. 44°08'40"N., long. 90°40'22"W.;
to lat. 44°08'40"N., long. 90°44'20"W.;
to lat. 44°43'16"N., long. 90°28'08"W.;
to the point of beginning.

Altitudes. FL180 to FL280

Times of use. Intermittent by NOTAM at least 2 hours in advance

Controlling agency. FAA, Minneapolis ARTCC

Using agency. USAF, Air National Guard, Volk Field Combat Readiness Training Center, WI

Volk East ATCAA, WI

Boundaries. Beginning at lat. 44°42'00"N., long. 90°20'09"W.;
to lat. 44°35'00"N., long. 90°18'00"W.;
to lat. 44°27'00"N., long. 89°59'00"W.;
to lat. 44°10'00"N., long. 89°59'00"W.;
to lat. 43°40'00"N., long. 89°46'15"W.;
to lat. 43°35'30"N., long. 88°46'30"W.;
to lat. 44°09'34"N., long. 88°45'15"W;
to lat. 44°29'00"N., long. 89°00'00"W.;
to the point of beginning.

Altitudes. FL180 to FL280

Times of use. Intermittent by NOTAM at least 2 hours in advance

Controlling agency. FAA, Minneapolis ARTCC

Using agency. USAF, Air National Guard, Volk Field Combat Readiness Training Center, WI

Oshkosh ATCAA, WI

Boundaries. Beginning at lat. 43°35'30"N., long. 88°46'30"W.;
to lat. 43°33'00"N., long. 88°21'00"W.;
to lat. 44°09'00"N., long. 88°20'00"W.;
to lat. 44°23'00"N., long. 88°26'00"W.;
to lat. 44°29'00"N., long. 89°00'00"W.;
to lat. 44°09'34"N., long. 88°45'15"W.;
to the point of beginning.

Altitudes. FL180 to FL280

Times of use. Intermittent by NOTAM at least 2 hours in advance

Expected Usage 3 hours per day, 50 days per year

Controlling agency. FAA, Minneapolis ARTCC

Using agency. USAF, Air National Guard, Volk Field Combat Readiness Training Center, WI

Sheboygan West ATCAA, WI

Boundaries. Beginning at lat. 44°29'00"N., long. 88°26'00"W.;
to lat. 44°05'30"N., long. 87°29'45"W.;
to lat. 43°19'00"N., long. 87°41'00"W.;

to lat. 43°33’00”N., long. 88°21’00”W.;
to lat. 43°09’00”N., long. 88°20’00”W.;
to the point of beginning.

Altitudes.	FL180 to FL240
Times of use.	Intermittent by NOTAM at least 2 hours in advance
Expected Usage	3 hours per day, 50 days per year
Controlling agency.	FAA, Minneapolis ARTCC
Using agency.	USAF, Air National Guard, Volk Field Combat Readiness Training Center, WI

<u>Sheboygan East ATCAA, WI</u>

Boundaries.	Beginning	at lat. 44°05’30”N., long. 87°29’45”W.; to lat. 44°01’14”N., long. 86°56’38”W.; to lat. 43°17’00”N., long. 86°44’00”W.; to lat. 43°15’30”N., long. 87°14’00”W.; to lat. 43°19’00”N., long. 87°41’00”W.; to the point of beginning.
Altitudes.		FL180 to FL240
Times of use.		Intermittent by NOTAM at least 2 hours in advance
Expected Usage		3 hours per day, 50 days per year
Controlling agency.		FAA, Minneapolis ARTCC
Using agency.		USAF, Air National Guard, Volk Field Combat Readiness Training Center, WI

e. Activities.

1. For areas that will contain aircraft operations.

(a) The number and types of aircraft that will normally use the area.

F-16:	8 - 16 sorties per day
KC-135:	1 - 2 sorties per day
F-15:	25 sorties per year
F-18:	25 sorties per year
F-22:	50 sorties per year
B-1B:	25 sorties per year
C-130:	25 sorties per year

HH-60:	50 sorties per year
B-52:	25 sorties per year

(b) Specific Activities and the maximum altitudes required for each type of activity planned.

Tactical combat maneuvering by fighter and transport category fixed wing aircraft involving abrupt, unpredictable changes in altitude, attitude, and direction of flight. Maximum daily use altitude of FL280.

Air Combat Tactics (ACT). Maximum altitude FL280

Suppression of Enemy Air Defenses (SEAD). Maximum altitude FL280

Non-standard formation flights. Maximum altitude FL280

Basic Surface Attack (BSA). Maximum altitude FL280

Close Air Support (CAS). Maximum altitude FL280

Surface Attack Tactics (SAT). Maximum altitude FL280

Forward Airstrike Control – Airborne (FAC-A). Maximum altitude FL280

Combat Search and Rescue (CSAR). Maximum altitude FL280

Air Interdiction (AI). Maximum altitude FL280

Opposed Surface Attack Tactics (OPSAT). Maximum altitude FL280

Defensive Counter Air (DCA). Maximum altitude FL280

Large Force Employment (LFE) combat training. Maximum altitude FL280

Flare/chaff countermeasures for self-protection. Maximum altitude FL280

c) Supersonic Flight. N/A. Supersonic flight operations will be prohibited in the proposed airspace.

2. **Air-to-surface, surface-to-air, and surface-to-surface weapons firing.** Inert weapons delivery parameters will remain unchanged due to weapon-footprint limitations of the R6904 impact area.

(a) The number and types of aircraft that will normally use the proposed R-6904C.

F-16:	350 sorties per year
F-18:	30 sorties per year
B-1B:	40 sorties per year

B-52:	30 sorties per year
Other (B-2, A-10, etc):	100 sorties per year

(b) Specific Activities and the maximum altitudes required for each type of activity planned.

As discussed above, the principle purpose of R-6904C is to allow long-range laser operations outside of current capabilities. This activity is important to the following mission types:

Basic Surface Attack (BSA). Maximum altitude FL280

Close Air Support (CAS). Maximum altitude FL280

Surface Attack Tactics (SAT). Maximum altitude FL280

Forward Airstrike Control – Airborne (FAC-A). Maximum altitude FL280

Flare/chaff countermeasures for self-protection. Maximum altitude FL280

f. Environmental and land use information.

1. NGB/A7AM
3501 Fetchet Avenue
JB Andrews, MD 20762-5157
ang.env.comments@ang.af.mil

2. Volk Field CRTC agrees to provide reasonable and timely aerial access to the underlying public and private land. This access will be coordinated via a proposed direct communication line with the Volk Field CRTC Airspace Office. In addition, the Volk Field CRTC will publish the weekly training/usage schedule including proposed times of use via NOTAM.

3. Not applicable.

g. Communications and Radar.

1. All participating aircraft will utilize airspace scheduling (Phoenix - 346.525), Air Combat Training System (Phantom - 319.025), Ground Control Intercept (Brochure - 348.30), Hardwood Aerial Gunnery Range (358.8) and guard frequencies to maintain situational awareness on the status of the airspace and to facilitate any real-time airspace modifications/recalls. Ground based radar and radio communications will be used by Minneapolis ARTCC and Volk RAPCON to monitor the airspace.

2. N/A

h. Safety considerations.

1. Activity will be contained within the MOA and Restricted Area using geographic references, inertial navigation, global positioning systems and

TACAN radial/DME references.

2. Malfunctions will be handled in accordance with aircraft technical orders, Service Directives, and FARs.

3. The employment of flares above 2,000 feet AGL will be authorized. Volk Field CRTC and visiting aircrews will take into consideration the fire danger and restrict usage when the fire danger is high. No other types of ordnance will be released outside of the R6904A/B/C complex. Chaff operations are authorized.

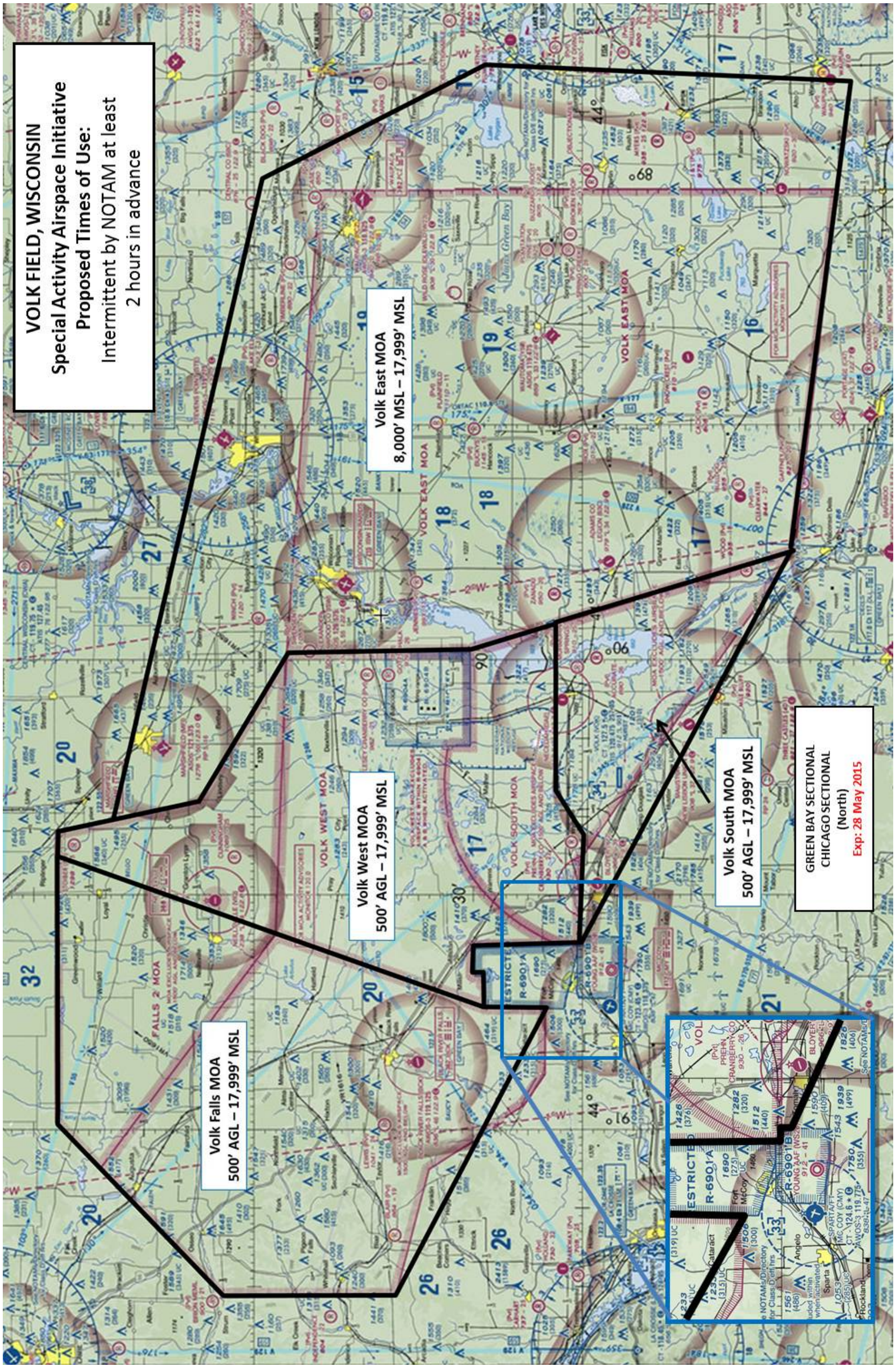
4. Non-eye-safe laser operations will be conducted within boundaries of the R6904C and directed solely to the munition impact area of Hardwood Aerial Gunnery Range. The laser will not penetrate outside approved DoD boundaries.

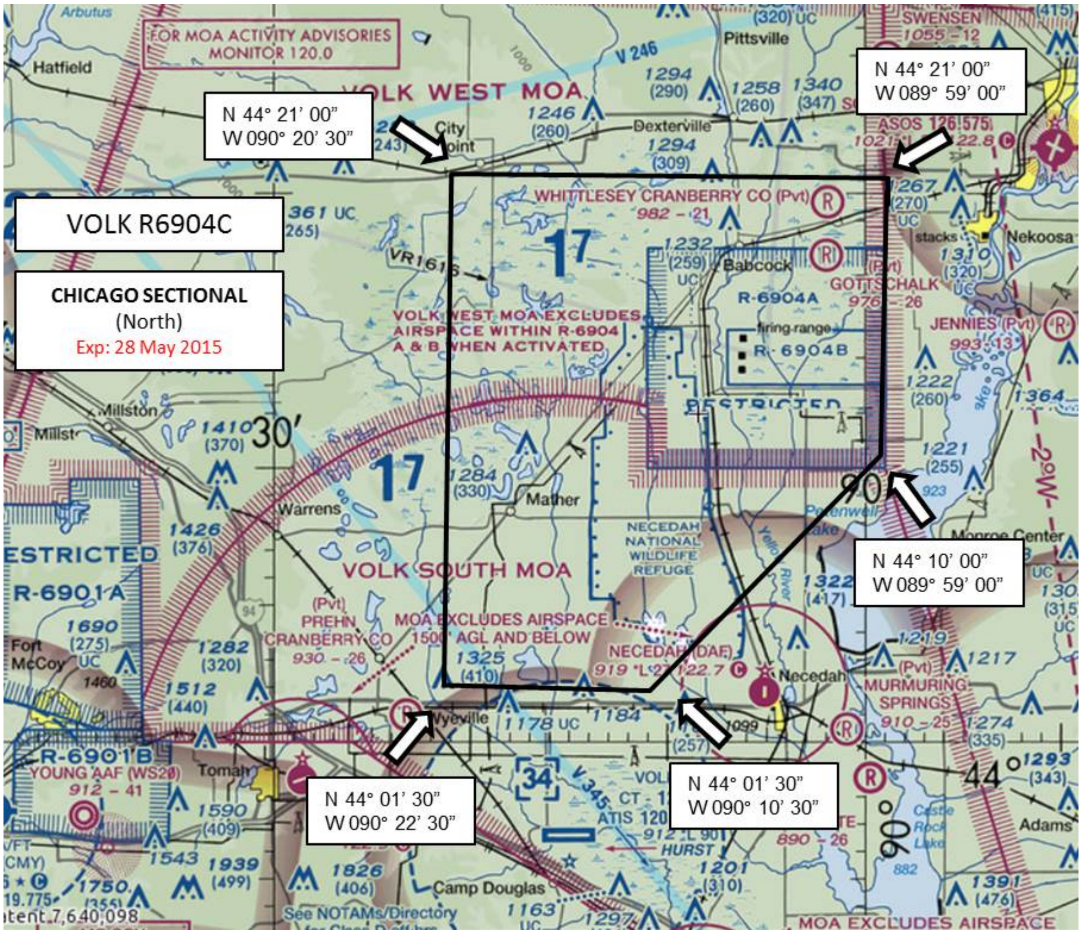
5. Participants will adhere to the provisions of FAR 91.119 and applicable service *directives* to determine minimum safe altitudes within the airspace.

i. Coordination summary.

National Guard Bureau/A3AA, Mr. Jamie Flanders
Minneapolis ARTCC
Chicago ARTCC
Volk Field ANGB, Maj Anthony Hart, Airspace Manager
Air Force Representative, Lt Col Rick Miller, FAA Central Services Area

j. Area Charts





VOLK R6904C
CHICAGO SECTIONAL
(North)
Exp: 28 May 2015
N 44° 21' 00"
W 090° 20' 30"
N 44° 21' 00"
W 089° 59' 00"
N 44° 10' 00"
W 089° 59' 00"
N 44° 01' 30"
W 090° 22' 30"
N 44° 01' 30"
W 090° 10' 30"
VOLK WEST MOA
VOLK SOUTH MOA
FOR MOA ACTIVITY ADVISORIES
MONITOR 120.0
VOLK WEST MOA EXCLUDES
AIRSPACE WITHIN R-6904
A & B WHEN ACTIVATED
MOA EXCLUDES AIRSPACE
1500' AGL AND BELOW
R-6904A
R-6904B
NECEDAH
NATIONAL
WILDLIFE
REFUGE

k. Environmental Documents. “Environmental Assessment for Proposed Volk Field Special Activity Airspace Modification and Establishment” is being conducted.

l. Graphic Notice Information. N/A

m. Other.

APPENDIX B

AGENCY COORDINATION

Appendix B

Appendix B contains Agency Coordination as part of the intergovernmental review phase of Environmental Impact Analysis Process (EIAP) per Executive Order (EO) 12372, Intergovernmental Review of Federal Programs. This appendix contains copies of correspondence between the National Guard Bureau (NGB) and identified Federal, state, and local agencies, including Indian Tribal Governments. Also within this appendix, is the correspondence between the NGB and Federal Aviation Administration (FAA) associated with the FAA's Cooperating Agency status.

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS MD 20762-5157

12 August 2013

NGB/A7A

Dennis Roberts
Director, Airspace Services (AJV-1)
Federal Aviation Administration
800 Independence Avenue SW, Room 400 East
Washington, DC 20591

Dear Mr. Roberts

The National Guard Bureau (NGB) invites the Federal Aviation Administration (FAA) to participate as a Cooperating Agency (CA) in the preparation of the Environmental Assessment (EA) for Proposed Airspace Establishment and Modifications of the Volk Field Special Activity Airspace (SAA) Complex, Wisconsin.

This invitation is consistent with the President's Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) Regulations, 40 CFR § 1501.6, *Cooperating Agencies* and the FAA/DoD Memorandum of Understanding concerning environmental review of Special Use Airspace (SUA), October 4, 2005 (attached).

The "Volk Airspace Complex Joint FAA/ANG Special use Airspace Review" Working Group (June 2008) identified multiple shortfalls with the existing Volk Field SAA Complex and made several recommendations to improve/optimize the Complex to the benefit of both civilian and military aviation assets. The Proposed Action consists of the following elements:

a. Modification of the Falls 1 and 2 Military Operations Area (MOA) and Establishment of the Volk Falls MOA

b. Establishment of the Falls Air Traffic Control Assigned Airspace (ATCAA)

c. Modification and Expansion of Volk West MOA

d. Modification and Expansion of Volk West ATCAA

e. Modification and Expansion of Volk South MOA

f. Modification and Expansion of Volk East MOA and ATCAA

g. Establish Oshkosh ATCAA

h. Establish R-6904C Restricted Area

As the CA, your responsibilities will encompass various portions of the EA development, to include:

a. Responding, in writing, to this request;

b. Assuming responsibility, upon request by the NGB, for developing information and preparing analyses on topics for which the FAA has special expertise and/or regulatory oversight;

c. Supporting the NGB, the designated lead Federal agency, in conducting necessary consultations with other agencies;

d. Making staff available for agency-to-agency internal interdisciplinary reviews; and

e. Protecting interagency deliberative communications and information consistent with Freedom of Information Act (FOIA) principles.

My point of contact for this action is Mr. Robert Dogan, NGB/A7AM, (240) 612-8859 and robert.dogan@ang.af.mil.

Sincerely

William P. Albro

WILLIAM P. ALBRO, P.E., GS-15
Assoc Director, Installations & Mission Support

Attachment:
FAA/DoD MOU Concerning Environmental Review of SUA

cc:
NGB/A3A
Volk Field Combat Readiness Training Center

U.S. Department
of Transportation
**Federal Aviation
Administration**

SEP 3 0 2013

Mr. William P. Albro, P.E.
Associate Director, Installations & Mission Support
National Guard Bureau
3501 Fetchet Avenue
Joint Base Andrews, MD 20762

Dear Mr. Albro:

Thank you for your letter requesting the Federal Aviation Administration (FAA) participate as a cooperating agency in the preparation of the Environmental Assessment for Proposed Airspace Establishment and Modifications of the Volk Field Special Activity Airspace Complex, Wisconsin.

Since the proposal involves Special Use Airspace (SUA), the FAA will follow the guidelines described in the Memorandum of Understanding between the FAA and the Department of Defense Concerning SUA Environmental Actions, dated October 4, 2005, and in accordance with 40 CFR § 1501.6, National Environmental Policy Act regulations regarding cooperating agencies.

Modification of this SUA resides under the jurisdiction of the Central Service Center, Operations Support Group, Fort Worth, TX. Mr. David Medina, Manager of the Operations Support Group at the Central Service Center, will be the primary focal point for matters related to both airspace and environmental matters.

FAA Order 7400.2, Procedures for Handling Airspace Matters, Chapter 32, indicates that airspace modifications and environmental processes be conducted in tandem as much as possible. Approval of either the aeronautical process or the environmental process does not imply approval of the entire proposal. Enclosed is Appendix 2, 3 and 4 of FAA Order 7400.2 for additional details.

A copy of the incoming correspondence and this response is being forwarded to Mr. Medina. He can be contacted at 817-321-7700 for further processing of your proposal.

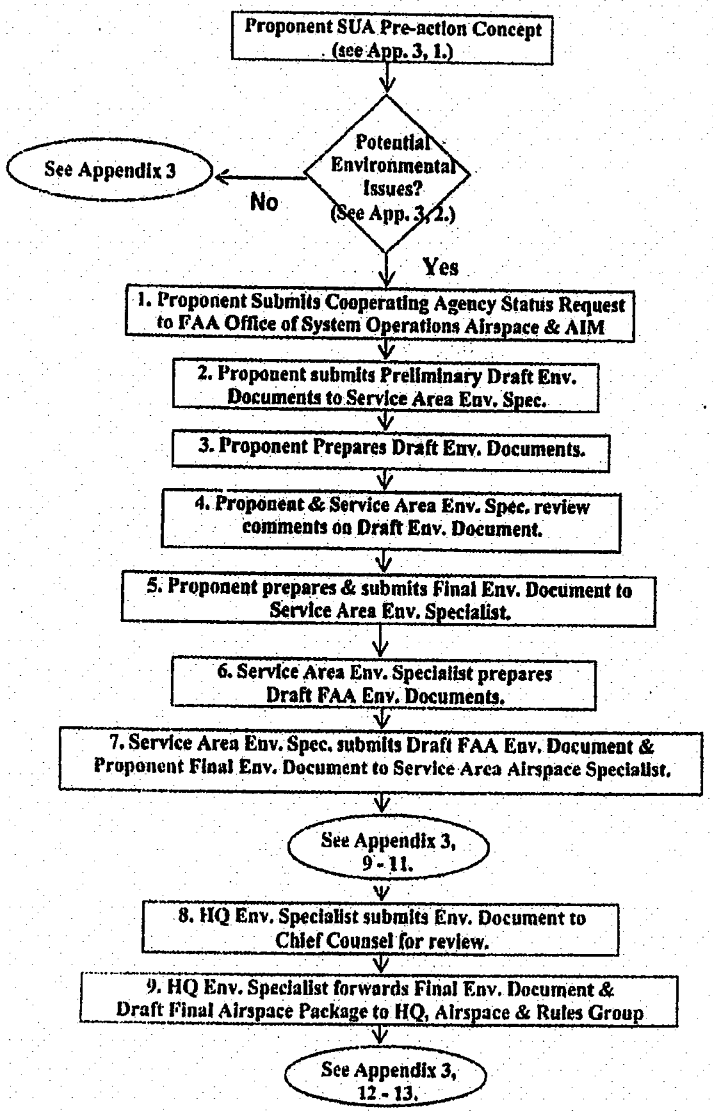
Sincerely,

Franklin L. Black
For
Dennis E. Roberts
Director, Airspace Services
Air Traffic Organization

Enclosures (3)

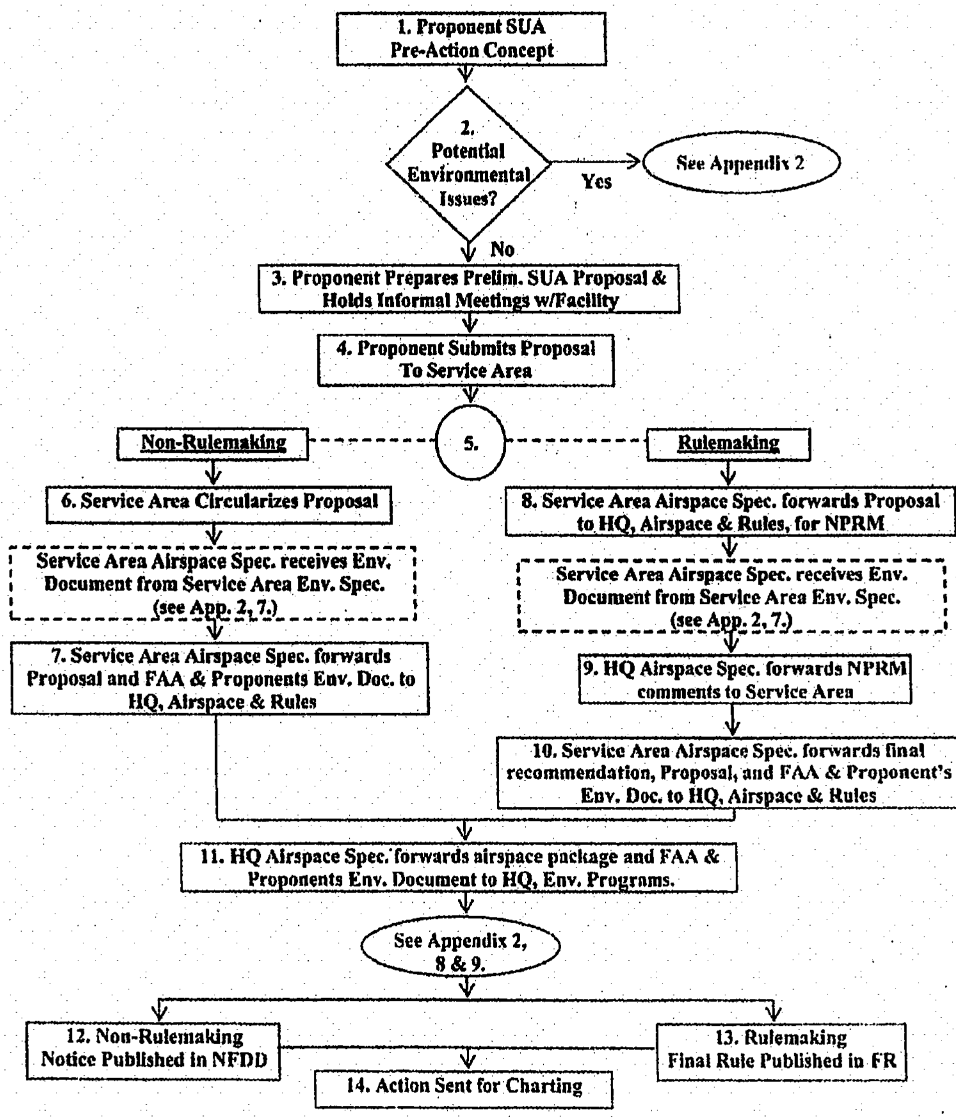
Appendix 2. Procedures For Processing SUA Actions Environmental Process Flow Chart

(This Chart is for use with Appendix 4 and the numbers correlate to the numbers in the Environmental column of that table.)



Appendix 3. Procedures For Processing SUA Actions Aeronautical Process Flow Chart

(This Appendix is for use with Appendix 4 and the numbers correlate to the numbers in the Aeronautical column of that table.)



Appendix 4. FAA Procedures for Processing SUA Actions Aeronautical and Environmental Summary Table

(The aeronautical and environmental processes may not always occur in parallel.)
(This Appendix is for use with Appendix 2 and Appendix 3, and the numbers correlate to numbers on those charts.)

(See note below.)

AERONAUTICAL	ENVIRONMENTAL
1. Proponent shall present to the Facility a Pre-draft concept (i.e., new/ revisions to SUA needed or required).	1. Proponent shall discuss with the Service Area, at the earliest time, the potential for environmental impacts associated with the proposal.
	2. If there is the potential for environmental impacts, Proponent shall make a request to the FAA for a Cooperating Agency (CA) status when Proponent decides to initiate the environmental process. Proponent shall forward the request to the Director of the System Operations Airspace and AIM. The Director will transmit the request to the Environmental Programs Group who prepares and forwards the response to Proponent. The Environmental Programs Group will send a courtesy copy of the response to the responsible Service Area. The Service Area environmental specialist works as the FAA point of contact throughout the process in development of any required environmental documentation.
	3. Proponent submits a Preliminary Draft EA or EIS to the Service Area environmental specialist. The Service Area environmental specialist shall provide comments, in consultation with the airspace specialist and the Environmental Programs Group, back to Proponent.

2. Proponent forwards the aeronautical proposal to the FAA Service Area for review and processing by the airspace specialist.	4. Proponent prepares a Draft EA or EIS with a 45-day public comment period. As the FAA CA point of contact, the Service Area environmental specialist reviews the associated draft environmental documentation to ensure that the Proponent addressed adequately all environmental concerns submitted on the Preliminary Draft. If required, the Service Area environmental specialist forwards the draft environmental documentation to the Environmental Programs Group for review and comment by the headquarters environmental specialist and the Office of Chief Counsel.
3. The Service Area airspace specialist, in accordance with this order, determines the type of airspace action(s) necessary, either Non-Rulemaking or Rulemaking. FAA Service Area and Proponent determine if informal Airspace Meetings are required.	
For Non-Rulemaking:	
4. The Service Area airspace specialist sends out a circularization with a 45-day public comment period. The Service Area airspace specialist reviews and prepares, in consultation with the Proponent, responses to the aeronautical comments from the study and circularization in accordance with Chapter 21 of this order.	5. The Proponent reviews comments received on their Draft EA/FONSI or EIS and prepares their responses to the comments, in consultation with the FAA and other cooperating agencies, if necessary, and in accordance with Chapter 32 of this order.
	6. Proponent prepares and submits their Final EA/FONSI or EIS/ROD to the Service Area environmental specialist.
	7. The Service Area environmental specialist prepares a Draft FAA FONSI/ROD or Draft FAA Adoption Document/ROD.
	8. The Service Area environmental specialist submits the Draft FAA FONSI/ROD or Draft FAA Adoption Document/ROD and the Proponent's Final EA/FONSI or EIS/ROD to the Service Area airspace specialist for inclusion with the airspace proposal package.
5. The Service Area airspace specialist then sends the completed package containing the aeronautical proposal, response to comments, Proponent's Final EA/FONSI, and the Draft FAA FONSI/ROD to the Headquarters Airspace and Rules Group with their recommendation.	

For Rulemaking:	
6. The Service Area airspace specialist sends the proposal to the Airspace and Rules Group who prepares a Notice of Proposed Rulemaking (NPRM). The Headquarters Airspace and Rules Group submits the NPRM for publication in the Federal Register with a 45-day comment period in accordance with Chapter 2 of this order.	
7. The Headquarters airspace specialist sends comments received on the NPRM to the Service Area airspace specialist for resolution.	
8. The Service Area airspace specialist then sends the completed package containing the response to comments, final service area recommendation, the proposal, Proponent's Final EA/FONSI or EIS/ROD, and the Draft FAA FONSI/ROD or Draft FAA Adoption Document/ROD to the Headquarters Airspace and Rules Group for preparation of the Final Rule.	
9. The Headquarters airspace specialist forwards the draft final rule package or draft non-rulemaking case summary (NRCS) with all supporting documentation to the Headquarters Environmental Programs Group for review (after all aeronautical comments have been resolved).	9. The Headquarters environmental specialist reviews the package for environmental technical accuracy; then submits the environmental documentation to the Office of the Chief Counsel, Airports and Environmental Law Division, for legal sufficiency review (having collaborated throughout the process).
	10. The Chief Counsel's environmental attorney's comments are incorporated into the final FAA environmental decision and signed by Headquarters Environmental Programs Group Manager. The package is then returned to the Headquarters Airspace and Rules Group.
10. For Non-rulemaking: The non-rulemaking action is published in the National Flight Data Digest. 11. For Rulemaking: The Final Rule is published in the Federal Register. The Final Rule will contain a reference to the decision rendered and location of documentation for the associated environmental process.	

Consult the following documents throughout the process for further information:

- Council on Environmental Quality Regulations for Implementing the National Environmental Policy Act (NEPA), 40 CFR Parts 1500-1508
- FAA Order 1050.1E, "Environmental Impacts: Policies and Procedures"
- FAA Order 7400.2, "Procedures for Handling Airspace Matters," Part 5
- FAA Order 7400.2, Chapter 32, "Environmental Matters" and the associated appendixes (for specific SUA environmental direction)

NOTE: The time periods below are for a non-controversial aeronautical proposal and its associated environmental process. The time periods are for FAA review/processing only. Times for proponent and/or environmental contract support processing must be added.

ENVIRONMENTAL: The estimated time of completion for EA processing is 12 to 18 months or, for EIS processing, 18 to 36 months.

AERONAUTICAL (Non-Rulemaking): A minimum 4 months is required from submission of the Formal Airspace Proposal by the Proponent to the Service Area through completion of the circularization process. Additionally, a minimum of 6 months is required from submission of the Formal Airspace Proposal by the Service Area to Headquarters through completion of the charting process.

AERONAUTICAL (Rulemaking): A minimum 6 weeks for Service Area processing, and a minimum of 9 months to complete rulemaking once the formal package is received at Headquarters.

U.S. Department
of Transportation
Federal Aviation Administration
800 Independence Ave., S.W.
Washington, D.C. 20591

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Mr. William P. Albro, P.E.
Associate Director, Installations & Mission Support
National Guard Bureau
3501 Ftechet Avenue
Joint Base Andrews, MD 20762

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Meeting	Date	Location	Personnel	Objectives
Volk Airspace Complex Joint FAA/ANG Special Use Airspace Review	1-Jun-08	Volk Field CRTC, WI	Volk Field, Central Service Center AFREP, Minneapolis Center, NGB A3	Airspace Construction/Limitations/ Reconstruction Discussion
Minneapolis Airspace Users Conference	2-4 Nov 10	Minneapolis, MN	Mulitple DoD and FAA Personnel	Airspace Concept Discussions
Minneapolis/Chicago ARTCCs & Volk Field Airspace Redesign Conf.	7-8 Dec 10	Volk Field CRTC, WI	Volk Field Airspace, Minneapolis & Chicago Ctr	Airspace Concept Construction
Minneapolis/Milwaukee & Green Bay Approach ARTCCs & Volk Field Airspace Proposal Review	15-Mar-11	Minneapolis, MN	Volk Field Airspace, Minneapolis & Chicago Ctr	Airspace Concept Review
Central Great Lakes Airspace & Range Council	29-31 May 12	Volk Field CRTC, WI	Mulitple ANG/FAA/Civilian Stakeholders	Airspace Concept Review
Volk Field/Fort McCoy Airspace Coordination Meeting	14-Dec-12	Volk Field CRTC, WI	Volk Field Airspace, Jim Hubbard (Fort McCoy)	Airspace Concept Review/Ft McCoy Inputs
Minneapolis/Chicago ARTCCs & Volk Field Airspace Proposal Review	23-24 Jan 13	Minneapolis, MN	Volk Field Airspace, Minneapolis & Chicago Ctr	Airspace Concept Review
HQ Air Force A3A Airspace Review/Request Panel	25-26 Feb 13	Washington DC	Mulitple Air Force (A3A) and NGB Personnel	Airspace Concept Review
Central Great Lakes Airspace & Range Council	24-25 July 13	Volk Field CRTC, WI	Mulitple ANG/FAA/Civilian Stakeholders	Airspace Concept Review
Chicago Center (ZAU) Oshkosh ATCAA Discussion	?? Oct 13	Telecon	Tom Rucker, ZAU, Maj. Tony Hart	Oshkosh ATCAA Review
HQ Air Force A3A Airspace Review/Request Panel	22-Oct-13	Telecon	Mulitple Air Force (A3A) and NGB Personnel	Airspace Concept Review
Minneapolis Center "Hero" Briefings	6-7 Nov 13	Minneapolis, MN	FAA Controllers/Operations Personnel	Military Airspace Utilization Fam Briefs
HQ Air Force Strategic Basing/Environmental Steering Group	17-20 Dec 13	Washington DC	HQ AF SB/ESG, Multiple ANG Representatives	SB ESG Approval
Minneapolis Center Airspace Users Conference	6-8 Jan 14	Minneapolis, MN	Mulitple DoD and FAA Personnel	Airspace Coordination
Aircraft Owners and Pilots Association and National Business Aviation Association	11-Feb-14	NBAA, Washington, DC	Bob Lamond (NBAA), Melissa McCaffrey (AOPA)	Public Outreach
Wisconsin Federal CODEL Briefing	19-Feb-14	Volk Field CRTC, WI	Mark Nielsen (Sen Johnson), John Medinger (Sen Baldwin), Mark Aumann (Cong. Kind)	Federal CODEL Brief
Wisconsin State Legislator Briefing	20-Feb-14	Madison, WI	WI State Legistlators and Staff Members	State Legislature Brief
Secretary of the Air Force Brief/Approval (Conducted by HAF A3A)	8-Apr-14	Washington DC	SecAF & Staff	Airspace Proposal Review & Approval
Wisconsin Department of Transportation - Aeronautics Bureau	29-Apr-14	Madison, WI	Justin Hetland (Airspace Manager), Jeff Taylor	WI DOT Rollout Brief
Stevens Point Municipal Airport	7-May-14	Stevens Point, WI	Jason Draheim (Airport Manager), Andrew Beveridge (City Staff), Joel Lemke (City Staff), and other corporate/GA pilots/operators.	Public Outreach
Marshfield Municipal Airport	12-May-14	Marshfield, WI	Jeff Gaier (Airport Manager), John Berg (Airport Chairman), H. Duffy Gaier (Airport Management), and multiple corporate and general aviation pilots/operators	Public Outreach
Experimental Aircraft Association (EAA)	14-May-14	EAA HQ, Oshkosh, WI	Jonathan Harger, Sean Elliot (VP Advocacy & Safety, Head of Air Operations)	Public Outreach
Volk Field Open House - Joint WI Dot VFR Seminar	17-May-14	Volk Field CRTC, WI	Approx. 50 Local Area General Aviation Pilots	Public Outreach
Central Great Lakes Airspace & Range Council	27-29 May 14	Volk Field CRTC, WI	Mulitple ANG/FAA/Civilian Stakeholders	Airspace Proposal Review
Marshfield GPS Rwy 34 Approach Conflict Mitigation Meeting	29-May-14	Volk Field CRTC, WI	Marshfield Municipal Airport Management/Stakeholder (last minute cancel), Justin Hetland (WI DOT), Minneapolis Center Operations, Volk Field Airspace	Stakeholder/Military Airspace Conflict Mitigation (Marshfield Rwy 34 GPS)
Chicago Center Oshkosh ATCAA Concerns	16-Jul-14	Telecon	Volk Field Airspace, Chicao Ctr	Oshkosh ATCAA Review
Mauston-New Lisbon Airport	16-Jul-14	Mauston, WI	Volk Field Airspace, Airport Personnel	Airspace Concept Review
Necedah Municipal Airport	21-Aug-14	Necedah, WI	Volk Field Airspace, Airport Personnel	Airspace Concept Review
Mauston/New Lisbon Municipal Airport	TBD	Mauston, WI		
Bloyer Airport	TBD	Tomah, WI		
Black River Falls Municipal Airpoort	TBD	Black River Falls, WI		
Ho-Chunk Nation	TBD	TBD		

Intergovernmental Review List
State and Federal Agencies

Ms. Cathy Stepp, Secretary
Wisconsin Department of Natural Resources
Central Office
101 S Webster Street
Madison WI 53707-7921
(608) 266-2621

Mr. Mark Gottlieb, P.E., Secretary
Wisconsin Department of Transportation
Hill Farms State Transportation Building
4802 Sheboygan Avenue
Madison, WI 53707-7999
(608) 264-7447

Ms. Daina Penkiunas, Deputy State Historic Preservation Officer
Wisconsin Historical Society
Division of Historic Preservation
Office of Preservation Planning
816 State Street
Madison, WI 53706
(608) 264-6508

Mr. David Medina, Manager
Federal Aviation Administration
Central Service Center
Operations Support Group
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Fort Worth, TX 76137
(817) 222-4013

Ms. Daisy Mather
Federal Aviation Administration
Central Service Center
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Fort Worth, TX 76137
(817) 222-4013

Mr. John Witucki
Federal Aviation Administration
Central Service Center
2601 Meacham Blvd
Fort Worth, TX 76137
(817) 222-4013

Ms. Susan Hedman, Administrator
U.S. Environmental Protection Agency, Region 5
77 W. Jackson Boulevard
Chicago, IL 60604
(312) 353-2000

Mr. Tom Melius, Regional Director
U.S. Fish and Wildlife Service, Region 3
Ecological Services
5600 American Boulevard West, Suite 990
Bloomington, MN 55437-1458
(612) 713-5350

Col. Dan Koprowski, District Commander
U.S. Army Corps of Engineers, St. Paul District
180 5th St. East, Ste. 700
St. Paul, MN 55101-1678
(651) 290-5807

Brigadier General Richard Kaiser, Division Commander
U.S. Army Corps of Engineers, Great Lakes and Ohio River Division
550 Main Street, Room 10524
Cincinnati, OH 45202-3222
(513) 684-3010

Mr. Jimmy Bramblett, State Conservationist
U.S. Department of Agriculture
Wisconsin National Resources Conservation Service
8030 Excelsior Drive, Suite 200
Madison WI 53717-2906
(608) 662-4422

Mr. Leon Carl, Regional Director
U.S. Geological Survey
Great Lakes Science Center
1451 Green Road
Ann Arbor, MI 48105
(734) 994-3331

Ms. Patty Trap, Acting Regional Director
National Park Service, Midwest Region
601 Riverfront Drive
Omaha, NE 68102-4226
(402) 661-1736

Mr. Dean Gettinger
Bureau of Land Management
Northeastern States Field Office
626 E. Wisconsin Ave., Suite 200
Milwaukee, Wisconsin 53202-4617
414-297-4400

Ms. Kathleen Atkinson, Regional Forester
U.S. Department of Agriculture Forest Service
Eastern Region - R9
626 East Wisconsin Ave.
Milwaukee, WI 53202
(414) 297-3600

Mr. Don Schwartz, Airport Manager
Mauston-New Lisbon Union Airport
W7493 Ferdon Road
New Lisbon, WI 53950
(608) 347-7027

Mr. Jason Draheim, Airport Manager
Stevens Point Municipal Airport
4501 Highway 66
Stevens Point, WI 54482
(715) 345-8993

David Dineen, Airport Manager
Marshfield Municipal Airport
93 Old Colony Lane
Marshfield, MA 02050
(781) 834-4928

Mr. Brad Chown, Airport Manager
Black River Falls Municipal Airport
101 S. Second Street
Black River Falls, WI 5415
(715) 284-5514

Intergovernmental Review List
Tribes

Mr. Mike Wiggins Jr., Chair
Bad River Band of Lake Superior
Chippewa
P.O. Box 39
Odanah, WI 54861
(715) 682-7111

Mr. Harold "Gus" Frank, Chair
Forest County Potawatomi Community
P.O. Box 340
Crandon, WI 54520
(715) 478-7200

Mr. Jon Greendeer, President
Ho-Chunk Nation
W9814 Airport Road
P.O. Box 667
Black River Falls, WI 54615
(715) 284-9343

Mr. Michael "Mic" Isham, Chair
Lac Courte Oreilles Band of Lake Superior
Chippewa
Tribal Governing Board
13394 West Trepenia Road,
Hayward, WI 54843
(715) 634-8934

Mr. Tom Maulson, President
Lac du Flambeau Band of Lake Superior
Chippewa
PO Box 67
Lac du Flambeau, WI 54538
(715) 588-3303

Ms. Laurie Boivin, Chairperson
Menominee Nation
Menominee Tribal Legislature
W2908 Tribal Office Loop
P.O. Box 910
Keshena, WI 54135-0910
(715) 799-5114

Mr. Wally Miller, President
Stockbridge-Munsee Band of Mohican
Indians
N8476 Mo He Con Nuck Road
P.O. Box 70
Bowler, WI 54416
(715) 793-4111

Ms. Cristina Danforth, Chair
Oneida Nation of Wisconsin
P.O. Box 365
Oneida, WI 54155-0365
(920) 869-4380

Ms. Rose Soulier, Chairwoman
Red Cliff Band of Lake Superior Chippewa
88385 Pike Rd., Hwy. 13
Bayfield, WI 54814
(715) 779-3700

Mr. Lewis Taylor, Chair
St. Croix Chippewa Community
24663 Angeline Avenue
Webster, WI 54893
(715) 349-2195

Mr. Chris McGeshick, Tribal Chair
Sokaogon Chippewa Community (Mole
Lake Band of Lake Superior Chippewa
Indians)
3051 Sand Lake Road
Crandon, WI 54520
(715) 478-7500

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS MD 20762-5157

NGB/A7AM

<<Contact>>
<<Address>>
<<Address>>
<<Address>>
<<Address>>

Subject: Proposed Volk Field Special Activity Airspace Modification and Establishment Wisconsin Air National Guard

Dear <<Contact>>,

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to evaluate the potential impacts on the physical and human environment associated with the proposed modification and establishment of Special Activity Airspace (SAA) over central and east-central Wisconsin. The EA is being prepared in accordance with the Council on Environmental Quality (CEQ) guidelines pursuant to the National Environmental Policy Act (NEPA) of 1969 and the Advisory Council on Historic Preservation's regulations (36 CFR 800, *Protection of Historic Properties*) pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966. It is the intent of the NGB to use the NEPA process to comply with Section 106 in lieu of the procedures set forth in Sections 800.3 through 800.6.

Per Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, this letter is being sent to you as part of the intergovernmental review phase of Environmental Impact Analysis Process (EIAP). We are writing this letter to notify you of this proposal and to request your assistance in providing early identification of any potential issues within your purview. The Draft EA will address these identified issues and will be sent to your office for further review and comment. We intend to maximize the use of electronic submittals during subsequent consultation phases. If you would prefer to receive a hardcopy of the Draft and/or Final EA, please indicate in your response, otherwise, documents will be provided in electronic format.

In support of the Wisconsin Air National Guard's (WIANG's) Volk Field Combat Readiness Training Center (CRTC), NGB is proposing to modify the existing Volk Field Special Activity Airspace (SAA) in order to address training limitations presented by the existing configuration of the airspace complex. Under the Proposed Action, NGB would modify and expand the existing airspace complex overlying central and east-central Wisconsin, including the consolidation and minor expansion of existing Military Operations Areas (MOAs) and Air Traffic Control Assigned Airspaces (ATCAAs). Additionally, NGB would establish Restricted Area (RA) 6904C (R-6904C) and the Oshkosh ATCAA, the latter of which would be used in support of Large Force Exercises (LFEs). Specific modifications and establishment of military training airspace included in the Proposed Action were developed early in the concept phase by the WIANG with support from the Federal Aviation Administration's (FAA's) Minneapolis Air Route Traffic Control Center (ARTCC) and Chicago ARTCC as well as the Green Bay and Milwaukee Approach Control facilities. The Proposed Action would not include the development or construction of any facilities, ground-disturbing activities, or changes to the impact area from air-to-ground training activities. The proposed airspace improvements would be utilized by numerous Department of Defense (DoD) agencies; however, the airspace complex would predominantly be utilized by the 115th Fighter Wing (115 FW), 148th Fighter Wing (148 FW), and 114th Fighter Wing (114 FW) based in Madison, Wisconsin, Duluth, Minnesota, and Sioux Falls, South Dakota, respectively.

Three alternatives and the No-Action Alternative will be analyzed. Alternative 1 includes the majority of airspace changes described for the Proposed Action; however, under this alternative the Oshkosh ATCAA would not be established. Alternative 2 includes the airspace changes proposed under the Proposed Action, but R-6904C would not be established. Alternative 3 would not implement the changes to the airspace as described for the Proposed Action; however, the ceiling of the existing Volk West ATCAA would be raised from Flight Level (FL) 230 (23,000 feet mean sea level [MSL]) to FL 280 (28,000 feet MSL) in order to reduce the number of airspace shelves in the complex. The No-Action Alternative would include none of the changes described for the Proposed Action and would result in no changes to the current configuration of the Volk Field SAA. Under the No-Action Alternative, local and deployed units would continue to lose adequate training opportunities and would not utilize new advanced weapons systems due to the current configuration of the airspace complex. Further, the No-Action Alternative would limit support for future aircraft training and tactics.

The enclosed graphics depict the location of the proposed military airspace establishment and modifications included under the Proposed Action. It is important to note that this Proposed Action *would involve airspace only* and does not include any project components that would touch or otherwise directly affect the ground or water surface. In accordance with the NHPA, the area beneath the airspace is considered the Area of Potential Effect. As part of the intergovernmental review process, we request any further information or comments you may have with regard to the potential effects of the Proposed Action on resources, to include cultural resources, within your purview.

Please review this information and respond with comments within 30 days. Forward your written comments to Mr. Devin Scherer, at NGB/A7AM, Shepperd Hall, 3501 Fetchet Avenue, Joint Base Andrews Maryland 20762-5157, or email to ang.env.comments@ang.af.mil. Please include "Volk Field SAA Modification and Establishment" in the subject line. Thank you for your assistance.

Sincerely

KEVIN MAREK, REM
Environmental Specialist
Plans and Requirements Branch

Attachments:
Proposed Airspace Graphics 1-5

WISCONSIN AIR NATIONAL GUARD
VOLK FIELD AIR NATIONAL GUARD BASE
100 INDEPENDENCE DRIVE
CAMP DOUGLAS, WI 54618-5001

<<Contact>>
<<Tribe>>
<<Address>>
<<Address>>
<<Address>>
<<Address>>

Subject: National Historic Preservation Act Section 106 Consultation for the Environmental Assessment for Proposed Volk Field Special Activity Airspace Modification and Establishment
Wisconsin Air National Guard

Dear <<Contact>>,

The National Guard Bureau (NGB) is preparing an Environmental Assessment (EA) to evaluate the potential impacts on the physical and human environment associated with the proposed modification and establishment of Special Activity Airspace (SAA) over central and east-central Wisconsin. The EA is being prepared in accordance with the Council on Environmental Quality (CEQ) guidelines pursuant to the National Environmental Policy Act (NEPA) of 1969 and the Advisory Council on Historic Preservation's regulations (36 CFR 800, *Protection of Historic Properties*) pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966. It is the intent of the NGB to use the NEPA process to comply with Section 106 in lieu of the procedures set forth in Sections 800.3 through 800.6.

As a Federally-recognized Tribe with historic and cultural interests in the project's Area of Potential Effects (APE), NGB is reaching out to you to assist in our analysis of the undertakings effect. In accordance with Section 106 of the NHPA and in reference to Executive Order (EO) 13175, *Consultation and Coordination with Indian Tribal Governments*, the NGB would like to initiate government-to-government consultation with your tribe. The NGB anticipates the APE for this undertaking to be limited to the portion of land beneath the proposed airspace complex (see attached graphical depictions).

In particular, the NGB requests your input as to the status of any traditional resources that may be located in or near the proposed APE, whether you have knowledge of any historic properties that might be affected by the proposed undertaking in the APE, and whether your tribe wishes to participate in the Section 106 consultation. Being defined as a Federal undertaking, the NGB will be seeking input and inviting other potential consulting parties, such as other Federally-recognized Tribes and the Wisconsin State Historic Preservation Office (SHPO).

This letter and the accompanying graphics provide an introduction to the proposed undertaking and the EA underway by the Wisconsin Air National Guard (WIANG). In support of the WIANG's Volk Field Combat Readiness Training Center (CRTC), NGB is proposing to modify and expand existing Volk Field Special Activity Airspace (SAA) in order to address training limitations presented by the existing configuration and dimension of the of the airspace complex. The Volk Field SAA is comprised of several airspace units known as Military Operations Areas (MOAs) and also includes restricted airspace surrounding the Hardwood Range (R-6904A/B). The airspace is and would continue to be used primarily by F-16 fighter aircraft.

This airspace proposal largely involves the reconfiguration of existing internal airspace boundaries, however, expansion of the existing airspace is being proposed due to horizontal constraints of the existing airspace boundaries on training. The altitude of the existing MOAs are 100 (Volk West MOA), 500 (Falls 1, Falls 2, Volk South MOA), and 8,000 (Volk East MOA) feet above ground level (AGL) and extend to 17,999 feet above mean sea level (MSL). The existing Volk West MOA would be reconfigured and raised from 100 feet AGL to 500 feet AGL and the remaining airspace would stay at its current altitude. The proposed Volk West MOA and Volk South MOA expansion areas would have an altitude of 500 feet AGL to 17,999 feet MSL and the proposed Volk East MOA expansion area would have an altitude of 8,000 feet MSL to 17,999 feet MSL. Additionally, R-6904C would be established at an altitude of 3,000 feet MSL to 28,000 feet MSL to support long-range non-eye safe laser training, which cannot be conducted within the airspace complex as currently configured. It is important to note that this undertaking would involve modification to airspace only and would not include any components that would touch or otherwise directly affect the ground or water surface.

The NGB believes in and is committed to early and continuous consultation with all potentially affected Native American tribes. The information provided by your tribe will assist us in the development of the EA. If you have any questions about this project after reviewing these materials, please feel free to contact Mr. Kevin Marek, at NGB/A7AM, Shepperd Hall, 3501 Fetchet Avenue, Joint Base Andrews, Maryland 20762-5157, or email to ang.env.comments@ang.af.mil. If you choose to email comments, please include “Volk Field SAA Modification and Establishment” in the subject line. Please also let us know if you wish to receive an electronic copy of the Draft EA for review and comment. Thank you for your assistance.

Sincerely,

DAVID L. ROMUALD, Col, WI ANG
Commander

Attachment:
Proposed Airspace Graphics 1-5

From:	Scherer, Devin C CTR USAF ANG NGB/A7AM
To:	Meisinger, Nick
Cc:	Marek, Kevin P Civ USAF ANG NGB/A7AM
Subject:	FW: Volk Field SAA Modification and Establishment/from Wisconsin SHPO
Date:	Monday, December 01, 2014 7:00:18 AM

FYI...

SHPO needs two hardcopies of the DEA.

From: Eisenberg, Leslie E - WHS [mailto:Leslie.Eisenberg@wisconsinhistory.org]
Sent: Wednesday, November 26, 2014 11:45 AM
To: ANGRC/NGB/A7A NEPA COMMENTS
Subject: Re: Volk Field SAA Modification and Establishment/from Wisconsin SHPO

Mr. Scherer,

Thank you for the letter notification (and accompanying five graphics) dated November 20, 2014, notifying us that an Environmental Assessment (EA) is being prepared in connection with the "Proposed Volk Field Special Activity Airspace Modification and Establishment, Wisconsin Air National Guard." I am requesting that two copies of the Draft and/or Final EA be provided to me in hardcopy format for review when available. We do not yet have the ability to accept electronic submissions.

Sincerely,

Leslie Eisenberg

Leslie E. Eisenberg, Ph.D.

Compliance Archaeologist

Division of Historic Preservation-Public History

Wisconsin Historical Society

816 State Street

Madison, Wisconsin 53706

Phone: 608.264.6507

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
180 FIFTH STREET EAST, SUITE 700
ST. PAUL MN 55101-1678

December 18, 2014

REPLY TO
ATTENTION OF

Programs and Project Management Division
Project Management Branch (PM-B)

SUBJECT: Proposed Volk Field Special Activity Airspace Modification and Establishment Wisconsin Air National Guard

Mr. Devin Scherer
NGB/A7AM, Shepperd Hall
3501 Avenue
Joint Base Andrews, Maryland 20762-5157

Dear Mr. Scherer:

We are replying to your November 20, 2014, letter signed by Kevin Marek concerning the proposed Volk Field airspace modification over east-central Wisconsin.

The proposed project as outlined in your letter will not affect any St. Paul District real estate, completed projects, or ongoing civil works projects. We do not anticipate future impacts to any Corps of Engineers Civil Works projects by the St. Paul District.

The proposed project is located within the Saint Paul District's Regulatory jurisdiction. You should coordinate with Mr. Jeff Olson at the Saint Paul Regulatory Office, Corps of Engineers, 180 5th Street East, Saint Paul, Minnesota 55101-1678, concerning permit requirements for the Saint Paul District.

A copy of your letter has been forwarded to Mr. Olson of the Saint Paul District Regulatory office. Please note that this letter does not eliminate the need for State, local, or other authorizations, such as those of the Wisconsin Department of Natural Resources.

Sincerely,

Joseph H. Mose

Joseph H. Mose
Chief, Project Management Branch

cc:
CEMVP-OP-R/Jeff Olson

Wisconsin Department of Transportation

www.dot.wisconsin.gov

Scott Walker
Governor

Mark Gottlieb, P.E.
Secretary

Office of the Secretary
4802 Sheboygan Avenue, Room 120B
P O Box 7910
Madison, WI 53707-7910

Telephone: 608-266-1113
FAX: 608-266-9912
E-mail: sec.exec@dot.wi.gov

December 15, 2014

Mr. Devin Scherer
NGB/A7AM
Shepperd Hall
3501 Fetchet Avenue
Joint Base Andrews, MD 20762-5157

Dear Mr. Scherer:

Thank you for the opportunity to review and comment on the proposal to modify and establish a Special Activity Airspace (SAA) over central and east-central Wisconsin. After careful review by our Bureau of Aeronautics staff, we have no objections to any of the alternatives being considered. It is our understanding that if any of these alternatives are adopted, there would be minimal impact on current air traffic routing around the special use airspace and minimal impact on the instrument approach procedures at airports that exist underneath the expansion.

Our Bureau of Aeronautics staff will be available for continued coordination as your plans progress; please contact Scott Brummond, Chief of Aeronautical & Technical Services at (608) 266-1745 or scott.brummond@dot.wi.gov.

Again, thank you for allowing us the opportunity to comment on your proposal.

Sincerely,

M. Gottlieb

Mark Gottlieb, P.E.
Secretary

WISCONSIN • DEPARTMENT OF TRANSPORTATION •

DT59 11/2007

In Reply Use Address Inside

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Office of the Secretary
PO Box 7910
Madison, WI 53707-7910

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MR. DEVIN SCHERER
NGB/A7AM
SHEPPERD HALL
3501 FETCHET AVENUE
JOINT BASE ANDREWS, MD 20762-5157

JAVKSSB 20762

Meisinger, Nick

Subject: FW: scoping comment from wisconsin

-----Original Message-----
From: Breese, Gregory D - DNR [mailto:Gregory.Breese@wisconsin.gov]
Sent: Tuesday, February 24, 2015 3:58 PM
To: ANGRC/NGB/A7A NEPA COMMENTS
Cc: Anderson, Russell A - DNR; Sukup, Laurel C - DNR
Subject: Volk Field SAAA Modification and Establishment

Devin,

I am moving forward with the SAA request and have some information to share.
There is a concern with how this new SAA will impact our MOA for Whooping Cranes. Specifically, this may now take the entire refuge off-limits when it is active rather than the existing one or two territories. This will be fleshed out more when our expert returns from Florida, where she is currently working and I would hope the details will reveal solutions. This is a serious concern and finding a solution may be challenging. It is also difficult to tell if the new proposal changes the areas used over lake Michigan. If it does, we will have more questions but if it does not this is not a specific concern. Overall it will be necessary to evaluate the potential effect this would have in your environmental assessment that restricted area R-690 and the lake Michigan danger zone would be closed to the public, charter and commercial fishing boats. This is a very large industry for the State and needs complete vetting. Thanks and please do not hesitate to call with questions.

Also, considering the size of the area, please be sure to contact all counties, cities and villages that would be in the flight paths. Or at least make a public announcement so that they have the ability to comment. Other state agencies to contact would be Departments of Trade and Consumer Protection (this will have our agricultural agency), Tourism, Transportation, Administration and the Public Service Commission.

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey <http://dnr.wi.gov/customersurvey> to evaluate how I did.

Gregg Breese
Business Sector Specialist - Sustainability & Business Support Wisconsin Department of Natural Resources
Phone: [(608) 267-7407
Gregory.breese@wisconsin.gov

<http://dnr.wi.gov/> dnr.wi.gov <http://dnr.wi.gov/>
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<http://www.flickr.com/photos/widnr/>
<http://www.youtube.com/user/WIDNRTV>   <http://dnr.wi.gov/rss/>

Stockbridge-Munsee Tribal Historic Preservation Office

Sherry White - Tribal Historic Preservation Officer
W13447 Camp 14 Road
P.O. Box 70
Bowler, WI 54416

Date 12/9/14
Project Number Special Activity Airspace
TCNS Number
Company Name Wisconsin National Guard

We have received your letter for the above listed project. Before we can process the request we need more information. The additional items needed are checked below.

Additional Information Required:

___ Site visit by Tribal Historic Preservation Officer
___ Archeological survey, Phase 1
___ Colored maps
___ Pictures of the site
___ Any reports the State Historic Preservation Office may have
___ Review fee of $300.00 must be included with letter
___ Has site been previously disturbed, please explain what the use was and when it was disturbed

After reviewing your letter:

___ We are in the process of gathering more information on this site and will respond to your project request once all information has been gathered.
___ This project has the potential to affect a Mohican cultural site, please contact us
✓ This project is not within Mohican area of interest
___ This project is within Mohican territory, but we are not aware of any cultural site within the project area.

Additional comments___

Should this project inadvertently uncover a Native American site, we require you to halt all construction and notify the Stockbridge-Munsee Tribe immediately.

Please do not resubmit projects for changes that are not ground disturbance

Sherry White
Sherry White, Tribal Historic Preservation Officer

APPENDIX C

AIR QUALITY

Appendix C

Appendix C contains data associated with *Air Quality*, specifically the Record of Non-Applicability for Clean Air Conformity and calculations associated with military aircraft operations within the existing and proposed Volk Special Activity Airspace.

RECORD OF NON-APPLICABILITY (RONA)
FOR CLEAN AIR CONFORMITY
PROPOSED VOLK FIELD SPECIAL ACTIVITY AIRSPACE
MODIFICATION AND ESTABLISHMENT

The Proposed Action (Preferred Alternative) and its alternatives falls under the Record of Non-Applicability (RONA) category and is documented with this RONA. The U.S. Environmental Protection Agency (USEPA) published Determining Conformity of General Federal Actions to State or Federal Implementation Plans: Final Rule, in the 30 November 1993, Federal Register (40 Code of Federal Regulations [CFR] Parts 6, 51, and 93). The U.S. Air Force (USAF) published the *United States Air Force Conformity Guide*, dated August 2010. These publications provide implementing guidance to document Clean Air Act (CAA) Conformity Determination requirements.

Federal regulations state that no department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license to permit, or approve any activity that does not conform to an applicable implementation plan. It is the responsibility of the Federal agency to determine whether a Federal action conforms to the applicable implementation plan, before the action is taken (40 CFR Part 1 51.850[a]).

Federal action may be exempt from conformity determinations if they do not exceed designated *de minimis* levels for criteria pollutants (40 CFR Part 51.853[b]). Federal actions may also be exempt from conformity determinations if they would result in no emissions increase or an increase in emissions that is clearly *de minimis*, including the routine movement of mobile assets, such as ships and aircraft, in home port reassignments and stations (when no new support facilities or personnel are required) to perform as operational groups and/or for repair or overhaul (Oregon State Implementation Plan [SIP] 340-250-0020[4][b][H]). The Proposed Action, described below, involves the proposed establishment and modification of military training airspace for use by the Volk Field Combat Readiness Training Center (CRTC) of the Wisconsin Air National Guard (WIANG).

Table 1. ***De minimis*** **Threshold Levels for Criteria Pollutants Pursuant to 40 CFR Part 51.853**

Criteria Pollutant	Attainment Status	*De minimis* Threshold (tons/year)
Ozone (VOC or NO_x)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region	100
Ozone (NO_x)	Marginal and moderate nonattainment inside an ozone	100
	Maintenance	100
Ozone (VOC)	Marginal and moderate nonattainment inside an ozone	50
	Maintenance within an ozone transport region	50
	Maintenance outside an ozone transport region	100
Carbon monoxide (CO), sulfur dioxide (SO_2), and nitrogen dioxide (NO_2)	All nonattainment & maintenance	100
PM_{10}	Serious nonattainment	70
	Moderate nonattainment & maintenance	100
Lead (Pb)	All nonattainment & maintenance	25

PROPOSED ACTION

Action Proponent: WIANG

Action Title: Volk Field Special Activity Airspace (SAA) Modification and Establishment

Action Location: The affected and proposed airspace included in the Proposed Action would be located central and east-central Wisconsin. Of the counties underlying the proposed airspace, all counties are in attainment for all criteria pollutants.

Anticipated Date and Duration of Proposed Action: The Proposed Action would result in the modification and establishment of Special Use Airspace (SUA) for as military training airspace over the foreseeable future. The proposed airspace would be established upon completion of the National Environmental Policy Act (NEPA) planning and review process and approval of the airspace proposal by the Federal Aviation Administration (FAA), anticipated in Calendar Year (CY) 2016.

Proposed Action: The Proposed Action (Preferred Alternative) would modify existing airspace by raising the floor altitude of some areas, reconfiguring the airspace borders, and expanding the external airspace boundaries. Additionally, the Proposed Action would establish a new Restricted Area (RA). The existing Air Traffic Controlled Assigned Airspace (ATCAA) would be modified through establishing ATCAAs over (i.e., on top of) the proposed Military Operations Areas (MOAs) and establishing a new ATCAAs to the east of the Volk East MOA.

Establishment of the Volk Falls MOA and Black River ATCAA

Under the Proposed Action, the existing Falls 1 MOA and a portion of the Falls 2 MOA would be combined to establish the proposed Volk Falls MOA and its dimensions would remain from 500 feet above ground level (AGL) to 17,999 feet above mean sea level (MSL). Additionally, the southern-most border of the existing Falls 1 MOA would be modified, resulting in a linear boundary that would align with the proposed Volk South MOA. This would result in the WIANG both giving up a segment of airspace, and expanding airspace into a small area not previously underlying the existing MOA. Additionally, the Proposed Action would include the establishment of the Black River ATCAA, which would cover a majority of the proposed Volk Falls MOA with the exception of small areas on the northern and western borders to accommodate existing commercial air traffic routes and holding points. Black River ATCAA would extend from Flight Level (FL) 180 to FL 210 (18,000 feet MSL to 21,000 feet MSL), with the ability to periodically schedule the proposed ATCAA to FL 500 (50,000 feet MSL) to accommodate Large Force Exercises (LFEs) and Defense Counter Air (DCA) training requirements.

Modification of the Volk West MOA

Under the Proposed Action, the existing boundaries of the Volk West MOA would be expanded to the north to include the eastern region of the existing Falls 2 MOA. Additionally, the existing boundaries of the Volk West MOA would be extended to the south, absorbing the northern-most portion of the existing Volk South MOA. However, there would be no expansion of the existing Volk West MOA into areas not currently covered by existing airspace. The existing floor of the Volk West MOA is 100 feet AGL based on a legacy low-level training requirement; however, current flight operations do not occur below 500 feet AGL. Under the Proposed Action the proposed Volk West MOA would extend from 500 feet AGL to 17,999 feet MSL, with the WIANG relinquishing existing unused airspace below 500 feet AGL.

Modification of the Volk South MOA

Under the Proposed Action, the northern-most extent of the existing Volk South MOA would be included as part of the proposed Volk West MOA. Consequently, the northern border of the proposed Volk South MOA would be linear and moved southward under the Proposed Action. Additionally, the southwestern border of the Volk South MOA would be expanded. As is the case with the proposed Volk Falls and Volk West MOAs, the proposed Volk South MOA would extend from 500 feet AGL to 17,999 feet MSL.

Modification and Expansion of the Volk West ATCAA

The existing Volk West ATCAA would be expanded to combine/consolidate two existing ATCAAs, including the Volk West ATCAA that extends from FL 180 to FL 230 (18,000 feet MSL to 23,000 feet MSL), and the Volk South ATCAA that extends from FL 180 to FL 280 (18,000 feet MSL to 28,000 feet MSL). The proposed Volk West ATCAA would cover the footprint of the proposed Volk South MOA and the majority of the proposed Volk West MOA extending from FL 180 to FL 280 (18,000 feet MSL to 28,000 feet MSL), with the ability to periodically schedule a ceiling of FL 500 (50,000 feet MSL) to accommodate LFEs and DCA training events.

Modification of the Volk East MOA and ATCAA

Under the Proposed Action, the existing Volk East MOA would be extended to the north as well as the east, resulting in an approximately 1,265-square-mile increase in total airspace area. Additionally, the Volk East ATCAA would be expanded to match the footprint of the proposed Volk East MOA. The vertical extent of the airspace areas would not change with MOA boundaries extending from 8,000 feet MSL to 17,999 feet

MSL and ATCAA boundaries extending from FL 180 to FL 280 (18,000 feet MSL to 28,000 feet MSL).

Establishment of the Oshkosh and Sheboygan East and West ATCAAs

Under the Proposed Action, the WIANG A, B, and C ATCAAs would be rescinded and the Oshkosh and Sheboygan East and West ATCAAs would be established and utilized to support LFEs and specific unit phase training events. The vertical limits of the Oshkosh ATCAA would extend from FL 180 to FL 280 (18,000 feet MSL to 28,000 feet MSL) with the vertical limits of the Sheboygan East and West ATCAAs extending from FL 180 to FL 240 (18,000 feet MSL to 24,000 feet MSL).

Establishment of Restricted Area 6904C

Under the Proposed Action, R-6904C would be established to support the use of long-range, non-eye safe laser training from maneuvering aircraft to the Hardwood Aerial Gunnery Range. Under the Proposed Action, the vertical limits of R-6904C would be 3,000 feet MSL to FL 280 (28,000 feet MSL). R-6904C would be activated by a Notice to Airmen (NOTAM), four (4) hours in advance of training operations.

EMISSIONS SUMMARY:

The proposed modifications to the existing Volk Field SAA are intended to address training limitations presented by the existing configuration of the airspace complex and would not include any changes to the current operating hours or activation schedule for the Volk Field SAA. Consequently, under the Proposed Action the Volk Field SAA would be expanded by approximately 1,290 square miles (sq mi), effectively diluting existing mobile aircraft-related emissions. Further, the Proposed Action would not include any ground disturbance or the development or construction of any support facilities. Additionally, the Proposed Action would not result in any changes to manpower levels at the Volk Field CRTC.

EMISSIONS EVALUATION AND CONCLUSION:

With respect to the General Conformity Rule, effects on air quality would be considered significant if a proposed action would result in emissions that exceed *de minimis* threshold levels established in 40 CFR 93.153(b) for individual pollutants in *nonattainment* or maintenance areas.

As described above, all of the counties underlying the proposed airspace are in attainment for all criteria pollutants. Additionally, the FAA conducted a study of ground level concentrations caused by elevated aircraft emissions using USEPA-approved models and conservative assumptions (FAA 2000). The study concluded that aircraft operations at or above the average mixing height of 3,000 feet AGL have a very small effect on ground level concentrations and could not directly result in a violation of the Nation Ambient Air Quality Standards (NAAQS) in a local area. Therefore, USEPA's final rule (40 CFR 93.153) exempts as *de minimis* aircraft emissions above the 3,000 foot AGL mixing height, including the subject mobile aircraft emissions resulting from the implementation of the Proposed Action.

General Conformity under the CAA, Section 176, has been evaluated for the Proposed Action according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to the Proposed Action because mobile aircraft emissions above 3,000 feet AGL are exempted as *de minimis* under USEPA's final rule 40 CFR 93.153. Therefore, the General Conformity Rule Determination procedures are not required, resulting in this RONA.

F100-220 and F100-229 Engines
Power Setting: Military Power, worst case scenerio
Fuel Flow (lbs/hr): 10996

Pollutant	Emission Factor (lb/1000 lb fuel burned)	Fuel Flow (lb/1hr)	lbs HAPs/lb fuel
Total HAPs	0.074	10996	0.000074

Airspace	Time in Airspace (hr/yr)
Falls 1 MOA	860.8
Falls 2 MOA	857.3
Volk West MOA	875.3
Volk South MOA	821.8
Volk East MOA	792.2
R-6904A/B	843

Airspace	Proposed Time in Airspace (hr/yr)
Volk Falls MOA	1000
Volk West MOA	1000
Volk South MOA	900
Volk East MOA	1000
R-6904A/B	800
R-6904C	250

Total Existing Pollutant emissions (lbs/yr) for each airspace	
	HAPs
Falls 1 MOA	700.44
Falls 2 MOA	697.59
Volk West MOA	712.24
Volk South MOA	668.70
Volk East MOA	644.62
R-6904A/B	685.95

Total Proposed Pollutant emissions (lbs/yr) for each airspace	
	HAPs
Volk Falls MOA	813.70
Volk West MOA	813.70
Volk South MOA	732.33
Volk East MOA	813.70
R-6904A/B	650.96
R-6904C	203.43

Total Existing Pollutant emissions (tons/yr) for each airspace	
	HAPs
Falls 1 MOA	0.35
Falls 2 MOA	0.35
Volk West MOA	0.36
Volk South MOA	0.33
Volk East MOA	0.32
R-6904A/B	0.34

Total Proposed Pollutant emissions (tons/yr) for each airspace	
	HAPs
Volk Falls MOA	0.41
Volk West MOA	0.41
Volk South MOA	0.37
Volk East MOA	0.41
R-6904A/B	0.33
R-6904C	0.10

F100-220 and F100-229 Engines
Power Setting: Military Power, worst case scenerio
Fuel Flow (lbs/hr): 10320

Pollutant	Emission Factor (lbs/hr) per engine
CO	9.52
VOC	1.06
Nox	285.66
SOx	10.58
PM	3.6

Airspace	Exisiting Time in Airspace (hr/yr)
Falls 1 MOA	860.8
Falls 2 MOA	857.3
Volk West MOA	875.3
Volk South MOA	821.8
Volk East MOA	792.2
R-6904A/B	843

* Based on Table 2-7 of the DOPPA for 2009 baseline utilization

Airspace	Proposed Time in Airspace (hr/yr)
Volk Falls MOA	1000
Volk West MOA	1000
Volk South MOA	900
Volk East MOA	1000
R-6904A/B	800
R-6904C	250

* Based on Table 2-7 of the DOPPA for proposed utilization

Existing Pollutant emissions (lbs/yr) per engine for each airspace					
	CO	VOC	NOx	SOx	PM
Falls 1 MOA	8194.816	912.448	245896.128	9107.264	3098.88
Falls 2 MOA	8161.496	908.738	244896.318	9070.234	3086.28
Volk West MOA	8332.856	927.818	250038.198	9260.674	3151.08
Volk South MOA	7823.536	871.108	234755.388	8694.644	2958.48
Volk East MOA	7541.744	839.732	226299.852	8381.476	2851.92
R-6904A/B	8025.36	893.58	240811.38	8918.94	3034.8

* F16s are single engine planes

Proposed Pollutant emissions (lbs/yr) per engine for each airspace					
	CO	VOC	NOx	SOx	PM
Volk Falls MOA	9520	1060	285660	10580	3600
Volk West MOA	9520	1060	285660	10580	3600
Volk South MOA	8568	954	257094	9522	3240
Volk East MOA	9520	1060	285660	10580	3600
R-6904A/B	7616	848	228528	8464	2880
R-6904C	2380	265	71415	2645	900

Existing Pollutant emissions (tons/yr)					
	CO	VOC	NOx	SOx	PM
Falls 1 MOA	4.1	0.5	122.9	4.6	1.5
Falls 2 MOA	4.1	0.5	122.4	4.5	1.5
Volk West MOA	4.2	0.5	125.0	4.6	1.6
Volk South MOA	3.9	0.4	117.4	4.3	1.5
Volk East MOA	3.8	0.4	113.1	4.2	1.4
R-6904A/B	4.0	0.4	120.4	4.5	1.5

Proposed Pollutant emissions (tons/yr)					
	CO	VOC	NOx	SOx	PM
Volk Falls MOA	4.8	0.5	142.8	5.3	1.8
Volk West MOA	4.8	0.5	142.8	5.3	1.8
Volk South MOA	4.3	0.5	128.5	4.8	1.6
Volk East MOA	4.8	0.5	142.8	5.3	1.8
R-6904A/B	3.8	0.4	114.3	4.2	1.4
R-6904C	1.2	0.1	35.7	1.3	0.5

APPENDIX D

BIOLOGICAL RESOURCES

Appendix D

Appendix D contains information on *Biological Resources*, specifically special status species at the state and/or Federal level existing in counties that are within the region of influence associated with the existing and proposed Volk Special Activity Airspace. Both species name and common name are presented, along with either Threatened or Endangered designation.

Species Name	Common Name	State Status	Federal Status
Clark			
Emydoidea blandingii	Blanding's Turtle	T	-
Glyptemys insculpta	Wood Turtle	T	-
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Sistrurus catenatus catenatus	Eastern Massasauga	E	-
Thamnophis proximus	Western Ribbonsnake	E	-
Tympanuchus cupido	Greater Prairie-Chicken	T	-
Viola fimbriatula	Sand Violet	E	-
Eau Claire			
Adoxa moschatellina	Musk-root	T	-
Anemone caroliniana	Carolina Anemone	E	-
Asclepias ovalifolia	Dwarf Milkweed	T	-
Buteo lineatus	Red-shouldered Hawk	T	-
Cirsium hillii	Hill's Thistle	T	-
Cycleptus elongatus	Blue Sucker	T	-
Cyclonaias tuberculata	Purple Wartyback	E	-
Diarrhena obovata	Beak Grass	E	-
Ellipsaria lineolata	Butterfly	E	-
Emydoidea blandingii	Blanding's Turtle	T	-
Gentiana alba	Yellow Gentian	T	-
Glyptemys insculpta	Wood Turtle	T	-
Hiodon alosoides	Goldeye	E	-
Lanius ludovicianus	Loggerhead Shrike	E	-
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Moxostoma carinatum	River Redhorse	T	-
Moxostoma valenciennesi	Greater Redhorse	T	-
Plethobasus cyphyus	Bullhead	E	E
Prenanthes aspera	Rough Rattlesnake-root	E	-
Schinia indiana	Phlox Moth	E	-
Simpsonaias ambigua	Salamander Mussel	T	-
Tritogonia verrucosa	Buckhorn	T	-
Jackson			
Ammodramus henslowii	Henslow's Sparrow	T	-
Asclepias lanuginosa	Woolly Milkweed	T	-
Asclepias ovalifolia	Dwarf Milkweed	T	-
Buteo lineatus	Red-shouldered Hawk	T	-
Callitriche heterophylla	Large Water-starwort	T	-
Callophrys irus	Frosted Elfin	T	-
Cycleptus elongatus	Blue Sucker	T	-
Cyclonaias tuberculata	Purple Wartyback	E	-
Dendroica cerulea	Cerulean Warbler	T	-
Diarrhena obovata	Beak Grass	E	-
Empidonax virescens	Acadian Flycatcher	T	-
Emydoidea blandingii	Blanding's Turtle	T	-
Eptesicus fuscus	Big Brown Bat	T	-
Fundulus dispar	Starhead Topminnow	E	-
Glyptemys insculpta	Wood Turtle	T	-
Lycaeides melissa samuelis	Karner blue butterfly	-	E

Species Name	Common Name	State Status	Federal Status
Lythrurus umbratilis	Redfin Shiner	T	-
Moxostoma carinatum	River Redhorse	T	-
Notropis amnis	Pallid Shiner	E	-
Ophisaurus attenuatus	Slender Glass Lizard	E	-
Oporornis formosus	Kentucky Warbler	T	-
Opuntia fragilis	Brittle Prickly-pear	T	-
Percina evides	Gilt Darter	T	-
Poa paludigena	Bog Bluegrass	T	-
Polyamia dilata	Prairie Leafhopper	T	-
Polytaenia nuttallii	Prairie Parsley	T	-
Schinia indiana	Phlox Moth	E	-
Scleria reticularis	Reticulated Nutrush	E	-
Setophaga kirtlandii	Kirtland's warbler	-	E
Simpsonaias ambigua	Salamander Mussel	T	-
Sistrurus catenatus catenatus	Eastern Massasauga	E	-
Somatochlora incurvata	Warpaint Emerald	E	-
Tritogonia verrucosa	Buckhorn	T	-
Viola fimbriatula	Sand Violet	E	-
Wilsonia citrina	Hooded Warbler	T	-
Trempealeau			
Acanthametropus pecatonica	Pecatonica River Mayfly	E	-
Agalinis gattingeri	Roundstem Foxglove	T	-
Buteo lineatus	Red-shouldered Hawk	T	-
Cycleptus elongatus	Blue Sucker	T	-
Dendroica cerulea	Cerulean Warbler	T	-
Ellipsaria lineolata	Butterfly	E	-
Elliptio crassidens	Elephant Ear	E	-
Emydoidea blandingii	Blanding's Turtle	T	-
Eptesicus fuscus	Big Brown Bat	T	-
Falco peregrinus	Peregrine Falcon	E	-
Fusconaia ebena	Ebony Shell	E	-
Gastrocopta procera	Wing Snaggletooth	T	-
Glyptemys insculpta	Wood Turtle	T	-
Hiodon alosoides	Goldeye	E	-
Ictiobus niger	Black Buffalo	T	-
Lampsilis higginsii	Higgins' Eye	E	E
Lanius ludovicianus	Loggerhead Shrike	E	-
Macrhybopsis aestivalis	Shoal Chub	T	-
Moxostoma carinatum	River Redhorse	T	-
Myotis lucifugus	Little Brown Bat	T	-
Notropis amnis	Pallid Shiner	E	-
Opuntia fragilis	Brittle Prickly-pear	T	-
Polyodon spathula	Paddlefish	T	-
Quadrula metanevra	Monkeyface	T	-
Silene nivea	Snowy Campion	T	-
Simpsonaias ambigua	Salamander Mussel	T	-
Sistrurus catenatus catenatus	Eastern Massasauga	E	-
Speyeria idalia	Regal Fritillary	E	-

Species Name	Common Name	State Status	Federal Status
Vireo bellii	Bell's Vireo	T	-
Monroe			
Aconitum noveboracense	Northern monkshood	-	T
Aflexia rubranura	Red-tailed Prairie Leafhopper	E	-
Asclepias ovalifolia	Dwarf Milkweed	T	-
Callophrys irus	Frosted Elfin	T	-
Carex careyana	Carey's Sedge	T	-
Coturnicops noveboracensis	Yellow Rail	T	-
Dendroica cerulea	Cerulean Warbler	T	-
Empidonax virescens	Acadian Flycatcher	T	-
Emydoidea blandingii	Blanding's Turtle	T	-
N Eptesicus fuscus	Big Brown Bat	T	-
Gentiana alba	Yellow Gentian	T	-
Glyptemys insculpta	Wood Turtle	T	-
Hendersonia occulta	Cherrystone Drop	T	-
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Lythrurus umbratilis	Redfin Shiner	T	-
Moxostoma carinatum	River Redhorse	T	-
Myotis lucifugus	Little Brown Bat	T	-
Myotis septentrionalis	Northern Long-eared Bat	T	-
Ophisaurus attenuatus	Slender Glass Lizard	E	-
Oporornis formosus	Kentucky Warbler	T	-
Opuntia fragilis	Brittle Prickly-pear	T	-
Percina evides	Gilt Darter	T	-
Perimyotis subflavus	Eastern Pipistrelle	T	-
Poa paludigena	Bog Bluegrass	T	-
Polytaenia nuttallii	Prairie Parsley	T	-
Prenanthes aspera	Rough Rattlesnake-root	E	-
Schinia indiana	Phlox Moth	E	-
Sistrurus catenatus catenatus	Eastern Massasauga	E	-
Speyeria idalia	Regal Fritillary	E	-
Wilsonia citrina	Hooded Warbler	T	-
Wood			
Acris crepitans	Northern Cricket Frog	E	-
Ammodramus henslowii	Henslow's Sparrow	T	-
Asclepias ovalifolia	Dwarf Milkweed	T	-
Buteo lineatus	Red-shouldered Hawk	T	-
Callophrys irus	Frosted Elfin	T	-
Emydoidea blandingii	Blanding's Turtle	T	-
Glyptemys insculpta	Wood Turtle	T	-
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Lythrurus umbratilis	Redfin Shiner	T	-
Ophisaurus attenuatus	Slender Glass Lizard	E	-
Platanthera flava var. herbiola	Pale Green Orchid	T	-
Podiceps grisegena	Red-necked Grebe	E	-
Sistrurus catenatus catenatus	Eastern Massasauga	E	-
Somatochlora incurvata	Warpaint Emerald	E	-
Tympanuchus cupido	Greater Prairie-Chicken	T	-

Species Name	Common Name	State Status	Federal Status
Tyto alba	Barn Owl	E	-
Juneau			
Acris crepitans	Northern Cricket Frog	E	-
Adoxa moschatellina	Musk-root	T	-
Agalinis gattingeri	Roundstem Foxglove	T	-
Asclepias lanuginosa	Woolly Milkweed	T	-
Asclepias ovalifolia	Dwarf Milkweed	T	-
Buteo lineatus	Red-shouldered Hawk	T	-
Callophrys irus	Frosted Elfin	T	-
Carex prasina	Drooping Sedge	T	-
Dendroica cerulea	Cerulean Warbler	T	-
Eleocharis wolfi	Wolf Spike-rush	E	-
Empidonax virescens	Acadian Flycatcher	T	-
Emydoidea blandingii	Blanding's Turtle	T	-
Eptesicus fuscus	Big Brown Bat	T	-
Glyptemys insculpta	Wood Turtle	T	-
Gnaphalium obtusifolium var. saxicola	Cliff Cudweet	T	-
Lanius ludovicianus	Loggerhead Shrike	E	-
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Nyctanassa violacea	Yellow-crowned Night-Heron	T	-
Ophisaurus attenuatus	Slender Glass Lizard	E	-
Platanthera flava var. herbiola	Pale Green Orchid	T	-
Polytaenia nuttallii	Prairie Parsley	T	-
Potamogeton confervoides	Algae-like Pondweed	T	-
Potamogeton pulcher	Spotted Pondweed	E	-
Simpsonaias ambigua	Salamander Mussel	T	-
Sistrurus catenatus catenatus	Eastern Massasauga	E	-
Somatochlora incurvata	Warpaint Emerald	E	-
Speyeria idalia	Regal Fritillary	E	-
Adams			
Agalinis gattingeri	Roundstem Foxglove	T	-
Agalinis skinneriana	Pale False Foxglove	E	-
Anemone multifida var. hudsoniana	Early Anemone	E	-
Asclepias ovalifolia	Dwarf Milkweed	T	-
Buteo lineatus	Red-shouldered Hawk	T	-
Callophrys irus	Frosted Elfin	T	-
Catabrosa aquatica	Brook grass	E	-
Eleocharis quadrangulata	Square-stem Spike-rush	E	-
Emydoidea blandingii	Blanding's Turtle	T	-
Glyptemys insculpta	Wood Turtle	T	-
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Ophisaurus attenuatus	Slender Glass Lizard	E	-
Opuntia fragilis	Brittle Prickly-pear	T	-
Platanthera flava var. herbiola	Pale Green Orchid	T	-
Poa paludigena	Bog Bluegrass	T	-

Species Name	Common Name	State Status	Federal Status
Pseudognaphalium saxicola	Cliff Cudweed	T	-
Scleria reticularis	Reticulated Nutrush	E	-
Sistrurus catenatus catenatus	Eastern Massasauga	E	-
Somatochlora incurvata	Warpaint Emerald	E	-
Setophaga kirtlandii	Kirtland's warbler	-	E
Sterna Ei	Forster's Tern	E	-
Thamnophis sauritus	Eastern Ribbonsnake	E	-
Tympanuchus cupido	Greater Prairie-Chicken	T	-
Tyto alba	Barn Owl	E	-
Portage			
Acris crepitans	Northern Cricket Frog	E	-
Ammodramus henslowii	Henslow's Sparrow	T	-
Asclepias lanuginosa	Woolly Milkweed	T	-
Buteo lineatus	Red-shouldered Hawk	T	-
Emydoidea blandingii	Blanding's Turtle	T	-
Glyptemys insculpta	Wood Turtle	T	-
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Lythrurus umbratilis	Redfin Shiner	T	-
Oxytropis campestris var. chartacea	Fassett's Locoweed	E	T
Platanthera flava var. herbiola	Pale Green Orchid	T	-
Sistrurus catenatus catenatus	Eastern Massasauga	E	-
Speyeria idalia	Regal Fritillary	E	-
Tympanuchus cupido	Greater Prairie-Chicken	T	-
Vaccinium cespitosum	Dwarf Huckleberry	E	-
Valeriana sitchensis ssp. uliginosa	Marsh Valerian	T	-
Viola fimbriatula	Sand Violet	E	-
Waushara			
Acris crepitans	Northern Cricket Frog	E	-
Alasmidonta viridis	Slippershell Mussel	T	-
Ammodramus henslowii	Henslow's Sparrow	T	-
Ammodramus henslowii	Tufted Hairgrass	T	-
Asclepias lanuginosa	Woolly Milkweed	T	-
Asclepias purpurascens	Purple Milkweed	E	-
Buteo lineatus	Red-shouldered Hawk	T	-
Calephelis mutica	Swamp Metalmark	E	-
Emydoidea blandingii	Blanding's Turtle	T	-
Epioblasma triquetra	Snuffbox	E	E
Hybopsis amnis *Luxilus chrysocephalus*	Striped Shiner	E	-
Lepomis megalotis	Longear Sunfish	T	-
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Lythrurus umbratilis	Redfin Shiner	T	-
Moxostoma valenciennesi	Greater Redhorse	T	-
Notropis anogenus	Pugnose Shiner	T	-
Ophisaurus attenuatus	Slender Glass Lizard	E	-
Opuntia fragilis	Brittle Prickly-pear	T	-

Species Name	Common Name	State Status	Federal Status
Oxytropis campestris var. chartacea	Fassett's Locoweed	E	T
Platanthera flava var. herbiola	Pale Green Orchid	T	-
Rhynchospora scirpoides	Long-beaked Baldrush	T	-
Tofieldia glutinosa	Sticky False-asphodel	T	-
Tympanuchus cupido	Greater Prairie-Chicken	T	-
Waupaca			
Acris crepitans	Northern Cricket Frog	E	-
Alasmidonta viridis	Slippershell Mussel	T	-
Buteo lineatus	Red-shouldered Hawk	T	-
Carex formosa	Handsome Sedge	T	-
Cypripedium arietinum	Ram's-head Lady's-slipper	T	-
Dendroica cerulea	Cerulean Warbler	T	-
Emydoidea blandingii	Blanding's Turtle	T	-
Epioblasma triquetra	Snuffbox	E	E
Glyptemys insculpta	Wood Turtle	T	-
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Lythrurus umbratilis	Redfin Shiner	T	-
Moxostoma valenciennesi	Greater Redhorse	T	-
Myotis lucifugus	Little Brown Bat	T	-
Notropis anogenus	Pugnose Shiner	T	-
Nyctanassa violacea	Yellow-crowned Night-Heron	T	-
Ophiogomphus howei	Pygmy Snaketail	T	-
Opuntia fragilis	Brittle Prickly-pear	T	-
Rhynchospora scirpoides	Long-beaked Baldrush	T	-
Simpsonaias ambigua	Salamander Mussel	T	-
Tritogonia verrucosa	Buckhorn	T	-
Valeriana sitchensis ssp. uliginosa	Marsh Valerian	T	-
Marquette			
Acris crepitans	Northern Cricket Frog	E	-
Agalinis gattingeri	Roundstem Foxglove	T	-
Asclepias lanuginosa	Woolly Milkweed	T	-
Asclepias ovalifolia	Dwarf Milkweed	T	-
Calephelis mutica	Swamp Metalmark	E	-
Coturnicops noveboracensis	Yellow Rail	T	-
Coturnicops noveboracensis	Yellow Rail	T	-
Cypripedium candidum	Small White Lady's-slipper	T	-
Dendroica cerulea	Cerulean Warbler	T	-
Diarrhena obovata	Beak Grass	E	-
Drosera linearis	Slenderleaf Sundew	T	-
Emydoidea blandingii	Blanding's Turtle	T	-
Fuirena pumila	Dwarf Umbrella-sedge	E	-
Lanius ludovicianus	Loggerhead Shrike	E	-
Lespedeza virginica	Slender Bush-clover	T	-
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Moxostoma valenciennesi	Greater Redhorse	T	-
Myotis lucifugus	Little Brown Bat	T	-

Species Name	Common Name	State Status	Federal Status
Notropis anogenus	Pugnose Shiner	T	-
Ophisaurus attenuatus	Slender Glass Lizard	E	-
Opuntia fragilis	Brittle Prickly-pear	T	-
Platanthera flava var. herbiola	Pale Green Orchid	T	-
Poa paludigena	Bog Bluegrass	T	-
Polytaenia nuttallii	Prairie Parsley	T	-
Rhionaeschna mutata	Spatterdock Darner	T	-
Rhynchospora scirpoides	Long-beaked Baldrush	T	-
Sterna Ei	Forster's Tern	E	-
Tofieldia glutinosa	Sticky False-asphodel	T	-
Vireo bellii	Bell's Vireo	T	-
Green Lake			
Aflexia rubranura	Red-tailed Prairie Leafhopper	E	-
Ammodramus henslowii	Henslow's Sparrow	T	-
Ardea alba	Great Egret	T	-
Armoracia lacustris	Lake-cress	E	-
Asclepias lanuginosa	Woolly Milkweed	T	-
Buteo lineatus	Red-shouldered Hawk	T	-
Cypripedium candidum	Small White Lady's-slipper	T	-
Dendroica cerulea	Cerulean Warbler	T	-
Empidonax virescens	Acadian Flycatcher	T	-
Emydoidea blandingii	Blanding's Turtle	T	-
Lycaeides melissa samuelis	Karner blue butterfly	-	E
Muhlenbergia richardsonis	Soft-leaf Muhly	E	-
Myotis lucifugus	Little Brown Bat	T	-
Oarisma poweshiek	Poweshiek Skipperling	E	PT
Ophisaurus attenuatus	Slender Glass Lizard	E	-
Opuntia fragilis	Brittle Prickly-pear	T	-
Platanthera flava var. herbiola	Pale Green Orchid	T	-
Platanthera leucophaea	Prairie White-fringed Orchid	E	T
Podiceps grisegena	Red-necked Grebe	E	-
Polytaenia nuttallii	Prairie Parsley	T	-
Ruellia humilis	Hairy Wild-petunia	E	-
Scirpus cespitosus	Tufted Bulrush	T	-
Sterna Ei	Forster's Tern	E	-
Tofieldia glutinosa	Sticky False-asphodel	T	-
Tritogonia verrucosa	Buckhorn	T	-
Tympanuchus cupido	Greater Prairie-Chicken	T	-
Vireo bellii	Bell's Vireo	T	-
Winnebago			
Alasmidonta viridis	Slippershell Mussel	T	-
Ardea alba	Great Egret	T	-
Armoracia lacustris	Lake-cress	E	-
Asclepias ovalifolia	Dwarf Milkweed	T	-
Asclepias purpurascens	Purple Milkweed	E	-
Aster furcatus	Forked Aster	T	-
Carex formosa	Handsome Sedge	T	-
Dendroica cerulea	Cerulean Warbler	T	-

Species Name	Common Name	State Status	Federal Status
Emydoidea blandingii	Blanding's Turtle	T	-
Falco peregrinus	Peregrine Falcon	E	-
Glyptemys insculpta	Wood Turtle	T	-
Hybopsis amnis *Luxilus chrysocephalus*	Striped Shiner	E	-
Moxostoma valenciennesi	Greater Redhorse	T	-
Notropis anogenus	Pugnose Shiner	T	-
Opuntia fragilis	Brittle Prickly-pear	T	-
Platanthera leucophaea	Prairie White-fringed Orchid	E	T
Poa paludigena	Bog Bluegrass	T	-
Podiceps grisegena	Red-necked Grebe	E	-
Ruellia humilis	Hairy Wild-petunia	E	-
Sterna caspia	Caspian Tern	E	-
Sterna Ei	Forster's Tern	E	-
Sterna hirundo	Common Tern	E	-
Tritogonia verrucosa	Buckhorn	T	-
Fond du Lac			
Aflexia rubranura	Red-tailed Prairie Leafhopper	E	-
Alasmidonta viridis	Slippershell Mussel	T	-
Ammodramus henslowii	Henslow's Sparrow	T	-
Ardea alba	Great Egret	T	-
Ardea alba	Great Egret	T	-
Asclepias lanuginosa	Woolly Milkweed	T	-
Asclepias sullivantii	Prairie Milkweed	T	-
Aster furcatus	Forked Aster	T	-
Buteo lineatus	Red-shouldered Hawk	T	-
Cypripedium candidum	Small White Lady's-slipper	T	-
Dendroica cerulea	Cerulean Warbler	T	-
Empidonax virescens	Acadian Flycatcher	T	-
Emydoidea blandingii	Blanding's Turtle	T	-
Eptesicus fuscus	Big Brown Bat	T	-
Erigenia bulbosa	Harbinger-of-spring	E	-
Gentiana alba	Yellow Gentian	T	-
Lepomis megalotis	Longear Sunfish	T	-
Lythrurus umbratilis	Redfin Shiner	T	-
Lythrurus umbratilis	Redfin Shiner	T	-
Moxostoma valenciennesi	Greater Redhorse	T	-
Notropis anogenus	Pugnose Shiner	T	-
Papaipema silphii	Silphium Borer Moth	E	-
Poa paludigena	Bog Bluegrass	T	-
Podiceps grisegena	Red-necked Grebe	E	-
Sterna hirundo	Common Tern	E	-
Thamnophis butleri	Butler's Gartersnake	T	-
Venustaconcha ellipsiformis	Ellipse	T	-
Vertigo hubrichti	Midwest Pleistocene Vertigo	E	-
Villosa iris	Rainbow Shell	E	-
Columbia			
Acanthametropus pecatonica	Pecatonica River Mayfly	E	-

Species Name	Common Name	State Status	Federal Status
Acris blanchardi	Blanchard's Cricket Frog	E	-
Aflexia rubranura	Red-tailed Prairie Leafhopper	E	-
Alasmidonta viridis	Slippershell Mussel	T	-
Ammodramus henslowii	Henslow's Sparrow	T	-
Arcidens confragosus	Rock Pocketbook	T	-
Asclepias lanuginosa	Woolly Milkweed	T	-
Buteo lineatus	Red-shouldered Hawk	T	-
Carex lupuliformis	False Hop Sedge	E	-
Chlidonias niger	Black Tern	E	-
Cirsium hillii	Hill's Thistle	T	-
Cycleptus elongatus	Blue Sucker	T	-
Cypripedium candidum	Small White Lady's-slipper	T	-
Dendroica cerulea	Cerulean Warbler	T	-
Drosera linearis	Slenderleaf Sundew	T	-
Ellipsaria lineolata	Butterfly	E	-
Empidonax virescens	Acadian Flycatcher	T	-
Falco peregrinus	Peregrine Falcon	E	-
Fusconaia ebena	Ebony Shell	E	-
Glyptemys insculpta	Wood Turtle	T	-
Hiodon alosoides	Goldeye	E	-
Ictiobus niger	Black Buffalo	T	-
Lampsilis higginsii	Higgins' Eye	E	E
Lampsilis teres	Yellow & Slough Sandshells	E	-
Lanius ludovicianus	Loggerhead Shrike	E	-
Lepomis megalotis	Longear Sunfish	T	-
Lespedeza leptostachya	Prairie Bush-clover	E	-
Lythrurus umbratilis	Redfin Shiner	T	-
Macrhybopsis aestivalis	Shoal Chub	T	-
Nyctanassa violacea	Yellow-crowned Night-Heron	T	-
Ophisaurus attenuatus	Slender Glass Lizard	E	-
Ophisaurus attenuatus	Slender Glass Lizard	E	-
Opuntia fragilis	Brittle Prickly-pear	T	-
Papaipema silphii	Silphium Borer Moth	E	-
Perimyotis subflavus	Eastern Pipistrelle	T	-
Plethobasus cyphyus	Bullhead	E	E
Podiceps grisegena	Red-necked Grebe	E	-
Polyodon spathula	Paddlefish	T	-
Polyodon spathula	Paddlefish	T	-
Polytaenia nuttallii	Prairie Parsley	T	-
Pseudognaphalium saxicola	Cliff Cudweed	T	-
Quadrula metanevra	Monkeyface	T	-
Quadrula nodulata	Wartyback	T	-
Rhododendron lapponicum	Lapland Azalea	E	-
Scirpus cespitosus	Tufted Bulrush	T	-
Silene nivea	Snowy Campion	T	-
Silene virginica	Fire Pink	E	-
Sistrurus catenatus catenatus	Eastern Massasauga	E	-
Speyeria idalia	Regal Fritillary	E	-

Species Name	Common Name	State Status	Federal Status
Terrapene ornata	Ornate Box Turtle	E	-
Tofieldia glutinosa	Sticky False-asphodel	T	-
Tritogonia verrucosa	Buckhorn	T	-
Tritogonia verrucosa	Buckhorn	T	-
Truncilla donaciformis	Fawnsfoot	T	-
Vaccinium cespitosum	Dwarf Huckleberry	E	-
Vireo bellii	Bell's Vireo	T	-
Dodge			
Acris blanchardi	Blanchard's Cricket Frog	E	-
Hybopsis amnis *Luxilus chrysocephalus*	Striped Shiner	E	-
Chlidonias niger	Black Tern	E	-
Sterna Ei	Forster's Tern	E	-
Podiceps grisegena	Red-necked Grebe	E	-
Vertigo hubrichti	Midwest Pleistocene Vertigo	E	-
Lythrurus umbratilis	Redfin Shiner	T	-
Moxostoma carinatum	River Redhorse	T	-
Alasmidonta viridis	Slippershell Mussel	T	-
Venustaconcha ellipsiformis	Ellipse	T	-
Cypripedium candidum	Small White Lady's-slipper	T	-
Eptesicus fuscus	Big Brown Bat	T	-
Myotis lucifugus	Little Brown Bat	T	-
Myotis septentrionalis	Northern Long-eared Bat	T	-
Perimyotis subflavus	Eastern Pipistrelle	T	-

Species Name	Common Name	State Status	Federal Status
Ardea alba	Great Egret	T	-
Ammodramus henslowii	Henslow's Sparrow	T	-
Outagamie			
Ammodramus henslowii	Henslow's Sparrow	T	-
Buteo lineatus	Red-shouldered Hawk	T	-
Carex formosa	Handsome Sedge	T	-
Cypripedium arietinum	Ram's-head Lady's-slipper	T	-
Cypripedium candidum	Small White Lady's-slipper	T	-
Dendroica cerulea	Cerulean Warbler	T	-
Empidonax virescens	Acadian Flycatcher	T	-
Emydoidea blandingii	Blanding's Turtle	T	-
Epioblasma triquetra	Snuffbox	E	E
Eptesicus fuscus	Big Brown Bat	T	-
Falco peregrinus	Peregrine Falcon	E	-
Gentiana alba	Yellow Gentian	T	-
Glyptemys insculpta	Wood Turtle	T	-
Myotis lucifugus	Little Brown Bat	T	-
Plantago cordata	Heart-leaved Plantain	E	-
Ruellia humilis	Hairy Wild-petunia	E	-
Simpsonaias ambigua	Salamander Mussel	T	-
Trillium nivale	Snow Trillium	T	-
Tritogonia verrucosa	Buckhorn	T	-
Tritogonia verrucosa	Buckhorn	T	-
Tyto alba	Barn Owl	E	-
Valeriana sitchensis ssp. uliginosa	Marsh Valerian	T	-
Calumet			
Acris crepitans	Northern Cricket Frog	E	-
Ammodramus henslowii	Henslow's Sparrow	T	-

Species Name	Common Name	State Status	Federal Status
Buteo lineatus	Red-shouldered Hawk	T	-
Coturnicops noveboracensis	Yellow Rail	T	-
Cypripedium arietinum	Ram's-head Lady's-slipper	T	-
Eptesicus fuscus	Big Brown Bat	T	-
Gentiana alba	Yellow Gentian	T	-
Moxostoma valenciennesi	Greater Redhorse	T	-
Myotis lucifugus	Little Brown Bat	T	-
Myotis septentrionalis	Northern Long-eared Bat	T	-
Perimyotis subflavus	Eastern Pipistrelle	T	-
Polytaenia nuttallii	Prairie Parsley	T	-
Trillium nivale	Snow Trillium	T	-

Notes:

State Status
T = Threatened = Any species which appears likely, within the foreseeable future, on the basis of scientific evidence to become endangered.
E = Endangered = Any species whose continued existence as a viable component of this state's wild animals or wild plants is determined by the Department to be in jeopardy on the basis of scientific evidence

Federal Status
PT = Proposed Threatened = Proposed for listing as threatened under the Federal Endangered Species Act
T = Threatened = Likely to become endangered in foreseeable future throughout range
E = Endangered = Danger of extinction throughout range

Source: USFWS 2015c; WDNR 2014l

U.S. Fish and Wildlife Service

Trust Resources List

This resource list is to be used for planning purposes only — it is not an official species list.

Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

Green Bay Ecological Services Field Office
2661 SCOTT TOWER DRIVE
NEW FRANKEN, WI 54229
(920) 866-1717

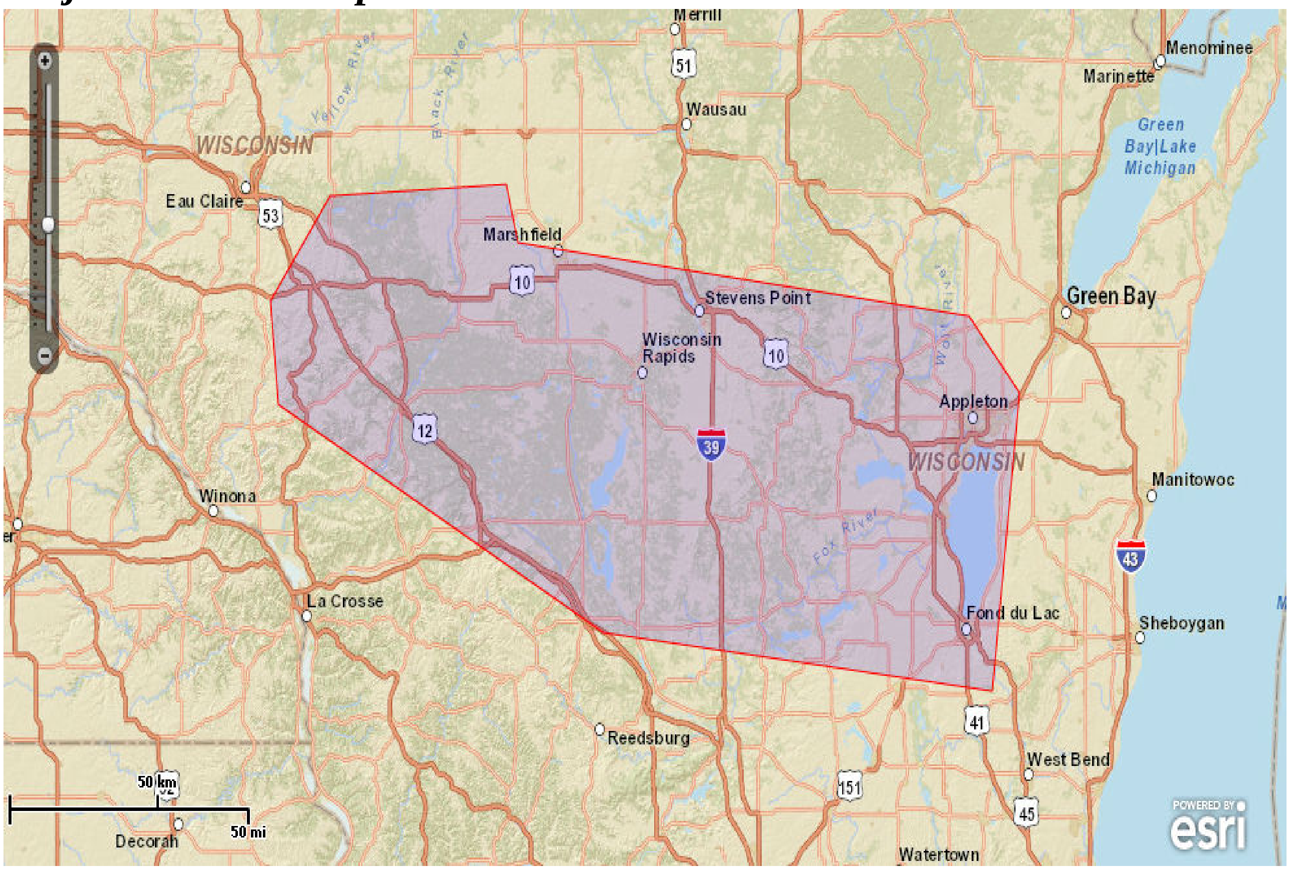
Project Name:

Volk Field SAA Modification and Expansion

U.S. Fish and Wildlife Service

Trust Resources List

Project Location Map:



Project Counties:

Adams, WI | Calumet, WI | Clark, WI | Dodge, WI | Eau Claire, WI | Fond du Lac, WI | Green Lake, WI | Jackson, WI | Juneau, WI | Marquette, WI | Monroe, WI | Outagamie, WI | Portage, WI | Trempealeau, WI | Waupaca, WI | Waushara, WI | Winnebago, WI | Wood, WI

Geographic coordinates (Open Geospatial Consortium Well-Known Text, NAD83):

MULTIPOLYGON (((-91.3913216 44.5470844, -91.1386361 44.7928068, -90.3915658 44.820283, -90.3421273 44.6837471, -88.4305062 44.5116444, -88.2162728 44.3311737, -88.3316292 43.6236073, -89.9795785 43.7626214, -91.3583626 44.3038585, -91.3913216 44.5470844)))

Project Type:

Military Operations / Maneuvers

U.S. Fish and Wildlife Service

Trust Resources List

Endangered Species Act Species List (USFWS Endangered Species Program).

There are a total of **11** threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fishes may appear on the species list because a project could cause downstream effects on the species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section below for critical habitat that lies within your project area. Please contact the designated FWS office if you have questions.

Species that should be considered in an effects analysis for your project:

Birds	Status		Has Critical Habitat	Contact
Kirtland's Warbler (*Setophaga kirtlandii*) Population: Entire	Endangered	species info		Green Bay Ecological Services Field Office
Whooping crane (*Grus americana*) Population: U.S.A.(AL, AR, GA, IL, IN, IA, KY, LA, MI, MN, MS, MO, NC, OH, SC, TN, VA, WI, WV)	Experimental Population, Non-Essential	species info		Green Bay Ecological Services Field Office
Clams				
higgins eye (*Lampsilis higginsii*) Population: Entire	Endangered	species info		Green Bay Ecological Services Field Office
Sheepnose Mussel (*Plethobasus cyphyus*)	Endangered	species info		Green Bay Ecological Services Field Office
Flowering Plants				
Eastern Prairie Fringed orchid (*Platanthera leucophaea*)	Threatened	species info		Green Bay Ecological Services Field Office

Trust Resources List

Fassett's locoweed (*Oxytropis campestris var. chartacea*) Population:	Threatened	species info		Green Bay Ecological Services Field Office
Northern Wild monkshood (*Aconitum noveboracense*) Population:	Threatened	species info		Green Bay Ecological Services Field Office
Insects				
Karner Blue butterfly (*Lycaeides melissa samuelis*) Population: Entire	Endangered	species info		Green Bay Ecological Services Field Office
Poweshiek skipperling (*Oarisma poweshiek*)	Proposed Endangered	species info	Proposed critical habitat	Green Bay Ecological Services Field Office
Mammals				
northern long-eared Bat (*Myotis septentrionalis*) Population:	Proposed Endangered	species info		Green Bay Ecological Services Field Office
Reptiles				
eastern Massasauga (*Sistrurus catenatus*)	Candidate	species info		Green Bay Ecological Services Field Office

Critical habitats within your project area: (View all critical habitats within your project area on one map)

The following critical habitats lie fully or partially within your project area.

Insects	Critical Habitat Type
Poweshiek skipperling (*Oarisma poweshiek*)	Proposed critical habitat

U.S. Fish and Wildlife Service

Trust Resources List

FWS National Wildlife Refuges (USFWS National Wildlife Refuges Program).

There are **2** refuges in your refuge list

Necedah National Wildlife Refuge (608) 565-2551 N11385 HEADQUARTERS ROAD NECEDAH, WI54646	refuge profile
Leopold Wetland Management District (608) 742-7100 W10040 CASCADE MOUNTAIN ROAD PORTAGE, WI53901	refuge profile

FWS Migratory Birds (USFWS Migratory Bird Program).

The protection of birds is regulated by the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. For more information regarding these Acts see: http://www.fws.gov/migratorybirds/RegulationsandPolicies.html.

All project proponents are responsible for complying with the appropriate regulations protecting birds when planning and developing a project. To meet these conservation obligations, proponents should identify potential or existing project-related impacts to migratory birds and their habitat and develop and implement conservation measures that avoid, minimize, or compensate for these impacts. The Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

For information about Birds of Conservation Concern, go to: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html.

To search and view summaries of year-round bird occurrence data within your project area, go to the Avian Knowledge Network Histogram Tool links in the Bird Conservation Tools section at: http://www.fws.gov/migratorybirds/CCMB2.htm.

Trust Resources List

For information about conservation measures that help avoid or minimize impacts to birds, please visit: http://www.fws.gov/migratorybirds/CCMB2.htm.

Migratory birds of concern that may be affected by your project:
There are **22** birds on your Migratory birds of concern list. The underlying data layers used to generate the migratory bird list of concern will continue to be updated regularly as new and better information is obtained. User feedback is one method of identifying any needed improvements. Therefore, users are encouraged to submit comments about any questions regarding species ranges (e.g., a bird on the USFWS BCC list you know does not occur in the specified location appears on the list, or a BCC species that you know does occur there is not appearing on the list). Comments should be sent to the ECOS Help Desk.

Species Name	Bird of Conservation Concern (BCC)	Species Profile	Seasonal Occurrence in Project Area
American bittern (*Botaurus lentiginosus*)	Yes	species info	Breeding
Bald eagle (*Haliaeetus leucocephalus*)	Yes	species info	Year-round
Black tern (*Chlidonias niger*)	Yes	species info	Breeding
Black-billed Cuckoo (*Coccyzus erythropthalmus*)	Yes	species info	Breeding
Blue-winged Warbler (*Vermivora pinus*)	Yes	species info	Breeding
Bobolink (*Dolichonyx oryzivorus*)	Yes	species info	Breeding
Brown Thrasher (*Toxostoma rufum*)	Yes	species info	Breeding
Canada Warbler (*Wilsonia canadensis*)	Yes	species info	Breeding
cerulean warbler (*Dendroica cerulea*)	Yes	species info	Breeding
Common tern (*Sterna hirundo*)	Yes	species info	Breeding
Dickcissel (*Spiza americana*)	Yes	species info	Breeding
Golden-Winged Warbler (*Vermivora chrysoptera*)	Yes	species info	Breeding
Henslow's sparrow (*Ammodramus henslowii*)	Yes	species info	Breeding
Least Bittern (*Ixobrychus exilis*)	Yes	species info	Breeding

Marsh wren (*Cistothorus palustris*)	Yes	species info	Breeding
Pied-billed Grebe (*Podilymbus podiceps*)	Yes	species info	Breeding
Prothonotary Warbler (*Protonotaria citrea*)	Yes	species info	Breeding
Red-headed Woodpecker (*Melanerpes erythrocephalus*)	Yes	species info	Year-round, Breeding
Short-eared Owl (*Asio flammeus*)	Yes	species info	Wintering
Upland Sandpiper (*Bartramia longicauda*)	Yes	species info	Breeding
Willow Flycatcher (*Empidonax traillii*)	Yes	species info	Breeding
Wood Thrush (*Hylocichla mustelina*)	Yes	species info	Breeding

NWI Wetlands (USFWS National Wetlands Inventory).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

Data Limitations, Exclusions and Precautions

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

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The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery and/or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Exclusions - Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Precautions - Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

The following wetland types intersect your project area in one or more locations:

Wetland Types	NWI Classification Code	Total Acres
Freshwater Emergent Wetland	PEM/ABG	0.5598
Freshwater Emergent Wetland	PEMCf	38.1131
Freshwater Emergent Wetland	PEM1/SS1C	8.6833
Freshwater Emergent Wetland	PEM1Ad	47.6402
Freshwater Emergent Wetland	PEMF	200.8743
Freshwater Emergent Wetland	PEMA	232.0674
Freshwater Emergent Wetland	PEMC	726.1775
Freshwater Emergent Wetland	PEM1Fh	1.4138
Freshwater Emergent Wetland	PEM1F	14.0007

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Freshwater Emergent Wetland	PEM1C	20.2103
Freshwater Emergent Wetland	PEM1A	37.3598
Freshwater Emergent Wetland	PEMGx	3.8054
Freshwater Forested/Shrub Wetland	PFO2/SS2Bg	48.9708
Freshwater Forested/Shrub Wetland	PSS1/EMA	6.4329
Freshwater Forested/Shrub Wetland	PSS1/EMC	70.3507
Freshwater Forested/Shrub Wetland	PFO1Ad	5.0668
Freshwater Forested/Shrub Wetland	PSS1/UB	30.1378
Freshwater Forested/Shrub Wetland	PFO4A	9.0719
Freshwater Forested/Shrub Wetland	PFO4Bg	8.4094
Freshwater Forested/Shrub Wetland	PSS2/EMBg	8.6356
Freshwater Forested/Shrub Wetland	PFO5/UBG	8.004
Freshwater Forested/Shrub Wetland	PFO1/EMBg	379.876
Freshwater Forested/Shrub Wetland	PFO4/EMBg	56.9387
Freshwater Forested/Shrub Wetland	PSS1/EM1C	3.5198
Freshwater Forested/Shrub Wetland	PFO1/4B	249.4465
Freshwater Forested/Shrub Wetland	PFO1/4A	82.2139
Freshwater Forested/Shrub Wetland	PFO1/4C	24.2071
Freshwater Forested/Shrub Wetland	PFO1/SS1F	45.2756
Freshwater Forested/Shrub Wetland	PFO1/SS1C	131.4693
Freshwater Forested/Shrub Wetland	PFO1/4Bg	241.1856
Freshwater Forested/Shrub Wetland	PFO2/SSB	4.6586
Freshwater Forested/Shrub Wetland	PSS4A	0.9108
Freshwater Forested/Shrub Wetland	PFO1/SS1A	34.8924
Freshwater Forested/Shrub Wetland	PSS3/EMBg	11.9275
Freshwater Forested/Shrub Wetland	PSS1Ad	8.6605

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Freshwater Forested/Shrub Wetland	PFO1/EMC	234.8127
Freshwater Forested/Shrub Wetland	PSS1/EMBg	654.2124
Freshwater Forested/Shrub Wetland	PSS3Bg	129.5302
Freshwater Forested/Shrub Wetland	PFO4/SS3	6.2538
Freshwater Forested/Shrub Wetland	PFO2B	49.5756
Freshwater Forested/Shrub Wetland	PFO2/SS3B	15.5402
Freshwater Forested/Shrub Wetland	PFO4/SS3Bg	37.9646
Freshwater Forested/Shrub Wetland	PSS1Bg	292.6042
Freshwater Forested/Shrub Wetland	PFO2Bg	22.0193
Freshwater Forested/Shrub Wetland	PFO1/SS1Bg	557.0903
Freshwater Forested/Shrub Wetland	PFO2/EMB	10.0522
Freshwater Forested/Shrub Wetland	PFO1Bg	1250.5126
Freshwater Forested/Shrub Wetland	PFO1/EM1Cd	5.4475
Freshwater Forested/Shrub Wetland	PFO2/SS2E	3.5202
Freshwater Forested/Shrub Wetland	PFO2/EMBg	17.4518
Freshwater Forested/Shrub Wetland	PSS1/FO1C	30.7295
Freshwater Forested/Shrub Wetland	PSS1A	0.3261
Freshwater Forested/Shrub Wetland	PFO1C	802.8989
Freshwater Forested/Shrub Wetland	PFO1A	74.1396
Freshwater Forested/Shrub Wetland	PSS1C	39.4509
Freshwater Forested/Shrub Wetland	PSS1F	45.4959
Freshwater Forested/Shrub Wetland	PFO1F	10.7789
Freshwater Pond	PUBGx	24.4658
Freshwater Pond	PUBHx	44.8573
Freshwater Pond	PUSC	0.1836
Freshwater Pond	PUBH	160.0493

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Freshwater Pond	PUBG	8.6779
Lake	L2EMG	0.0767
Lake	L1UBG	69.8436
Lake	L1UBH	91.475
Other	Pf	86.7574
Riverine	R2UBH	375.7913
Riverine	R2ABH	0.2927
Riverine	R5UBH	0.428

APPENDIX E

NOISE

Appendix E

Appendix E contains information on *Noise*, specifically text files that contain the noise modeling results of both the existing and proposed Volk Special Activity Airspace. Both existing and proposed Military Operations Areas (MOA) were modeled, including proposed Restricted Area 6904C. Included within the text files are MR_NMAP noise model inputs (e.g., MOA boundaries, aircraft operations, avoidance areas, etc.) and results for the two metrics, A-weighted Day-Night Average Noise Level with Onset Rate-Adjusted (Ldnmr) and Sound Exposure Level (SEL) above 65 decibels (dB).

Noise Background

General

Noise, often defined as unwanted sound, is one of the most common environmental issues associated with aircraft operations. Of course, aircraft are not the only sources of noise in a rural surrounding. Noise from interstate and local roadway traffic, rail, industrial, and neighborhood sources also intrude on the everyday quality of life in these areas. Nevertheless, aircraft are readily identifiable to those affected by their noise and are typically singled out for special attention and criticism. Consequently, aircraft noise issues often dominate analyses of environmental impacts.

Sound is a physical phenomenon consisting of small vibrations, which travel through a medium (i.e., intervening substance) such as air, and are sensed by the human ear. Whether that sound is interpreted as pleasant (e.g., music) or unpleasant (e.g., transportation-related noise) depends largely on the listener's current activity, past experience, and attitude toward the source of that sound. It is often true that one person's music is another person's noise.

The measurement and human perception of sound involves two basic physical characteristics – intensity and frequency. Intensity is a measure of the acoustic energy of the sound vibrations and is expressed in terms of sound pressure. The higher the sound's pressure, the more energy carried by the sound and the louder the perception of that sound. The second important physical characteristic is frequency, which is the number of times per second the air vibrates or oscillates. Low-frequency sounds are characterized as rumbles or roars, while high-frequency sounds are typified by sirens or screeches.

The loudest sounds which can be detected comfortably by the human ear, have intensities that are 1 trillion times higher than those of sound that cannot be detected by humans. Because of this vast range, any attempt to represent the intensity of sound using a linear scale becomes very unmanageable. As a result, a logarithmic unit known as the decibel (dB) is used to represent the intensity of a sound. Such a representation is known as a sound level.

A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above about 120 dB begin to be felt inside the human ear as discomfort and eventually pain at still higher levels.

Because of the logarithmic nature of the dB unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. However, some simple rules of thumb are useful in dealing with sound levels. First, if a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example:

60 dB + 60 dB = 63 dB, and

80 dB + 80 dB = 83 dB.

The total sound level produced by two sounds of different levels is usually only slightly more than the higher of the two. For example:

60.0 dB + 70.0 dB = 70.4 dB.

Because the addition of sound levels behaves differently than that of ordinary numbers, such an addition is often referred to as "dB addition" or "energy addition." The latter term arises from the fact that what we are really doing when we add dB values is first converting each dB value to its corresponding acoustic energy, then adding the energies using the normal rules of addition, and finally converting the total energy back to its dB equivalent.

An important facet of dB addition arises later when the concept of time-average sound levels is introduced to explain Day-Night Average A-Weighted Sound Level (DNL) (see the Noise Metrics discussion below). Because of the logarithmic units, the time-average sound levels are dominated by the louder levels, which occur during the averaging period. As a simple example, consider a sound level of 100 dB that lasts for 30-seconds, followed by a sound level of 50 dB which also lasts for 30-seconds. The time-average sound level over the total 60-second period is 97 dB, not 75 dB.

Sound frequency is measured in terms of cycles per second (cps), or hertz (Hz), which is the preferred scientific unit for cps. The normal human ear can detect sounds over a wide range of frequencies. However, not all frequencies in this range are heard equally well by the human ear which is most sensitive to frequencies in the 1,000 to 4,000 Hz range. In measuring community noise, this frequency dependence is taken into account by adjusting the very high and low frequencies to approximate the human ear's lower sensitivity to those frequencies. This is called "A-weighting" and is commonly used in measurements of community environmental noise.

Sound levels measured using A-weighting are referred to as A-weighted sound levels. However, since most environmental impact analysis documents deal only with A-weighted sound levels, the adjective "A-weighted" is often omitted, and A-weighted sound levels are referred to simply as sound levels. In some instances the author will indicate that the levels have been A-weighted by using the abbreviation dBA for decibel. As long as the use of A-weighting is understood to be used, there is no difference implied by the terms "sound level" and "A-weighted sound level" or by the units dB and dBA. In this document all sound levels are A-weighted sound levels and the adjective “A-weighted” has been omitted.

Sound levels do not represent instantaneous measurements but rather averages over short periods of time. Two measurement time periods are most common – one second and one-eighth of a second. A measured sound level averaged over one second is called a slow response sound level; one averaged over one-eighth of a second is called a fast response sound level. Most environmental noise studies use slow response measurements, and the adjective “slow response” is usually omitted. It is easy to understand why the proper descriptor “slow response A-weighted sound level” is usually shortened to “sound level” in environmental impact analysis documents.

Noise Metrics

A “metric” is defined as something “of, involving, or used in measurement.” As used in environmental noise analyses, a metric refers to the unit or quantity, which quantitatively measures the effect of noise on the environment. Noise studies have typically involved a confusing proliferation of noise metrics as individual researchers have attempted to understand and represent the effects of noise. As a result, past literature describing environmental noise abatement has included many different metrics.

More recently, however, various federal agencies involved in environmental noise mitigation have agreed on common metrics for environmental impact analysis documents, and both the Department of Defense (DoD) and the Federal Aviation Administration (FAA) have specified those which should be used for federal aviation noise assessments. These metrics are as follows:

Maximum Sound Level

The highest A-weighted sound level measured during a single event in which the sound level changes value as time goes on (e.g., an aircraft overflight) is called the maximum A-weighted sound level (ALM) or maximum sound level, for short.

Sound Exposure Level

Individual time-varying noise events have two main characteristics – a sound level which changes throughout the event and a period of time during which the event is heard. Although the maximum sound level, described above, provides some measure of the intrusiveness of the event, it alone does not completely describe the total event. The period of time during which the sound is heard is also significant. The Sound Exposure Level (SEL) combines both of these characteristics into a single metric.

Noise Background

SEL is a logarithmic measure of the total acoustic energy transmitted to the listener during the event. Mathematically, it represents the sound level of the constant sound that would, in one second, generate the same acoustic energy, as did the actual time-varying noise event. Since aircraft overflights usually last longer than one second, the SEL of an overflight is usually greater than the ALM of the overflight.

Note that SEL is a composite metric (i.e., made up of distinct parts), which represents both the intensity of a sound level and its duration. It does not directly represent the sound level heard at any given time, but rather provides a measure of the net impact of the entire acoustic event. It has been well established in the scientific community that SEL measures this impact much more reliably than just the A-weighted sound level.

Because the SEL and the ALM are both A-weighted sound levels expressed in dBs, there is sometimes confusion between the two, so the specific metric used should be clearly stated.

Day-Night Average A-Weighted Sound Level

Time-averaged sound levels are measurements of sound levels, which are averaged over a specified length of time. These levels provide a measure of the average sound energy during the measurement period.

For the evaluation of community noise effects, and particularly aircraft noise effects, DNL is used. DNL averages aircraft sound levels at a location over a complete 24-hour period, with a 10 dB adjustment added to those noise events which take place between 10:00 p.m. and 7:00 a.m. (local time). This 10 dB "penalty" represents the added intrusiveness of sounds which occur during normal sleeping hours, both because of the increased sensitivity to noise during those hours and because ambient sound levels during nighttime are typically about 10 dB lower than during daytime hours.

DNL provides a single measure of overall noise impact, but does not provide specific information on the number of noise events or the individual sound levels, which occur during the day. For example, a DNL of 65 could result from a few very noisy events, or many quieter events during the 24-hour period.

As noted earlier for SEL, DNL does not represent the sound level heard at any particular time, but rather represents the total sound exposure. Scientific studies and social surveys, which have been conducted to determine community annoyance to all types of environmental noise, have found DNL to be the best measure of that annoyance. Its use is endorsed by the following scientific communities: American

National Standards Institute (1980, 1988); United States Environmental Protection Agency [USEPA] (1974); and Federal Interagency Committee on Noise [FICON] (1980, 1992).

Opinion surveys about aircraft noise have been conducted in different countries to find the percentages of groups of people who express various degrees of annoyance when exposed to different levels of DNL. The results of these surveys are remarkably consistent. Synthesis of Social Surveys of Noise Annoyance (Schultz 1978) was published in 1978. A more recent study has reaffirmed the results found in the 1978 study (Fidell et al. 1991). In general, correlation coefficients of 0.85 to 0.95 are found between the percentages of groups of people highly annoyed and the level of average noise exposure. The correlation coefficients for the annoyance of individuals are relatively low, however, on the order of 0.5 or less. This is not surprising, considering the varying personal factors that influence the manner in which individuals react to noise. Nevertheless, the findings of these and other studies substantiate that community annoyance to aircraft noise is represented quite reliably using DNL.

This relation between community annoyance and time-average sound level also has been confirmed for infrequent aircraft noise events. Community Reactions to Helicopter Noise (Schmoer et al. 1991) reported the reactions of individuals in a community to daily helicopter overflights correlated quite well with the daily time-average sound levels over this range of numbers of daily noise events.

The use of DNL has been criticized recently as not accurately representing community annoyance and land-use compatibility with aircraft noise. Much of that criticism stems from a lack of understanding of the basis for the measurement or calculation of DNL. One frequent criticism is based on the inherent feeling that people react more to single noise events and not as much to "meaningless" time-average sound levels.

In fact, a time-average noise metric, such as DNL, takes into account both the noise levels of all individual events which occur during a 24-hour period and the number of times those events occur. As described briefly above, the logarithmic nature of the dB unit causes the noise levels of the loudest events to control the 24-hour average.

As a simple example of this characteristic, consider a case in which only one aircraft overflight occurs in daytime during a 24-hour period, creating a sound level of 100 dB for 30 seconds. During the remaining 23-hours, 59-minutes, and 30 seconds of the day, the ambient sound level is 50 dB. The DNL for this 24-hour period is 65.5. Assume, as a second example that ten such 30-second overflights occur in daytime hours during the next 24-hour period, with the same ambient sound level of 50 dB during the remaining 23-hours and 55-minutes of the day. The DNL for this 24-hour period is 75.4. Clearly, the averaging of noise over a 24-hour period does not ignore the louder single events and tends to emphasize both the sound levels and number of those events. This is the basic concept of a time-averaged sound metric such as DNL.

Onset Rate-Adjusted Day-Night Average

Onset rate-adjusted day-night average, a-weighted sound level (Ldnmr) is an additional noise metric which has been developed specifically for aircraft operations at low altitudes along Military Training Routes (MTRs) by the USAF under direction of the Armstrong Aerospace Medical Research Laboratory. Individual low-altitude events on MTRs are different from typical noise sources because the rapid onset of aircraft noise can create a "startle" effect. The Ldnmr is similar to the DNL in that it is an average metric with a 10 dB penalty for events occurring between 10:00 p.m. and 7:00 a.m. However, Ldnmr represents an average for an entire month utilizing the highest monthly sortie activity, and includes an additional 0 to 11 dB penalty to compensate for the "startle" effect of a low-altitude overflight. Because of this penalty, Ldnmr always equals or exceeds DNL. Ldnmr is currently the approved MTR noise metric for the armed services, and the USAF recommends calculation of Ldnmr values for noise assessments along MTRs. Because it is a conservative measure of average noise exposure over time with built-in penalties for rapid onset of noise, Ldnmr closely correlates with the probability of "highly annoying" a noise receptor, and is appropriate to use in areas where receptors would be highly sensitized to potential noise impacts.

Noise Effects

Hearing Loss

Noise-induced hearing loss is probably the best defined of the potential effects of human exposure to excessive noise. Federal workplace standards for protection from hearing loss allow a time-average level of (Equivalent Continuous Sound Pressure Level (LEQ) 90 dB over an 8-hour period, or LEQ 85 dB averaged over a 16-hour period. Even the most protective criterion suggests a time-averaged sound level of DNL 70 over a 24-hour period. Since it is unlikely that airport neighbors will remain outside their homes 24-hours per day for extended periods of time, and there is little possibility of hearing loss below a DNL of 75, this protection level is extremely conservative.

Nonauditory Health Effects

Nonauditory health effects of long-term noise exposure, where noise may act as a risk factor have not been found to occur at levels below those which protect against noise-induced hearing loss (described in Section C.3.1). Most studies attempting to clarify such health effects have found that noise exposure levels established for hearing protection will also protect against any potential nonauditory health effects, at least in workplace conditions. The best scientific summary of these findings is contained in the lead paper at the National Institute of Health Conference on Noise and Hearing Loss, held on 22-24 January 1990 in Washington, D.C. (Von Gierke 1990).

> *The nonauditory effects of chronic noise exposure, when noise is suspected to act as one of the risk factors in the development of hypertension, cardiovascular disease, and other nervous disorders, have never been proven to occur as chronic manifestations at levels below these criteria [an average of 75 dB for complete protection against hearing loss for an eight-hour day]. At the recent (1988) International Congress on Noise as a Public Health Problem, most studies attempting to clarify such health effects did not find them at levels below the criteria protective of noise-induced hearing loss, and even above these criteria, results regarding such health effects were ambiguous. Consequently, one comes to the conclusion that establishing and enforcing exposure levels protecting against noise-induced hearing loss would not only solve the noise-induced hearing loss problem but also any potential nonauditory health effects in the work place*.

Although these findings were directed specifically at noise effects in the work place, they are equally applicable to aircraft noise effects in the community environment. Research studies regarding the nonauditory health effects of aircraft noise are ambiguous at best, and often contradictory. In addition, even those studies which purport to find such health effects use time-averaged noise levels of 75 dB and higher for their research.

For example, in an often-quoted paper, two University of California at Los Angeles (UCLA) researchers apparently found a relationship between aircraft noise levels under the approach path to Los Angeles International Airport (LAX) and increased mortality rates among the exposed residents by using an average noise exposure level greater than 75 dB for the “noise-exposed” population (Meacham et al. 1979). Nevertheless, three other UCLA professors analyzed those same data and found no relation between noise exposure and mortality rates (Frericks et al. 1980).

As a second example, two other UCLA researchers used this same population near LAX to show a higher rate of birth defects in 1970-1972 when compared with a control group residing away from the airport (Jones et al. 1978). Based on this report, a separate group at the United States Center for Disease Control performed a more thorough study of populations near Atlanta’s Hartsfield International Airport for 1970-1972 and found no relation in their study of 17 identified categories of birth defects to aircraft noise levels above 65 dB (Edmonds et al. 1979).

In summary, there is no scientific basis for claims that potential auditory or nonauditory health effects exist for aircraft time-average sound levels below 75 dB.

Noise Background

Annoyance

The primary effect of aircraft noise on exposed communities is one of annoyance. Noise annoyance is defined by USEPA as any negative subjective reaction on the part of an individual or group (USEPA 1974). As noted in the discussion of DNL community annoyance is best measured by that metric.

It is often suggested that a lower DNL, such as 60 or 55, be adopted as the threshold of community noise annoyance for airport environmental analysis documents. While there is no technical reason why a lower level cannot be measured or calculated for comparison purposes, a DNL of 65:

1. Provides a valid basis for comparing and assessing community noise effects;
2. Represents a noise exposure level which is normally dominated by aircraft noise and not other community or nearby highway noise sources; and
3. Reflects the FAA's threshold for grant-in-aid funding of airport noise mitigation projects.

The United States Department of Housing and Urban Development (HUD) also established a DNL standard of 65 for eligibility for federally guaranteed home loans. Although the FAA , HUD, and DoD consider 65 DNL as the threshold of significance for assessing noise impacts, this threshold does not distinguish between urban, suburban, or rural settings. Along with several other federal agencies, the USEPA takes a more conservative approach to noise assessment including a more restrictive 55 DNL threshold for noise in rural areas or "places in which quiet is a basis for use" (USEPA 1974).

Speech Interference

Speech interference associated with aircraft noise is a primary cause of annoyance to individuals on the ground. The disruption of routine activities such as radio or television listening, telephone use, or family conversation gives rise to frustration and irritation. The quality of speech communication is also important in classrooms, offices, and industrial settings and can cause fatigue and vocal strain in those who attempt to communicate over the noise. Research has shown that "whenever intrusive noise exceeds approximately 60 dB indoors, there will be interference with speech communication" (FICON 1992). A steady A-weighted background sound level of 60 dB will produce 93 percent intelligibility; that of 70 dB will produce 66 percent intelligibility; and that of 75 dB will produce 2 percent intelligibility (Figure C-1 in USEPA 1974).

Sleep Interference

Sleep interference may be measured in either of two ways: "Arousal" represents actual awakening from sleep, while a change in "sleep stage" represents a shift from one of four sleep stages to another stage of lighter sleep without actual awakening. In general, arousal requires a somewhat louder noise level than does a change in sleep stage.

An analysis sponsored by the United States Air Force (USAF) summarized 21 published studies concerning the effects of noise on sleep (Pearsons et al. 1989). The analysis concluded that a lack of reliable studies in homes, combined with large differences among the results from the various laboratory studies and the limited in-home studies, did not permit development of an acceptable accurate assessment procedure. The noise events used in the laboratory studies and in contrived in-home studies were presented at much higher rates of occurrence than would normally be experienced in the home. None of the laboratory studies were of sufficiently long duration to determine any effects of habituation, such as that which would occur under normal community conditions.

Nevertheless, some guidance is available in judging sleep interference. The USEPA identified an indoor DNL of 45 as necessary to protect against sleep interference (USEPA 1974). Since typical dwelling units provide a sound level reduction of 20 dB, an outdoor noise level of DNL 65 would cause minimal interference with sleep.

The FICON (FICON 1992) reviewed the sleep disturbance issue and presented an USAF-developed sleep disturbance dose-response prediction curve, based on data from Analyses of the Predictability of Noise-Induced Sleep Disturbance (Pearsons et al. 1989), as an interim tool for analysis of potential sleep disturbance. This interim curve shows that for an indoor SEL of 65 dB, approximately 15 percent or less of those exposed would be awakened.

Noise Effects on Domestic Animals and Wildlife

Wildlife species differ greatly in their responses to noise. Each species has adapted, physically and behaviorally, to fill its ecological role in nature, and its hearing ability usually reflects that role. Animals rely on their hearing to avoid predators, obtain food, and communicate with and attract other members of their species. Aircraft noise may mask or interfere with these functions. Secondary effects may include nonauditory effects similar to those exhibited by humans – stress, hypertension, and other nervous disorders. Tertiary effects may include interference with mating and resultant population declines.

There are many scientific studies available regarding the effects of noise on wildlife and some anecdotal reports of wildlife "flight due to noise". Few of these studies or reports include any reliable measures of the actual noise levels involved.

Noise Background

In the absence of definitive data on the effect of noise on animals, the Committee on Hearing, Bioacoustics, and Biomechanics of the National Research council has proposed that protective noise criteria for animals be taken to be the same as for humans (National Academy of Sciences 1977).

Effects of Noise-Induced Vibration on Structures and Humans

The sound from aircraft overflight travels from the exterior to the interior of the house in one of two ways: through the solid structural elements and directly through the air. The sound transmission starts with noise impinging on the wall exterior. Some of this sound energy will be reflected away and a portion of this energy will make the wall vibrate. The vibrating wall radiates sound into the airspace, which in turn sets the interior finish surface vibrating, with some of the energy lost in the airspace. This surface then radiates sound into the dwelling interior. Vibrational energy also bypasses the air cavity by traveling through the studs and edge connections.

Normally, the most sensitive components of a structure to airborne noise are the windows and, infrequently, the plastered walls and ceilings. An evaluation of the peak sound pressure impinging on (i.e., affecting) the structure is normally sufficient to determine the possibility of damage. In general, sound levels above 130 dB (peak sound pressure for window breakage) may be of more concern than other frequencies. Conservatively, only sounds lasting more than one second above a sound level of 130 dB are potentially damaging to structural components (Von Gierke et al 1991).

In terms of average acceleration of wall or ceiling vibration, the thresholds for structural damage (International Organization for Standardization [ISO] 1989) are:

- 0.5 m/s/s – threshold of risk of damage to sensitive structures (i.e. ancient monuments); and
- 1.0 m/s/s/ - threshold of risk of damage to normal dwellings (i.e. houses with plaster ceilings and walls).

Noise-induced structural vibration may also cause annoyance to dwelling occupants because of induced secondary vibrations, or “rattle”, of objects within the dwelling – hanging pictures, dishes, plaques, etc. Loose windowpanes may also vibrate noticeably when exposed to high levels of noise, causing homeowners to fear breakage. In general, such noise-induced vibrations occur at sound levels above those considered normally compatible with residential land use. Thus, noise levels compatible for residential land use (i.e., below DNL 65) would not cause significant secondary noise-induced vibrations.

Noise Background

In the assessment of vibrations on humans, the following factors determine if a person will perceive and possibly react to building vibrations:

- Type of excitation: steady state, intermittent, or impulsive vibration;
- Frequency of the excitation. ISO 2631-2 recommends a frequency range of 1 to 80 Hz be used for assessing the effect of vibration on humans;
- Orientation of the body with respect to the vibration;
- The use of the occupied space; and
- Time of day.

Noise Effects on Terrain

It has been suggested that noise levels associated with low-flying aircraft may affect the terrain under the flight path by disturbing fragile soil or snow structures, especially in mountainous areas, causing landslides or avalanches. There are no known instances of such effects, and it is considered improbable that such effects will result from routine, subsonic aircraft operations.

Noise Effects on Historical and Archaeological Sites

Because of the potential for increased fragility of structural components of historical buildings and other historical sites, aircraft noise may affect such sites more severely than newer, modern structures. Again, there are few scientific studies of such effects to provide guidance for their assessment.

One study involved the measurements of sound levels and structural vibration levels in a superbly restored plantation house, originally built in 1795, and now situated approximately 1,500 feet from the centerline at the departure end of Runway 19L at Washington Dulles International Airport. These measurements were made in connection with the proposed scheduled operation of the supersonic Concorde aircraft at Dulles (Wesler 1977). There was a special concern for the building's windows, since roughly half of the 324 windowpanes were original. No instances of structural damage were found. Interestingly, despite the high levels of noise during Concorde takeoffs, the induced structural vibration levels were actually less than those induced by touring groups and vacuum cleaning.

As noted above for the noise effects of noise-induced vibrations on normal structures, assessments of noise exposure levels for normally compatible land uses should also assist in protecting historic and archaeological sites from structural damage caused by aircraft noise.

Noise Background

REFERENCES

American National Standard. 1980. Sound Level Description for Determination of Compatible Land Use. American national Standards Institute Standard ANSI S3.23-1980.

American National Standard. 1988. Quantities and Procedures for Description and Measurement of Environmental Sound, Part I. American National Standards Institute Standard ANSI S2.1-1988.

Edmonds, L.D. 1979. Airport Noise and Teratogenesis. Archives of Environmental Health, 243-247. July/August.

Federal Interagency Committee on Noise (FICON). 1992. Federal Agency Review of Selected Airport Noise Analysis Issues. Washington, DC.

FICON. 1980. Guidelines for Considering Noise in Land-Use Planning and Control. June.

Fidell, S., Barger, D.S., and T.J. Schultz. 1991. Updating a Dosage-Effect Relationship for the Prevalence of Annoyance Due to General Transportation Noise. Journal of the Acoustical Society of America, Volume 89, pp. 221-233. January.

Frericks, R.R., et al. 1980. Los Angeles Airport Noise and Mortality: Faulty Analysis and Public Policy. American Journal of Public Health, pp. 357-362. April.

Jones, F.N., and J. Tauscher. 1978. Residence Under an Airport Landing Pattern as a Factor in Teratism. Archives of Environmental Health, pp. 10-12. January/February.

Meacham, W.C. and N. Shaw. 1979. Effects of Jet Noise on Mortality Rates. British Journal of Audiology, pp. 77-80. August.

National Academy of Sciences. 1977. Committee on Hearing, Biuacoustics, and Biomechanics, Guidelines for Preparing Environmental Impact Statements of Noise. Report of Working Group No. 69.

Pearsons, K.S., Barber, D.S., and B.G. Tabachick. 1989. Analyses of the Predictability of Noise Induced Sleep Disturbance. USAF Report HSD-TR-89-029. October.

Schomer, P.D., Hoover, B.D., and L.R. Wagner. 1991. Human Response to Helicopter Noise: A Test of AWeighting. Technical Report N-91/13, USA Construction Engineering Research Laboratory, November 1991.

Schultz, T.J. 1978. Synthesis of Social Surveys on Noise Annoyance. Journal of the Acoustical Society of America, Volume 64, pp. 377-405. August.

Noise Background

United States Environmental Protection Agency (USEPA). 1974. Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety. United States Environmental Protection Agency Report 550/9-74-004. March.

Von Gierke, H.R. 1990. The Noise-Induced Hearing Loss Problem. NIH Consensus Development Conference on Noise and Hearing Loss. Washington, D.C. 22-24 January.

Wesler, J.E. 1977. Concorde Operations at Dulles International Airport. NOISEXPO 1977, Chicago, IL. March.

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            VOLK_MRNMAP_BASELINEMOAS_2015 - Baseline - MRNMAP.txt
                   ***** MOA RANGE NOISEMAP *****
                            Version  3.0
                    Release Date      2/7/2013

                          CASE INFORMATION
Case Name:VOLK_MRNMAP_BASELINE MOA 2015 - Baseline Scenario

Site Name:VOLK SAA


                          SETUP PARAMETERS
Number of MOAs and Ranges =  5     Number of tracks = 0
Lower Left  Corner of Grid in feet (X Y pair) =  -347398.,  -236702.
Upper Right Corner of Grid in feet (X Y pair) =   371702.,   212398.
Grid spacing =      900. feet      Number of events above an SEL  of 65.0 dB
Temperature =  59 F      Humidity =  70     Flying days per month = 30


                         MOA SPECIFICATIONS

MOA name FALLS 1 MOA
     Lat       Long
    (deg)      (deg)
  44.46667   -90.58334
  44.14444   -90.73891
  44.04583   -90.74169
  44.05000   -90.88335
  44.08333   -90.95002
  44.23334   -91.08335
  44.28334   -91.35003
  44.55002   -91.35002
  44.73335   -91.08335
  44.46667   -90.58334
Floor =     500 feet AGL     Ceiling =   17041 feet AGL

MOA name FALLS 2 MOA
     Lat       Long
    (deg)      (deg)
  44.73334   -91.08334
  44.80001   -90.98335
  44.80001   -90.36667
  44.58334   -90.30000
  44.45000   -89.98333
  44.46667   -90.58334
  44.73334   -91.08334
Floor =     500 feet AGL     Ceiling =   17041 feet AGL

MOA name VOLK EAST MOA
     Lat       Long
    (deg)      (deg)
  44.40000   -88.99998
  43.59999   -88.99998
  43.66666   -89.77083
  44.16667   -89.98333
  44.45000   -89.98333
  44.40000   -88.99998
Floor =    7041 feet AGL     Ceiling =   17041 feet AGL

MOA name VOLK SOUTH MOA
     Lat       Long
    (deg)      (deg)
  44.16667   -89.98333
  43.66666   -89.77083
  44.00000   -90.43333
```

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  44.00000   -90.58750
  44.00055   -90.58750
  44.00056   -90.60973
  44.00278   -90.61140
  44.02194   -90.61167
  44.06244   -90.58925
  44.09976   -90.55793
  44.13289   -90.51855
  44.16093   -90.47215
  44.18313   -90.41999
  44.19889   -90.36346
  44.20778   -90.30410
  44.20955   -90.24352
  44.20417   -90.18333
  44.16667   -90.18333
  44.16667   -89.98333
Floor =     500 feet AGL     Ceiling =   17041 feet AGL

MOA name VOLK WEST MOA
     Lat       Long
    (deg)      (deg)
  44.45000   -89.98333
  44.16667   -89.98333
  44.16667   -90.18333
  44.20417   -90.18333
  44.20955   -90.24352
  44.20778   -90.30410
  44.19889   -90.36346
  44.18313   -90.41999
  44.16093   -90.47215
  44.13289   -90.51855
  44.09976   -90.55793
  44.06244   -90.58925
  44.02194   -90.61167
  44.16000   -90.61390
  44.16000   -90.67278
  44.14444   -90.67278
  44.14444   -90.73890
  44.46667   -90.58334
  44.45000   -89.98333
Floor =     500 feet AGL     Ceiling =   17041 feet AGL


                  SPECIFIC POINT SPECIFICATION
Number of Specific points = 26
 Latitude    Longitude       Name
  44.59612   -90.79723     1650HWY10
  44.16417   -89.99250     ARMENIA
  44.30389   -90.11111     BABCOCK
  43.87000   -89.93944     CASTLE ROCK LOOK
  44.73251   -91.06335     COONFORK
  44.31834   -90.06111     CRANMOOR
  44.02500   -90.23556     CUTLER
  44.37667   -90.10889     DEXTERVILLE
  44.23584   -90.09528     DZR6904
  44.22639   -90.00777     EASTR6904
  44.21306   -90.13055     FINLEY
  44.31000   -89.98778     GRAVPIT1
  44.36222   -91.11890     GRAVPIT2
  44.43389   -90.30278     GREENWOOD
  44.23584   -90.19667     HWY173
  44.41973   -90.71667     LKARBUTUS
  44.45501   -90.83862     MERRILLAN
  44.22945   -90.06055     MIDR6904
```

44.24195	-90.08139	NWR6904
44.44612	-90.12666	PITTSVILLE
44.28528	-89.87500	PT12M6904
44.31778	-90.28611	REMINGTON
44.00750	-89.79500	ROCHEACRI
44.17528	-90.79417	SHAMROCK
44.22667	-90.10695	SWR6904
44.37334	-91.29029	WHITEHALL

AVOIDANCE SPECIFICATION

Number of Avoidance Areas = 9

Latitude	Longitude	Radius (feet)	Floor (feet AGL)	Name
44.25000	-90.85417	18228.	1500	BLK RIV FLS AIRPORT
43.97500	-90.48500	18228.	1500	BLOYER AIRPORT
43.83694	-90.13695	18228.	1500	MAUSTON NEW LISBON AIRPORT
44.03333	-90.08333	18228.	1500	NECEDAH AIRPORT
44.18470	-90.18024	15190.	1000	NECEDAH NWR 2A
44.14507	-90.18922	15190.	1000	NECEDAH NWR 2B
44.11045	-90.17878	18228.	1000	NECEDAH NWR 3A
44.06948	-90.16016	24304.	1000	NECEDAH NWR 3B
44.55834	-90.50834	18228.	1500	NEILSVILLE AIRPORT

MISSION DATA

Mission name = A10 VOLK EAST
Aircraft code =FM0090100 Speed = 300 kias Power = 6200.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
7041	15000	50.0
15000	17041	50.0

Mission name = A10 VOLK FALLS
Aircraft code =FM0090100 Speed = 300 kias Power = 6200.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	5000	20.0
5000	10000	50.0
10000	17041	30.0

Mission name = A10 VOLK FALLS_2
Aircraft code =FM0090100 Speed = 300 kias Power = 6200.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	5000	20.0
5000	10000	50.0
10000	17041	30.0

```
Mission name = A10 VOLK SOUTH
Aircraft code =FM0090100  Speed =  300 kias  Power =  6200.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = A10 VOLK WEST
Aircraft code =FM0090100  Speed =  300 kias  Power =  6200.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = B1VOLK EAST
Aircraft code =FM0120100  Speed =  270 kias  Power =    98.5
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041        15000        50.0
     15000        17041        50.0


Mission name = B1VOLK FALLS
Aircraft code =FM0120100  Speed =  270 kias  Power =    98.5
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B1VOLK FALLS_2
Aircraft code =FM0120100  Speed =  270 kias  Power =    98.5
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B1VOLK SOUTH
Aircraft code =FM0120100  Speed =  270 kias  Power =    98.5
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B1VOLK WEST
Aircraft code =FM0120100  Speed =  270 kias  Power =    98.5
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0
```

```
Mission name = B2VOLK EAST
Aircraft code =FM0130100  Speed =  230 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041        15000        50.0
     15000        17041        50.0


Mission name = B2VOLK FALLS
Aircraft code =FM0130100  Speed =  230 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B2VOLK FALLS_2
Aircraft code =FM0130100  Speed =  230 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B2VOLK SOUTH
Aircraft code =FM0130100  Speed =  230 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B2VOLK WEST
Aircraft code =FM0130100  Speed =  230 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B52VOLK EAST
Aircraft code =FM0140200  Speed =  250 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041        15000        50.0
     15000        17041        50.0


Mission name = B52VOLK FALLS
Aircraft code =FM0140200  Speed =  250 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0
```

```
Mission name = B52VOLK FALLS_2
Aircraft code =FM0140200  Speed =  250 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B52VOLK SOUTH
Aircraft code =FM0140200  Speed =  250 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B52VOLK WEST
Aircraft code =FM0140200  Speed =  250 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = C130 VOLK EAST
Aircraft code =FM0290300  Speed =  140 kias  Power =   580.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041        15000        50.0
     15000        17041        50.0


Mission name = C130 VOLK SOUTH
Aircraft code =FM0290300  Speed =  140 kias  Power =   580.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = C130 VOLK WEST
Aircraft code =FM0290300  Speed =  140 kias  Power =   580.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = C130VOLK FALLS
Aircraft code =FM0290300  Speed =  140 kias  Power =   580.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0
```

```
Mission name = C130VOLK FALLS_2
Aircraft code =FM0290300  Speed =  140 kias  Power =   580.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F15PW229 VOLK EAST
Aircraft code =FM0430400  Speed =  350 kias  Power =    91.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041         15000        50.0
     15000         17041        50.0


Mission name = F15PW229 VOLK SOUTH
Aircraft code =FM0430400  Speed =  350 kias  Power =    91.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F15PW229 VOLK WEST
Aircraft code =FM0430400  Speed =  350 kias  Power =    91.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F15PW229VOLKFALLS
Aircraft code =FM0430400  Speed =  350 kias  Power =    91.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F15PW229VOLKFALLS_2
Aircraft code =FM0430400  Speed =  350 kias  Power =    91.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F16GE100 VOLK EAST
Aircraft code =FM0440400  Speed =  340 kias  Power =   104.0
           Altitude Distribution
```

```
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041         15000        50.0
     15000         17041        50.0


Mission name = F16GE100 VOLK SOUTH
Aircraft code =FM0440400  Speed =  340 kias  Power =   104.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F16GE100 VOLK WEST
Aircraft code =FM0440400  Speed =  340 kias  Power =   104.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F16GE100VOLKFALLS
Aircraft code =FM0440400  Speed =  340 kias  Power =   104.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F16GE100VOLKFALLS_2
Aircraft code =FM0440400  Speed =  340 kias  Power =   104.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F16PW220 VOLK EAST
Aircraft code =FM0440200  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041         15000        50.0
     15000         17041        50.0


Mission name = F16PW220 VOLK SOUTH
Aircraft code =FM0440200  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0
```

```
Mission name = F16PW220 VOLK WEST
Aircraft code =FM0440200  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F16PW220VOLKFALLS
Aircraft code =FM0440200  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F16PW220VOLKFALLS_2
Aircraft code =FM0440200  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F16PW229 VOLK EAST
Aircraft code =FM0440300  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041         15000        50.0
     15000         17041        50.0


Mission name = F16PW229 VOLK SOUTH
Aircraft code =FM0440300  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F16PW229 VOLK WEST
Aircraft code =FM0440300  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F16PW229VOLKFALLS
Aircraft code =FM0440300  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
```

```
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F16PW229VOLKFALLS_2
Aircraft code =FM0440300  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F18E/F VOLK EAST
Aircraft code =FM0450200  Speed =  420 kias  Power =    97.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041         15000        50.0
     15000         17041        50.0


Mission name = F18E/F VOLK SOUTH
Aircraft code =FM0450200  Speed =  420 kias  Power =    97.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F18E/F VOLK WEST
Aircraft code =FM0450200  Speed =  420 kias  Power =    97.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F18E/FVOLKFALLS
Aircraft code =FM0450200  Speed =  420 kias  Power =    97.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = F18E/FVOLKFALLS_2
Aircraft code =FM0450200  Speed =  420 kias  Power =    97.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0
```

Mission name = F35 VOLK EAST
Aircraft code =FM0850100 Speed = 350 kias Power =   60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
7041	15000	50.0
15000	17041	50.0

Mission name = F35 VOLK SOUTH
Aircraft code =FM0850100 Speed = 350 kias Power =   60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	5000	20.0
5000	10000	50.0
10000	17041	30.0

Mission name = F35 VOLK WEST
Aircraft code =FM0850100 Speed = 350 kias Power =   60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	5000	20.0
5000	10000	50.0
10000	17041	30.0

Mission name = F35VOLKFALLS
Aircraft code =FM0850100 Speed = 350 kias Power =   60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	5000	20.0
5000	10000	50.0
10000	17041	30.0

Mission name = F35VOLKFALLS_2
Aircraft code =FM0850100 Speed = 350 kias Power =   60.0

Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	5000	20.0
5000	10000	50.0
10000	17041	30.0

MOA OPERATION DATA

MOA name = FALLS 1 MOA

Mission Name	Daily Day OPS	Daily Night OPS	Monthly Day OPS	Monthly Night OPS	Yearly Day OPS	Yearly Night OPS	Time On Range (minutes)
A10 VOLK FALLS	0.067	0.003	2.00	0.08	24.	1.	25.
B1VOLK FALLS	0.053	0.003	1.58	0.08	19.	1.	25.

```
      B2VOLK FALLS                                       0.053      0.003       1.58
 0.08        19.         1.         25.
      B52VOLK FALLS                                      0.053      0.003       1.58
 0.08        19.         1.         25.
      C130VOLK FALLS                                     0.331      0.017       9.92
 0.50       119.         6.         25.
      F15PW229VOLKFALLS                                  0.067      0.003       2.00
 0.08        24.         1.         25.
      F16GE100VOLKFALLS                                  4.222      0.222     126.67
 6.67      1520.        80.         25.
      F16PW220VOLKFALLS                                  1.558      0.083      46.75
 2.50       561.        30.         25.
      F16PW229VOLKFALLS                                  0.067      0.003       2.00
 0.08        24.         1.         25.
      F18E/FVOLKFALLS                                    0.067      0.003       2.00
 0.08        24.         1.         25.
      F35VOLKFALLS                                       0.067      0.003       2.00
 0.08        24.         1.         25.


     MOA name = FALLS 2 MOA
                                                               Daily
Monthly               Yearly
        Mission                                          Day        Night        Day
Night       Day       Night    Time On Range
         Name                                            OPS        OPS          OPS
 OPS        OPS        OPS       (minutes)
      A10 VOLK FALLS_2                                   0.067      0.003       2.00
 0.08        24.         1.         25.
      B1VOLK FALLS_2                                     0.053      0.003       1.58
 0.08        19.         1.         25.
      B2VOLK FALLS_2                                     0.053      0.003       1.58
 0.08        19.         1.         25.
      B52VOLK FALLS_2                                    0.053      0.003       1.58
 0.08        19.         1.         25.
      C130VOLK FALLS_2                                   0.331      0.017       9.92
 0.50       119.         6.         25.
      F15PW229VOLKFALLS_2                                0.067      0.003       2.00
 0.08        24.         1.         25.
      F16GE100VOLKFALLS_2                                4.222      0.222     126.67
 6.67      1520.        80.         25.
      F16PW220VOLKFALLS_2                                1.558      0.083      46.75
 2.50       561.        30.         25.
      F16PW229VOLKFALLS_2                                0.067      0.003       2.00
 0.08        24.         1.         25.
      F18E/FVOLKFALLS_2                                  0.067      0.003       2.00
 0.08        24.         1.         25.
      F35VOLKFALLS_2                                     0.067      0.003       2.00
 0.08        24.         1.         25.


     MOA name = VOLK EAST MOA
                                                               Daily
Monthly               Yearly
        Mission                                          Day        Night        Day
Night       Day       Night    Time On Range
         Name                                            OPS        OPS          OPS
 OPS        OPS        OPS       (minutes)
      A10 VOLK EAST                                      0.072      0.003       2.17
 0.08        26.         1.         23.
      B1VOLK EAST                                        0.058      0.003       1.75
 0.08        21.         1.         23.
      B2VOLK EAST                                        0.058      0.003       1.75
 0.08        21.         1.         23.
```

B52VOLK EAST	0.058	0.003	1.75	0.08	21.	1.	23.
C130 VOLK EAST	0.356	0.019	10.67	0.58	128.	7.	23.
F15PW229 VOLK EAST	0.072	0.003	2.17	0.08	26.	1.	23.
F16GE100 VOLK EAST	4.561	0.239	136.83	7.17	1642.	86.	23.
F16PW220 VOLK EAST	1.681	0.089	50.42	2.67	605.	32.	23.
F16PW229 VOLK EAST	0.072	0.003	2.17	0.08	26.	1.	23.
F18E/F VOLK EAST	0.072	0.003	2.17	0.08	26.	1.	23.
F35 VOLK EAST	0.072	0.003	2.17	0.08	26.	1.	23.

MOA name = VOLK SOUTH MOA

Mission Name	Daily Day OPS	Daily Night OPS	Monthly Day OPS	Monthly Night OPS	Yearly Day OPS	Yearly Night OPS	Time On Range (minutes)
A10 VOLK SOUTH	0.064	0.003	1.92	0.08	23.	1.	23.
B1VOLK SOUTH	0.050	0.003	1.50	0.08	18.	1.	23.
B2VOLK SOUTH	0.050	0.003	1.50	0.08	18.	1.	23.
B52VOLK SOUTH	0.050	0.003	1.50	0.08	18.	1.	23.
C130 VOLK SOUTH	0.317	0.017	9.50	0.50	114.	6.	23.
F15PW229 VOLK SOUTH	0.064	0.003	1.92	0.08	23.	1.	23.
F16GE100 VOLK SOUTH	4.056	0.214	121.67	6.42	1460.	77.	23.
F16PW220 VOLK SOUTH	1.494	0.078	44.83	2.33	538.	28.	23.
F16PW229 VOLK SOUTH	0.064	0.003	1.92	0.08	23.	1.	23.
F18E/F VOLK SOUTH	0.064	0.003	1.92	0.08	23.	1.	23.
F35 VOLK SOUTH	0.064	0.003	1.92	0.08	23.	1.	23.

MOA name = VOLK WEST MOA

Mission Name	Daily Day OPS	Daily Night OPS	Monthly Day OPS	Monthly Night OPS	Yearly Day OPS	Yearly Night OPS	Time On Range (minutes)
A10 VOLK WEST	0.072	0.003	2.17	0.08	26.	1.	23.
B1VOLK WEST	0.058	0.003	1.75	0.08	21.	1.	23.
B2VOLK WEST	0.058	0.003	1.75	0.08	21.	1.	23.
B52VOLK WEST	0.058	0.003	1.75	0.08	21.	1.	23.

```
     C130 VOLK WEST                                   0.356      0.019      10.67
0.58       128.        7.         23.
     F15PW229 VOLK WEST                               0.072      0.003       2.17
0.08        26.        1.         23.
     F16GE100 VOLK WEST                               4.561      0.239     136.83
7.17      1642.       86.         23.
     F16PW220 VOLK WEST                               1.681      0.089      50.42
2.67       605.       32.         23.
     F16PW229 VOLK WEST                               0.072      0.003       2.17
0.08        26.        1.         23.
     F18E/F VOLK WEST                                 0.072      0.003       2.17
0.08        26.        1.         23.
     F35 VOLK WEST                                    0.072      0.003       2.17
0.08        26.        1.         23.
```

***** MOA RANGE NOISEMAP *****
RESULTS

The noise metric is Ldnmr.

MOA RESULTS

MOA Name	MOA Area (sq statute miles)	Uniform Distributed Sound Level (dB)	Number of Daily Events Above SEL of 65.0 dB
FALLS 1 MOA	1101.4	51.1	0.0
FALLS 2 MOA	696.4	53.8	0.0
VOLK EAST MOA	2470.2	37.8	0.0
VOLK SOUTH MOA	679.9	53.8	0.0
VOLK WEST MOA	679.2	53.7	0.0

AVOIDANCE AREA RESULTS

Avoidance Area Name	Uniform Distributed Sound Level (dB)	Number of Daily Events Above SEL of 65.0 dB
BLK RIV FLS AIRPORT	48.4	22.2
BLOYER AIRPORT	35.0	4.9
MAUSTON NEW LISBON A	35.0	7.3
NECEDAH AIRPORT	50.7	45.1
NECEDAH NWR 2A	42.3	19.1
NECEDAH NWR 2B	46.6	25.2
NECEDAH NWR 3A	50.2	34.5
NECEDAH NWR 3B	51.7	44.3
NEILSVILLE AIRPORT	51.0	44.2

***** MOA RANGE NOISEMAP *****
RESULTS

SPECIFIC POINT RESULTS

Specific Point: 1650HWY10

Top 20 contributors to this level:

Airspace	Aircraft	Sound Level (dB)	HA(%)	Mission
FALLS 2 MOA	F-16C	43.3	0.7	F16GE100VOLKFALLS_2
FALLS 2 MOA	F-16C	35.4	0.2	F16PW220VOLKFALLS_2
FALLS 2 MOA	F-18E/F	< 35.0		F18E/FVOLKFALLS_2
FALLS 2 MOA	F-15E	< 35.0		F15PW229VOLKFALLS_2
FALLS 2 MOA	F-22	< 35.0		F35VOLKFALLS_2
FALLS 2 MOA	F-16C	< 35.0		F16PW229VOLKFALLS_2
FALLS 2 MOA	B-1	< 35.0		B1VOLK FALLS_2
FALLS 2 MOA	B-52G	< 35.0		B52VOLK FALLS_2
FALLS 2 MOA	A-10A	< 35.0		A10 VOLK FALLS_2
FALLS 2 MOA	C-130H&N&P	< 35.0		C130VOLK FALLS_2
FALLS 2 MOA	B-2A	< 35.0		B2VOLK FALLS_2
VOLK SOUTH MOA	F-16C	< 35.0		F16GE100 VOLK SOUTH
VOLK WEST MOA	F-16C	< 35.0		F16GE100 VOLK WEST
FALLS 1 MOA	F-16C	< 35.0		F16GE100VOLKFALLS
VOLK SOUTH MOA	F-16C	< 35.0		F16PW220 VOLK SOUTH
VOLK WEST MOA	F-16C	< 35.0		F16PW220 VOLK WEST
FALLS 1 MOA	F-16C	< 35.0		F16PW220VOLKFALLS
VOLK SOUTH MOA	F-18E/F	< 35.0		F18E/F VOLK SOUTH
VOLK WEST MOA	F-18E/F	< 35.0		F18E/F VOLK WEST
VOLK SOUTH MOA	F-15E	< 35.0		F15PW229 VOLK SOUTH
Total Level		44.5	0.8	

Specific Point: ARMENIA

Top 20 contributors to this level:

Airspace	Aircraft	Sound Level (dB)	HA(%)	Mission
VOLK SOUTH MOA	F-16C	41.7	0.5	F16GE100 VOLK SOUTH

```
    VOLK SOUTH MOA                                        F16PW220 VOLK SOUTH
       F-16C      < 35.0
    VOLK SOUTH MOA                                        F18E/F VOLK SOUTH
       F-18E/F    < 35.0
    VOLK SOUTH MOA                                        F15PW229 VOLK SOUTH
       F-15E      < 35.0
    VOLK SOUTH MOA                                        F35 VOLK SOUTH
       F-22       < 35.0
    VOLK SOUTH MOA                                        F16PW229 VOLK SOUTH
       F-16C      < 35.0
    VOLK SOUTH MOA                                        B1VOLK SOUTH
       B-1        < 35.0
    VOLK SOUTH MOA                                        B52VOLK SOUTH
       B-52G      < 35.0
    VOLK SOUTH MOA                                        A10 VOLK SOUTH
       A-10A      < 35.0
    VOLK SOUTH MOA                                        C130 VOLK SOUTH
       C-130H&N&P < 35.0
    VOLK SOUTH MOA                                        B2VOLK SOUTH
       B-2A       < 35.0
    FALLS 2 MOA                                           F16GE100VOLKFALLS_2
       F-16C      < 35.0
    VOLK WEST MOA                                         F16GE100 VOLK WEST
       F-16C      < 35.0
    FALLS 1 MOA                                           F16GE100VOLKFALLS
       F-16C      < 35.0
    FALLS 2 MOA                                           F16PW220VOLKFALLS_2
       F-16C      < 35.0
    VOLK WEST MOA                                         F16PW220 VOLK WEST
       F-16C      < 35.0
    FALLS 1 MOA                                           F16PW220VOLKFALLS
       F-16C      < 35.0
    FALLS 2 MOA                                           F18E/FVOLKFALLS_2
       F-18E/F    < 35.0
    VOLK WEST MOA                                         F18E/F VOLK WEST
       F-18E/F    < 35.0
    FALLS 2 MOA                                           F15PW229VOLKFALLS_2
       F-15E      < 35.0


Total Level ........     42.9        0.6



    Specific Point:  BABCOCK
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                      >  Mission
       Aircraft     (dB)       HA(%)
    VOLK WEST MOA                                         F16GE100 VOLK WEST
       F-16C        52.5        2.4
    VOLK WEST MOA                                         F16PW220 VOLK WEST
       F-16C        44.5        0.8
    VOLK WEST MOA                                         F18E/F VOLK WEST
       F-18E/F      40.8        0.5
    VOLK WEST MOA                                         F15PW229 VOLK WEST
       F-15E        39.4        0.4
    VOLK WEST MOA                                         F35 VOLK WEST
       F-22       < 35.0
    VOLK WEST MOA                                         F16PW229 VOLK WEST
       F-16C      < 35.0
    VOLK WEST MOA                                         B1VOLK WEST
```

```
   B-1        < 35.0
VOLK WEST MOA                                  B52VOLK WEST
   B-52G      < 35.0
VOLK WEST MOA                                  A10 VOLK WEST
   A-10A      < 35.0
VOLK WEST MOA                                  C130 VOLK WEST
   C-130H&N&P < 35.0
VOLK WEST MOA                                  B2VOLK WEST
   B-2A       < 35.0
VOLK SOUTH MOA                                 F16GE100 VOLK SOUTH
   F-16C      < 35.0
FALLS 2 MOA                                    F16GE100VOLKFALLS_2
   F-16C      < 35.0
FALLS 1 MOA                                    F16GE100VOLKFALLS
   F-16C      < 35.0
FALLS 2 MOA                                    F16PW220VOLKFALLS_2
   F-16C      < 35.0
VOLK SOUTH MOA                                 F16PW220 VOLK SOUTH
   F-16C      < 35.0
FALLS 1 MOA                                    F16PW220VOLKFALLS
   F-16C      < 35.0
VOLK SOUTH MOA                                 F18E/F VOLK SOUTH
   F-18E/F    < 35.0
FALLS 2 MOA                                    F18E/FVOLKFALLS_2
   F-18E/F    < 35.0
VOLK SOUTH MOA                                 F15PW229 VOLK SOUTH
   F-15E      < 35.0


Total Level ........     53.7        2.8



    Specific Point:  CASTLE ROCK LOOK
    Top 20 contributors to this level:


             Sound Level
<                 Airspace                  >  Mission
   Aircraft     (dB)       HA(%)
VOLK SOUTH MOA                                 F16GE100 VOLK SOUTH
   F-16C        51.2        2.0
VOLK SOUTH MOA                                 F16PW220 VOLK SOUTH
   F-16C        43.1        0.6
VOLK SOUTH MOA                                 F18E/F VOLK SOUTH
   F-18E/F      39.6        0.4
VOLK SOUTH MOA                                 F15PW229 VOLK SOUTH
   F-15E        38.2        0.3
VOLK SOUTH MOA                                 F35 VOLK SOUTH
   F-22       < 35.0
VOLK SOUTH MOA                                 F16PW229 VOLK SOUTH
   F-16C      < 35.0
VOLK SOUTH MOA                                 B1VOLK SOUTH
   B-1        < 35.0
VOLK SOUTH MOA                                 B52VOLK SOUTH
   B-52G      < 35.0
VOLK SOUTH MOA                                 A10 VOLK SOUTH
   A-10A      < 35.0
VOLK SOUTH MOA                                 C130 VOLK SOUTH
   C-130H&N&P < 35.0
VOLK SOUTH MOA                                 B2VOLK SOUTH
   B-2A       < 35.0
FALLS 2 MOA                                    F16GE100VOLKFALLS_2
   F-16C      < 35.0
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    VOLK WEST MOA                                   F16GE100 VOLK WEST
       F-16C      < 35.0
    FALLS 1 MOA                                     F16GE100VOLKFALLS
       F-16C      < 35.0
    FALLS 2 MOA                                     F16PW220VOLKFALLS_2
       F-16C      < 35.0
    VOLK WEST MOA                                   F16PW220 VOLK WEST
       F-16C      < 35.0
    FALLS 1 MOA                                     F16PW220VOLKFALLS
       F-16C      < 35.0
    FALLS 2 MOA                                     F18E/FVOLKFALLS_2
       F-18E/F    < 35.0
    VOLK WEST MOA                                   F18E/F VOLK WEST
       F-18E/F    < 35.0
    FALLS 2 MOA                                     F15PW229VOLKFALLS_2
       F-15E      < 35.0

Total Level ........     52.4        2.3


    Specific Point:  COONFORK
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                   >  Mission
       Aircraft     (dB)       HA(%)
    FALLS 2 MOA                                     F16GE100VOLKFALLS_2
       F-16C        41.5        0.5
    FALLS 2 MOA                                     F16PW220VOLKFALLS_2
       F-16C      < 35.0
    FALLS 2 MOA                                     F18E/FVOLKFALLS_2
       F-18E/F    < 35.0
    FALLS 2 MOA                                     F15PW229VOLKFALLS_2
       F-15E      < 35.0
    FALLS 2 MOA                                     F35VOLKFALLS_2
       F-22       < 35.0
    FALLS 2 MOA                                     F16PW229VOLKFALLS_2
       F-16C      < 35.0
    FALLS 2 MOA                                     B1VOLK FALLS_2
       B-1        < 35.0
    FALLS 2 MOA                                     B52VOLK FALLS_2
       B-52G      < 35.0
    FALLS 2 MOA                                     A10 VOLK FALLS_2
       A-10A      < 35.0
    FALLS 2 MOA                                     C130VOLK FALLS_2
       C-130H&N&P < 35.0
    FALLS 2 MOA                                     B2VOLK FALLS_2
       B-2A       < 35.0
    VOLK SOUTH MOA                                  F16GE100 VOLK SOUTH
       F-16C      < 35.0
    VOLK WEST MOA                                   F16GE100 VOLK WEST
       F-16C      < 35.0
    FALLS 1 MOA                                     F16GE100VOLKFALLS
       F-16C      < 35.0
    VOLK SOUTH MOA                                  F16PW220 VOLK SOUTH
       F-16C      < 35.0
    VOLK WEST MOA                                   F16PW220 VOLK WEST
       F-16C      < 35.0
    FALLS 1 MOA                                     F16PW220VOLKFALLS
       F-16C      < 35.0
    VOLK SOUTH MOA                                  F18E/F VOLK SOUTH
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   F-18E/F    < 35.0
VOLK WEST MOA                                   F18E/F VOLK WEST
   F-18E/F    < 35.0
VOLK SOUTH MOA                                  F15PW229 VOLK SOUTH
   F-15E      < 35.0


Total Level ........     42.7        0.6



Specific Point:  CRANMOOR
Top 20 contributors to this level:


             Sound Level
<                 Airspace                   >  Mission
   Aircraft     (dB)       HA(%)
VOLK WEST MOA                                   F16GE100 VOLK WEST
   F-16C        51.0        1.9
VOLK WEST MOA                                   F16PW220 VOLK WEST
   F-16C        43.0        0.6
VOLK WEST MOA                                   F18E/F VOLK WEST
   F-18E/F      39.3        0.4
VOLK WEST MOA                                   F15PW229 VOLK WEST
   F-15E        37.9        0.3
VOLK WEST MOA                                   F35 VOLK WEST
   F-22       < 35.0
VOLK WEST MOA                                   F16PW229 VOLK WEST
   F-16C      < 35.0
VOLK WEST MOA                                   B1VOLK WEST
   B-1        < 35.0
VOLK WEST MOA                                   B52VOLK WEST
   B-52G      < 35.0
VOLK WEST MOA                                   A10 VOLK WEST
   A-10A      < 35.0
VOLK WEST MOA                                   C130 VOLK WEST
   C-130H&N&P < 35.0
VOLK WEST MOA                                   B2VOLK WEST
   B-2A       < 35.0
VOLK SOUTH MOA                                  F16GE100 VOLK SOUTH
   F-16C      < 35.0
FALLS 2 MOA                                     F16GE100VOLKFALLS_2
   F-16C      < 35.0
FALLS 1 MOA                                     F16GE100VOLKFALLS
   F-16C      < 35.0
FALLS 2 MOA                                     F16PW220VOLKFALLS_2
   F-16C      < 35.0
VOLK SOUTH MOA                                  F16PW220 VOLK SOUTH
   F-16C      < 35.0
FALLS 1 MOA                                     F16PW220VOLKFALLS
   F-16C      < 35.0
VOLK SOUTH MOA                                  F18E/F VOLK SOUTH
   F-18E/F    < 35.0
FALLS 2 MOA                                     F18E/FVOLKFALLS_2
   F-18E/F    < 35.0
VOLK SOUTH MOA                                  F15PW229 VOLK SOUTH
   F-15E      < 35.0


Total Level ........     52.2        2.2
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Specific Point: CUTLER
Top 20 contributors to this level:

Airspace	Aircraft	Sound Level (dB)	HA(%)	Mission
VOLK SOUTH MOA	F-16C	52.6	2.4	F16GE100 VOLK SOUTH
VOLK SOUTH MOA	F-16C	44.5	0.8	F16PW220 VOLK SOUTH
VOLK SOUTH MOA	F-18E/F	41.0	0.5	F18E/F VOLK SOUTH
VOLK SOUTH MOA	F-15E	39.6	0.4	F15PW229 VOLK SOUTH
VOLK SOUTH MOA	F-22	< 35.0		F35 VOLK SOUTH
VOLK SOUTH MOA	F-16C	< 35.0		F16PW229 VOLK SOUTH
VOLK SOUTH MOA	B-1	< 35.0		B1VOLK SOUTH
VOLK SOUTH MOA	B-52G	< 35.0		B52VOLK SOUTH
VOLK SOUTH MOA	A-10A	< 35.0		A10 VOLK SOUTH
VOLK SOUTH MOA	C-130H&N&P	< 35.0		C130 VOLK SOUTH
VOLK SOUTH MOA	B-2A	< 35.0		B2VOLK SOUTH
FALLS 2 MOA	F-16C	< 35.0		F16GE100VOLKFALLS_2
VOLK WEST MOA	F-16C	< 35.0		F16GE100 VOLK WEST
FALLS 1 MOA	F-16C	< 35.0		F16GE100VOLKFALLS
FALLS 2 MOA	F-16C	< 35.0		F16PW220VOLKFALLS_2
VOLK WEST MOA	F-16C	< 35.0		F16PW220 VOLK WEST
FALLS 1 MOA	F-16C	< 35.0		F16PW220VOLKFALLS
FALLS 2 MOA	F-18E/F	< 35.0		F18E/FVOLKFALLS_2
VOLK WEST MOA	F-18E/F	< 35.0		F18E/F VOLK WEST
FALLS 2 MOA	F-15E	< 35.0		F15PW229VOLKFALLS_2

Total Level 53.8 2.8

Specific Point: DEXTERVILLE
Top 20 contributors to this level:

Airspace	Aircraft	Sound Level (dB)	HA(%)	Mission
VOLK WEST MOA	F-16C	52.3	2.3	F16GE100 VOLK WEST
VOLK WEST MOA	F-16C	44.2	0.7	F16PW220 VOLK WEST

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    VOLK WEST MOA                                   F18E/F VOLK WEST
       F-18E/F      40.6        0.4
    VOLK WEST MOA                                   F15PW229 VOLK WEST
       F-15E        39.2        0.4
    VOLK WEST MOA                                   F35 VOLK WEST
       F-22       < 35.0
    VOLK WEST MOA                                   F16PW229 VOLK WEST
       F-16C      < 35.0
    VOLK WEST MOA                                   B1VOLK WEST
       B-1        < 35.0
    VOLK WEST MOA                                   B52VOLK WEST
       B-52G      < 35.0
    VOLK WEST MOA                                   A10 VOLK WEST
       A-10A      < 35.0
    VOLK WEST MOA                                   C130 VOLK WEST
       C-130H&N&P < 35.0
    VOLK WEST MOA                                   B2VOLK WEST
       B-2A       < 35.0
    VOLK SOUTH MOA                                  F16GE100 VOLK SOUTH
       F-16C      < 35.0
    FALLS 2 MOA                                     F16GE100VOLKFALLS_2
       F-16C      < 35.0
    FALLS 1 MOA                                     F16GE100VOLKFALLS
       F-16C      < 35.0
    FALLS 2 MOA                                     F16PW220VOLKFALLS_2
       F-16C      < 35.0
    VOLK SOUTH MOA                                  F16PW220 VOLK SOUTH
       F-16C      < 35.0
    FALLS 1 MOA                                     F16PW220VOLKFALLS
       F-16C      < 35.0
    VOLK SOUTH MOA                                  F18E/F VOLK SOUTH
       F-18E/F    < 35.0
    FALLS 2 MOA                                     F18E/FVOLKFALLS_2
       F-18E/F    < 35.0
    VOLK SOUTH MOA                                  F15PW229 VOLK SOUTH
       F-15E      < 35.0


Total Level ........     53.4        2.7



    Specific Point:  DZR6904
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                   >  Mission
       Aircraft     (dB)       HA(%)
    VOLK WEST MOA                                   F16GE100 VOLK WEST
       F-16C        51.6        2.1
    VOLK WEST MOA                                   F16PW220 VOLK WEST
       F-16C        43.5        0.7
    VOLK WEST MOA                                   F18E/F VOLK WEST
       F-18E/F      39.9        0.4
    VOLK WEST MOA                                   F15PW229 VOLK WEST
       F-15E        38.5        0.3
    VOLK WEST MOA                                   F35 VOLK WEST
       F-22       < 35.0
    VOLK WEST MOA                                   F16PW229 VOLK WEST
       F-16C      < 35.0
    VOLK WEST MOA                                   B1VOLK WEST
       B-1        < 35.0
    VOLK WEST MOA                                   B52VOLK WEST
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   B-52G      < 35.0
VOLK WEST MOA                                   A10 VOLK WEST
   A-10A      < 35.0
VOLK WEST MOA                                   C130 VOLK WEST
   C-130H&N&P < 35.0
VOLK WEST MOA                                   B2VOLK WEST
   B-2A       < 35.0
VOLK SOUTH MOA                                  F16GE100 VOLK SOUTH
   F-16C      < 35.0
FALLS 2 MOA                                     F16GE100VOLKFALLS_2
   F-16C      < 35.0
FALLS 1 MOA                                     F16GE100VOLKFALLS
   F-16C      < 35.0
FALLS 2 MOA                                     F16PW220VOLKFALLS_2
   F-16C      < 35.0
VOLK SOUTH MOA                                  F16PW220 VOLK SOUTH
   F-16C      < 35.0
FALLS 1 MOA                                     F16PW220VOLKFALLS
   F-16C      < 35.0
VOLK SOUTH MOA                                  F18E/F VOLK SOUTH
   F-18E/F    < 35.0
FALLS 2 MOA                                     F18E/FVOLKFALLS_2
   F-18E/F    < 35.0
VOLK SOUTH MOA                                  F15PW229 VOLK SOUTH
   F-15E      < 35.0

Total Level ........     52.7        2.4


    Specific Point:  EASTR6904
    Top 20 contributors to this level:


             Sound Level
<                 Airspace                  >   Mission
   Aircraft     (dB)       HA(%)
VOLK WEST MOA                                   F16GE100 VOLK WEST
   F-16C        46.5        1.0
VOLK WEST MOA                                   F16PW220 VOLK WEST
   F-16C        38.5        0.3
VOLK WEST MOA                                   F18E/F VOLK WEST
   F-18E/F    < 35.0
VOLK WEST MOA                                   F15PW229 VOLK WEST
   F-15E      < 35.0
VOLK WEST MOA                                   F35 VOLK WEST
   F-22       < 35.0
VOLK WEST MOA                                   F16PW229 VOLK WEST
   F-16C      < 35.0
VOLK WEST MOA                                   B1VOLK WEST
   B-1        < 35.0
VOLK WEST MOA                                   B52VOLK WEST
   B-52G      < 35.0
VOLK WEST MOA                                   A10 VOLK WEST
   A-10A      < 35.0
VOLK WEST MOA                                   C130 VOLK WEST
   C-130H&N&P < 35.0
VOLK WEST MOA                                   B2VOLK WEST
   B-2A       < 35.0
VOLK SOUTH MOA                                  F16GE100 VOLK SOUTH
   F-16C      < 35.0
FALLS 2 MOA                                     F16GE100VOLKFALLS_2
   F-16C      < 35.0
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FALLS 1 MOA			F16GE100VOLKFALLS
F-16C	< 35.0		
FALLS 2 MOA			F16PW220VOLKFALLS_2
F-16C	< 35.0		
VOLK SOUTH MOA			F16PW220 VOLK SOUTH
F-16C	< 35.0		
FALLS 1 MOA			F16PW220VOLKFALLS
F-16C	< 35.0		
VOLK SOUTH MOA			F18E/F VOLK SOUTH
F-18E/F	< 35.0		
FALLS 2 MOA			F18E/FVOLKFALLS_2
F-18E/F	< 35.0		
VOLK SOUTH MOA			F15PW229 VOLK SOUTH
F-15E	< 35.0		

Total Level 47.7 1.2

Specific Point: FINLEY
Top 20 contributors to this level:

< Airspace > Aircraft	Sound Level (dB)	HA(%)	Mission
VOLK WEST MOA			F16GE100 VOLK WEST
F-16C	48.4	1.3	
VOLK WEST MOA			F16PW220 VOLK WEST
F-16C	40.4	0.4	
VOLK WEST MOA			F18E/F VOLK WEST
F-18E/F	36.7	0.3	
VOLK WEST MOA			F15PW229 VOLK WEST
F-15E	35.4	0.2	
VOLK WEST MOA			F35 VOLK WEST
F-22	< 35.0		
VOLK WEST MOA			F16PW229 VOLK WEST
F-16C	< 35.0		
VOLK WEST MOA			B1VOLK WEST
B-1	< 35.0		
VOLK WEST MOA			B52VOLK WEST
B-52G	< 35.0		
VOLK WEST MOA			A10 VOLK WEST
A-10A	< 35.0		
VOLK WEST MOA			C130 VOLK WEST
C-130H&N&P	< 35.0		
VOLK WEST MOA			B2VOLK WEST
B-2A	< 35.0		
VOLK SOUTH MOA			F16GE100 VOLK SOUTH
F-16C	< 35.0		
FALLS 2 MOA			F16GE100VOLKFALLS_2
F-16C	< 35.0		
FALLS 1 MOA			F16GE100VOLKFALLS
F-16C	< 35.0		
FALLS 2 MOA			F16PW220VOLKFALLS_2
F-16C	< 35.0		
VOLK SOUTH MOA			F16PW220 VOLK SOUTH
F-16C	< 35.0		
FALLS 1 MOA			F16PW220VOLKFALLS
F-16C	< 35.0		
VOLK SOUTH MOA			F18E/F VOLK SOUTH
F-18E/F	< 35.0		
FALLS 2 MOA			F18E/FVOLKFALLS_2

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   F-18E/F    < 35.0
VOLK SOUTH MOA                              F15PW229 VOLK SOUTH
   F-15E      < 35.0


Total Level ........     49.5       1.6



Specific Point:  GRAVPIT1
Top 20 contributors to this level:


             Sound Level
<                 Airspace                 >  Mission
   Aircraft     (dB)      HA(%)
VOLK WEST MOA                               F16GE100 VOLK WEST
   F-16C        42.1        0.6
VOLK WEST MOA                               F16PW220 VOLK WEST
   F-16C      < 35.0
VOLK WEST MOA                               F18E/F VOLK WEST
   F-18E/F    < 35.0
VOLK WEST MOA                               F15PW229 VOLK WEST
   F-15E      < 35.0
VOLK WEST MOA                               F35 VOLK WEST
   F-22       < 35.0
VOLK WEST MOA                               F16PW229 VOLK WEST
   F-16C      < 35.0
VOLK WEST MOA                               B1VOLK WEST
   B-1        < 35.0
VOLK WEST MOA                               B52VOLK WEST
   B-52G      < 35.0
VOLK WEST MOA                               A10 VOLK WEST
   A-10A      < 35.0
VOLK WEST MOA                               C130 VOLK WEST
   C-130H&N&P < 35.0
VOLK WEST MOA                               B2VOLK WEST
   B-2A       < 35.0
VOLK SOUTH MOA                              F16GE100 VOLK SOUTH
   F-16C      < 35.0
FALLS 2 MOA                                 F16GE100VOLKFALLS_2
   F-16C      < 35.0
FALLS 1 MOA                                 F16GE100VOLKFALLS
   F-16C      < 35.0
FALLS 2 MOA                                 F16PW220VOLKFALLS_2
   F-16C      < 35.0
VOLK SOUTH MOA                              F16PW220 VOLK SOUTH
   F-16C      < 35.0
FALLS 1 MOA                                 F16PW220VOLKFALLS
   F-16C      < 35.0
VOLK SOUTH MOA                              F18E/F VOLK SOUTH
   F-18E/F    < 35.0
FALLS 2 MOA                                 F18E/FVOLKFALLS_2
   F-18E/F    < 35.0
VOLK SOUTH MOA                              F15PW229 VOLK SOUTH
   F-15E      < 35.0


Total Level ........     43.3       0.7



Specific Point:  GRAVPIT2
Top 20 contributors to this level:
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< Airspace / Aircraft	Sound Level (dB)	HA(%)	> Mission
FALLS 1 MOA			F16GE100VOLKFALLS
F-16C	49.9	1.6	
FALLS 1 MOA			F16PW220VOLKFALLS
F-16C	41.9	0.5	
FALLS 1 MOA			F18E/FVOLKFALLS
F-18E/F	38.3	0.3	
FALLS 1 MOA			F15PW229VOLKFALLS
F-15E	36.9	0.3	
FALLS 1 MOA			F35VOLKFALLS
F-22	< 35.0		
FALLS 1 MOA			F16PW229VOLKFALLS
F-16C	< 35.0		
FALLS 1 MOA			B1VOLK FALLS
B-1	< 35.0		
FALLS 1 MOA			B52VOLK FALLS
B-52G	< 35.0		
FALLS 1 MOA			A10 VOLK FALLS
A-10A	< 35.0		
FALLS 1 MOA			C130VOLK FALLS
C-130H&N&P	< 35.0		
FALLS 1 MOA			B2VOLK FALLS
B-2A	< 35.0		
VOLK SOUTH MOA			F16GE100 VOLK SOUTH
F-16C	< 35.0		
FALLS 2 MOA			F16GE100VOLKFALLS_2
F-16C	< 35.0		
VOLK WEST MOA			F16GE100 VOLK WEST
F-16C	< 35.0		
FALLS 2 MOA			F16PW220VOLKFALLS_2
F-16C	< 35.0		
VOLK SOUTH MOA			F16PW220 VOLK SOUTH
F-16C	< 35.0		
VOLK WEST MOA			F16PW220 VOLK WEST
F-16C	< 35.0		
VOLK SOUTH MOA			F18E/F VOLK SOUTH
F-18E/F	< 35.0		
FALLS 2 MOA			F18E/FVOLKFALLS_2
F-18E/F	< 35.0		
VOLK WEST MOA			F18E/F VOLK WEST
F-18E/F	< 35.0		

Total Level 51.1 1.9

Specific Point: GREENWOOD
Top 20 contributors to this level:

< Airspace / Aircraft	Sound Level (dB)	HA(%)	> Mission
VOLK WEST MOA			F16GE100 VOLK WEST
F-16C	47.9	1.2	
VOLK WEST MOA			F16PW220 VOLK WEST
F-16C	39.9	0.4	
VOLK WEST MOA			F18E/F VOLK WEST
F-18E/F	36.2	0.2	

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    VOLK WEST MOA                                         F15PW229 VOLK WEST
       F-15E       < 35.0
    VOLK WEST MOA                                         F35 VOLK WEST
       F-22        < 35.0
    VOLK WEST MOA                                         F16PW229 VOLK WEST
       F-16C       < 35.0
    VOLK WEST MOA                                         B1VOLK WEST
       B-1         < 35.0
    VOLK WEST MOA                                         B52VOLK WEST
       B-52G       < 35.0
    VOLK WEST MOA                                         A10 VOLK WEST
       A-10A       < 35.0
    VOLK WEST MOA                                         C130 VOLK WEST
       C-130H&N&P  < 35.0
    VOLK WEST MOA                                         B2VOLK WEST
       B-2A        < 35.0
    VOLK SOUTH MOA                                        F16GE100 VOLK SOUTH
       F-16C       < 35.0
    FALLS 2 MOA                                           F16GE100VOLKFALLS_2
       F-16C       < 35.0
    FALLS 1 MOA                                           F16GE100VOLKFALLS
       F-16C       < 35.0
    FALLS 2 MOA                                           F16PW220VOLKFALLS_2
       F-16C       < 35.0
    VOLK SOUTH MOA                                        F16PW220 VOLK SOUTH
       F-16C       < 35.0
    FALLS 1 MOA                                           F16PW220VOLKFALLS
       F-16C       < 35.0
    VOLK SOUTH MOA                                        F18E/F VOLK SOUTH
       F-18E/F     < 35.0
    FALLS 2 MOA                                           F18E/FVOLKFALLS_2
       F-18E/F     < 35.0
    VOLK SOUTH MOA                                        F15PW229 VOLK SOUTH
       F-15E       < 35.0

Total Level ........     49.0        1.5


    Specific Point:  HWY173
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                         >  Mission
       Aircraft      (dB)       HA(%)
    VOLK WEST MOA                                         F16GE100 VOLK WEST
       F-16C         47.8        1.2
    VOLK WEST MOA                                         F16PW220 VOLK WEST
       F-16C         39.8        0.4
    VOLK WEST MOA                                         F18E/F VOLK WEST
       F-18E/F       36.1        0.2
    VOLK WEST MOA                                         F15PW229 VOLK WEST
       F-15E       < 35.0
    VOLK WEST MOA                                         F35 VOLK WEST
       F-22        < 35.0
    VOLK WEST MOA                                         F16PW229 VOLK WEST
       F-16C       < 35.0
    VOLK WEST MOA                                         B1VOLK WEST
       B-1         < 35.0
    VOLK WEST MOA                                         B52VOLK WEST
       B-52G       < 35.0
    VOLK WEST MOA                                         A10 VOLK WEST
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   A-10A      < 35.0
VOLK WEST MOA                                  C130 VOLK WEST
   C-130H&N&P < 35.0
VOLK WEST MOA                                  B2VOLK WEST
   B-2A       < 35.0
VOLK SOUTH MOA                                 F16GE100 VOLK SOUTH
   F-16C      < 35.0
FALLS 2 MOA                                    F16GE100VOLKFALLS_2
   F-16C      < 35.0
FALLS 1 MOA                                    F16GE100VOLKFALLS
   F-16C      < 35.0
FALLS 2 MOA                                    F16PW220VOLKFALLS_2
   F-16C      < 35.0
VOLK SOUTH MOA                                 F16PW220 VOLK SOUTH
   F-16C      < 35.0
FALLS 1 MOA                                    F16PW220VOLKFALLS
   F-16C      < 35.0
VOLK SOUTH MOA                                 F18E/F VOLK SOUTH
   F-18E/F    < 35.0
FALLS 2 MOA                                    F18E/FVOLKFALLS_2
   F-18E/F    < 35.0
VOLK SOUTH MOA                                 F15PW229 VOLK SOUTH
   F-15E      < 35.0

Total Level ........     49.0        1.4


    Specific Point:  LKARBUTUS
    Top 20 contributors to this level:


             Sound Level
<                 Airspace                 >   Mission
   Aircraft     (dB)       HA(%)
FALLS 1 MOA                                    F16GE100VOLKFALLS
   F-16C        49.5        1.5
FALLS 1 MOA                                    F16PW220VOLKFALLS
   F-16C        41.5        0.5
FALLS 1 MOA                                    F18E/FVOLKFALLS
   F-18E/F      37.9        0.3
FALLS 1 MOA                                    F15PW229VOLKFALLS
   F-15E        36.5        0.2
FALLS 1 MOA                                    F35VOLKFALLS
   F-22       < 35.0
FALLS 1 MOA                                    F16PW229VOLKFALLS
   F-16C      < 35.0
FALLS 1 MOA                                    B1VOLK FALLS
   B-1        < 35.0
FALLS 1 MOA                                    B52VOLK FALLS
   B-52G      < 35.0
FALLS 1 MOA                                    A10 VOLK FALLS
   A-10A      < 35.0
FALLS 1 MOA                                    C130VOLK FALLS
   C-130H&N&P < 35.0
FALLS 1 MOA                                    B2VOLK FALLS
   B-2A       < 35.0
VOLK SOUTH MOA                                 F16GE100 VOLK SOUTH
   F-16C      < 35.0
FALLS 2 MOA                                    F16GE100VOLKFALLS_2
   F-16C      < 35.0
VOLK WEST MOA                                  F16GE100 VOLK WEST
   F-16C      < 35.0
```

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    FALLS 2 MOA                                          F16PW220VOLKFALLS_2
       F-16C      < 35.0
    VOLK SOUTH MOA                                       F16PW220 VOLK SOUTH
       F-16C      < 35.0
    VOLK WEST MOA                                        F16PW220 VOLK WEST
       F-16C      < 35.0
    VOLK SOUTH MOA                                       F18E/F VOLK SOUTH
       F-18E/F    < 35.0
    FALLS 2 MOA                                          F18E/FVOLKFALLS_2
       F-18E/F    < 35.0
    VOLK WEST MOA                                        F18E/F VOLK WEST
       F-18E/F    < 35.0


Total Level ........     50.6        1.8



    Specific Point:  MERRILLAN
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                      >  Mission
       Aircraft     (dB)       HA(%)
    FALLS 1 MOA                                        F16GE100VOLKFALLS
       F-16C        49.9        1.6
    FALLS 1 MOA                                        F16PW220VOLKFALLS
       F-16C        41.9        0.5
    FALLS 1 MOA                                        F18E/FVOLKFALLS
       F-18E/F      38.3        0.3
    FALLS 1 MOA                                        F15PW229VOLKFALLS
       F-15E        36.9        0.3
    FALLS 1 MOA                                        F35VOLKFALLS
       F-22       < 35.0
    FALLS 1 MOA                                        F16PW229VOLKFALLS
       F-16C      < 35.0
    FALLS 1 MOA                                        B1VOLK FALLS
       B-1        < 35.0
    FALLS 1 MOA                                        B52VOLK FALLS
       B-52G      < 35.0
    FALLS 1 MOA                                        A10 VOLK FALLS
       A-10A      < 35.0
    FALLS 1 MOA                                        C130VOLK FALLS
       C-130H&N&P < 35.0
    FALLS 1 MOA                                        B2VOLK FALLS
       B-2A       < 35.0
    VOLK SOUTH MOA                                     F16GE100 VOLK SOUTH
       F-16C      < 35.0
    FALLS 2 MOA                                        F16GE100VOLKFALLS_2
       F-16C      < 35.0
    VOLK WEST MOA                                      F16GE100 VOLK WEST
       F-16C      < 35.0
    FALLS 2 MOA                                        F16PW220VOLKFALLS_2
       F-16C      < 35.0
    VOLK SOUTH MOA                                     F16PW220 VOLK SOUTH
       F-16C      < 35.0
    VOLK WEST MOA                                      F16PW220 VOLK WEST
       F-16C      < 35.0
    VOLK SOUTH MOA                                     F18E/F VOLK SOUTH
       F-18E/F    < 35.0
    FALLS 2 MOA                                        F18E/FVOLKFALLS_2
       F-18E/F    < 35.0
    VOLK WEST MOA                                      F18E/F VOLK WEST
```

Airspace / Aircraft	Sound Level (dB)	HA(%)	Mission
F-18E/F	< 35.0		

Total Level 51.1 1.9

Specific Point: MIDR6904
Top 20 contributors to this level:

< Airspace / Aircraft	Sound Level (dB)	HA(%)	> Mission
VOLK WEST MOA			F16GE100 VOLK WEST
F-16C	51.0	1.9	
VOLK WEST MOA			F16PW220 VOLK WEST
F-16C	43.0	0.6	
VOLK WEST MOA			F18E/F VOLK WEST
F-18E/F	39.3	0.4	
VOLK WEST MOA			F15PW229 VOLK WEST
F-15E	37.9	0.3	
VOLK WEST MOA			F35 VOLK WEST
F-22	< 35.0		
VOLK WEST MOA			F16PW229 VOLK WEST
F-16C	< 35.0		
VOLK WEST MOA			B1VOLK WEST
B-1	< 35.0		
VOLK WEST MOA			B52VOLK WEST
B-52G	< 35.0		
VOLK WEST MOA			A10 VOLK WEST
A-10A	< 35.0		
VOLK WEST MOA			C130 VOLK WEST
C-130H&N&P	< 35.0		
VOLK WEST MOA			B2VOLK WEST
B-2A	< 35.0		
VOLK SOUTH MOA			F16GE100 VOLK SOUTH
F-16C	< 35.0		
FALLS 2 MOA			F16GE100VOLKFALLS_2
F-16C	< 35.0		
FALLS 1 MOA			F16GE100VOLKFALLS
F-16C	< 35.0		
FALLS 2 MOA			F16PW220VOLKFALLS_2
F-16C	< 35.0		
VOLK SOUTH MOA			F16PW220 VOLK SOUTH
F-16C	< 35.0		
FALLS 1 MOA			F16PW220VOLKFALLS
F-16C	< 35.0		
VOLK SOUTH MOA			F18E/F VOLK SOUTH
F-18E/F	< 35.0		
FALLS 2 MOA			F18E/FVOLKFALLS_2
F-18E/F	< 35.0		
VOLK SOUTH MOA			F15PW229 VOLK SOUTH
F-15E	< 35.0		

Total Level 52.1 2.2

Specific Point: NWR6904
Top 20 contributors to this level:

< Airspace >	Aircraft	Sound Level (dB)	HA(%)	Mission
VOLK WEST MOA	F-16C	51.9	2.2	F16GE100 VOLK WEST
VOLK WEST MOA	F-16C	43.9	0.7	F16PW220 VOLK WEST
VOLK WEST MOA	F-18E/F	40.2	0.4	F18E/F VOLK WEST
VOLK WEST MOA	F-15E	38.8	0.3	F15PW229 VOLK WEST
VOLK WEST MOA	F-22	< 35.0		F35 VOLK WEST
VOLK WEST MOA	F-16C	< 35.0		F16PW229 VOLK WEST
VOLK WEST MOA	B-1	< 35.0		B1VOLK WEST
VOLK WEST MOA	B-52G	< 35.0		B52VOLK WEST
VOLK WEST MOA	A-10A	< 35.0		A10 VOLK WEST
VOLK WEST MOA	C-130H&N&P	< 35.0		C130 VOLK WEST
VOLK WEST MOA	B-2A	< 35.0		B2VOLK WEST
VOLK SOUTH MOA	F-16C	< 35.0		F16GE100 VOLK SOUTH
FALLS 2 MOA	F-16C	< 35.0		F16GE100VOLKFALLS_2
FALLS 1 MOA	F-16C	< 35.0		F16GE100VOLKFALLS
FALLS 2 MOA	F-16C	< 35.0		F16PW220VOLKFALLS_2
VOLK SOUTH MOA	F-16C	< 35.0		F16PW220 VOLK SOUTH
FALLS 1 MOA	F-16C	< 35.0		F16PW220VOLKFALLS
VOLK SOUTH MOA	F-18E/F	< 35.0		F18E/F VOLK SOUTH
FALLS 2 MOA	F-18E/F	< 35.0		F18E/FVOLKFALLS_2
VOLK SOUTH MOA	F-15E	< 35.0		F15PW229 VOLK SOUTH

Total Level 53.1 2.5

Specific Point: PITTSVILLE
Top 20 contributors to this level:

< Airspace >	Aircraft	Sound Level (dB)	HA(%)	Mission
VOLK WEST MOA	F-16C	44.1	0.7	F16GE100 VOLK WEST
VOLK WEST MOA	F-16C	36.1	0.2	F16PW220 VOLK WEST
VOLK WEST MOA	F-18E/F	< 35.0		F18E/F VOLK WEST
VOLK WEST MOA	F-15E	< 35.0		F15PW229 VOLK WEST

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    VOLK WEST MOA                                    F35 VOLK WEST
       F-22       < 35.0
    VOLK WEST MOA                                    F16PW229 VOLK WEST
       F-16C      < 35.0
    VOLK WEST MOA                                    B1VOLK WEST
       B-1        < 35.0
    VOLK WEST MOA                                    B52VOLK WEST
       B-52G      < 35.0
    VOLK WEST MOA                                    A10 VOLK WEST
       A-10A      < 35.0
    VOLK WEST MOA                                    C130 VOLK WEST
       C-130H&N&P < 35.0
    VOLK WEST MOA                                    B2VOLK WEST
       B-2A       < 35.0
    VOLK SOUTH MOA                                   F16GE100 VOLK SOUTH
       F-16C      < 35.0
    FALLS 2 MOA                                      F16GE100VOLKFALLS_2
       F-16C      < 35.0
    FALLS 1 MOA                                      F16GE100VOLKFALLS
       F-16C      < 35.0
    FALLS 2 MOA                                      F16PW220VOLKFALLS_2
       F-16C      < 35.0
    VOLK SOUTH MOA                                   F16PW220 VOLK SOUTH
       F-16C      < 35.0
    FALLS 1 MOA                                      F16PW220VOLKFALLS
       F-16C      < 35.0
    VOLK SOUTH MOA                                   F18E/F VOLK SOUTH
       F-18E/F    < 35.0
    FALLS 2 MOA                                      F18E/FVOLKFALLS_2
       F-18E/F    < 35.0
    VOLK SOUTH MOA                                   F15PW229 VOLK SOUTH
       F-15E      < 35.0


Total Level ........     45.3        0.9



    Specific Point:  PT12M6904
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                    >  Mission
       Aircraft     (dB)       HA(%)
    VOLK EAST MOA                                    F16GE100 VOLK EAST
       F-16C        35.8        0.2
    VOLK EAST MOA                                    F16PW220 VOLK EAST
       F-16C      < 35.0
    VOLK EAST MOA                                    F18E/F VOLK EAST
       F-18E/F    < 35.0
    VOLK EAST MOA                                    F15PW229 VOLK EAST
       F-15E      < 35.0
    VOLK EAST MOA                                    F35 VOLK EAST
       F-22       < 35.0
    VOLK EAST MOA                                    F16PW229 VOLK EAST
       F-16C      < 35.0
    VOLK EAST MOA                                    B1VOLK EAST
       B-1        < 35.0
    VOLK EAST MOA                                    B52VOLK EAST
       B-52G      < 35.0
    VOLK EAST MOA                                    C130 VOLK EAST
       C-130H&N&P < 35.0
    VOLK EAST MOA                                    A10 VOLK EAST
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   A-10A      < 35.0
VOLK EAST MOA                                B2VOLK EAST
   B-2A       < 35.0
VOLK SOUTH MOA                               F16GE100 VOLK SOUTH
   F-16C      < 35.0
FALLS 2 MOA                                  F16GE100VOLKFALLS_2
   F-16C      < 35.0
VOLK WEST MOA                                F16GE100 VOLK WEST
   F-16C      < 35.0
FALLS 1 MOA                                  F16GE100VOLKFALLS
   F-16C      < 35.0
FALLS 2 MOA                                  F16PW220VOLKFALLS_2
   F-16C      < 35.0
VOLK SOUTH MOA                               F16PW220 VOLK SOUTH
   F-16C      < 35.0
VOLK WEST MOA                                F16PW220 VOLK WEST
   F-16C      < 35.0
FALLS 1 MOA                                  F16PW220VOLKFALLS
   F-16C      < 35.0
VOLK SOUTH MOA                               F18E/F VOLK SOUTH
   F-18E/F    < 35.0


Total Level ........     37.1        0.3



Specific Point:  REMINGTON
Top 20 contributors to this level:


             Sound Level
<                 Airspace                 >  Mission
   Aircraft     (dB)       HA(%)
VOLK WEST MOA                                F16GE100 VOLK WEST
   F-16C        52.6        2.4
VOLK WEST MOA                                F16PW220 VOLK WEST
   F-16C        44.5        0.8
VOLK WEST MOA                                F18E/F VOLK WEST
   F-18E/F      40.9        0.5
VOLK WEST MOA                                F15PW229 VOLK WEST
   F-15E        39.5        0.4
VOLK WEST MOA                                F35 VOLK WEST
   F-22       < 35.0
VOLK WEST MOA                                F16PW229 VOLK WEST
   F-16C      < 35.0
VOLK WEST MOA                                B1VOLK WEST
   B-1        < 35.0
VOLK WEST MOA                                B52VOLK WEST
   B-52G      < 35.0
VOLK WEST MOA                                A10 VOLK WEST
   A-10A      < 35.0
VOLK WEST MOA                                C130 VOLK WEST
   C-130H&N&P < 35.0
VOLK WEST MOA                                B2VOLK WEST
   B-2A       < 35.0
VOLK SOUTH MOA                               F16GE100 VOLK SOUTH
   F-16C      < 35.0
FALLS 2 MOA                                  F16GE100VOLKFALLS_2
   F-16C      < 35.0
FALLS 1 MOA                                  F16GE100VOLKFALLS
   F-16C      < 35.0
FALLS 2 MOA                                  F16PW220VOLKFALLS_2
   F-16C      < 35.0
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    VOLK SOUTH MOA                                          F16PW220 VOLK SOUTH
       F-16C      < 35.0
    FALLS 1 MOA                                             F16PW220VOLKFALLS
       F-16C      < 35.0
    VOLK SOUTH MOA                                          F18E/F VOLK SOUTH
       F-18E/F    < 35.0
    FALLS 2 MOA                                             F18E/FVOLKFALLS_2
       F-18E/F    < 35.0
    VOLK SOUTH MOA                                          F15PW229 VOLK SOUTH
       F-15E      < 35.0


Total Level ........     53.7        2.8



    Specific Point:  ROCHEACRI
    Top 20 contributors to this level:


                Sound Level
    <                Airspace                        >  Mission
       Aircraft     (dB)       HA(%)
    VOLK EAST MOA                                           F16GE100 VOLK EAST
       F-16C        35.9        0.2
    VOLK EAST MOA                                           F16PW220 VOLK EAST
       F-16C      < 35.0
    VOLK EAST MOA                                           F18E/F VOLK EAST
       F-18E/F    < 35.0
    VOLK EAST MOA                                           F15PW229 VOLK EAST
       F-15E      < 35.0
    VOLK EAST MOA                                           F35 VOLK EAST
       F-22       < 35.0
    VOLK EAST MOA                                           F16PW229 VOLK EAST
       F-16C      < 35.0
    VOLK EAST MOA                                           B1VOLK EAST
       B-1        < 35.0
    VOLK EAST MOA                                           B52VOLK EAST
       B-52G      < 35.0
    VOLK EAST MOA                                           C130 VOLK EAST
       C-130H&N&P < 35.0
    VOLK EAST MOA                                           A10 VOLK EAST
       A-10A      < 35.0
    VOLK EAST MOA                                           B2VOLK EAST
       B-2A       < 35.0
    VOLK SOUTH MOA                                          F16GE100 VOLK SOUTH
       F-16C      < 35.0
    FALLS 2 MOA                                             F16GE100VOLKFALLS_2
       F-16C      < 35.0
    VOLK WEST MOA                                           F16GE100 VOLK WEST
       F-16C      < 35.0
    FALLS 1 MOA                                             F16GE100VOLKFALLS
       F-16C      < 35.0
    FALLS 2 MOA                                             F16PW220VOLKFALLS_2
       F-16C      < 35.0
    VOLK SOUTH MOA                                          F16PW220 VOLK SOUTH
       F-16C      < 35.0
    VOLK WEST MOA                                           F16PW220 VOLK WEST
       F-16C      < 35.0
    FALLS 1 MOA                                             F16PW220VOLKFALLS
       F-16C      < 35.0
    VOLK SOUTH MOA                                          F18E/F VOLK SOUTH
       F-18E/F    < 35.0
```

Total Level 37.2 0.3

Specific Point: SHAMROCK
Top 20 contributors to this level:

Airspace	Aircraft	Sound Level (dB)	HA(%)	Mission
FALLS 1 MOA	F-16C	47.6	1.2	F16GE100VOLKFALLS
FALLS 1 MOA	F-16C	39.6	0.4	F16PW220VOLKFALLS
FALLS 1 MOA	F-18E/F	36.0	0.2	F18E/FVOLKFALLS
FALLS 1 MOA	F-15E	< 35.0		F15PW229VOLKFALLS
FALLS 1 MOA	F-22	< 35.0		F35VOLKFALLS
FALLS 1 MOA	F-16C	< 35.0		F16PW229VOLKFALLS
FALLS 1 MOA	B-1	< 35.0		B1VOLK FALLS
FALLS 1 MOA	B-52G	< 35.0		B52VOLK FALLS
FALLS 1 MOA	A-10A	< 35.0		A10 VOLK FALLS
FALLS 1 MOA	C-130H&N&P	< 35.0		C130VOLK FALLS
FALLS 1 MOA	B-2A	< 35.0		B2VOLK FALLS
VOLK SOUTH MOA	F-16C	< 35.0		F16GE100 VOLK SOUTH
FALLS 2 MOA	F-16C	< 35.0		F16GE100VOLKFALLS_2
VOLK WEST MOA	F-16C	< 35.0		F16GE100 VOLK WEST
FALLS 2 MOA	F-16C	< 35.0		F16PW220VOLKFALLS_2
VOLK SOUTH MOA	F-16C	< 35.0		F16PW220 VOLK SOUTH
VOLK WEST MOA	F-16C	< 35.0		F16PW220 VOLK WEST
VOLK SOUTH MOA	F-18E/F	< 35.0		F18E/F VOLK SOUTH
FALLS 2 MOA	F-18E/F	< 35.0		F18E/FVOLKFALLS_2
VOLK WEST MOA	F-18E/F	< 35.0		F18E/F VOLK WEST

Total Level 48.8 1.4

Specific Point: SWR6904
Top 20 contributors to this level:

Sound Level
< Airspace > Mission

```
   Aircraft     (dB)       HA(%)
VOLK WEST MOA                                  F16GE100 VOLK WEST
   F-16C        50.8         1.9
VOLK WEST MOA                                  F16PW220 VOLK WEST
   F-16C        42.8         0.6
VOLK WEST MOA                                  F18E/F VOLK WEST
   F-18E/F      39.1         0.4
VOLK WEST MOA                                  F15PW229 VOLK WEST
   F-15E        37.8         0.3
VOLK WEST MOA                                  F35 VOLK WEST
   F-22       < 35.0
VOLK WEST MOA                                  F16PW229 VOLK WEST
   F-16C      < 35.0
VOLK WEST MOA                                  B1VOLK WEST
   B-1        < 35.0
VOLK WEST MOA                                  B52VOLK WEST
   B-52G      < 35.0
VOLK WEST MOA                                  A10 VOLK WEST
   A-10A      < 35.0
VOLK WEST MOA                                  C130 VOLK WEST
   C-130H&N&P < 35.0
VOLK WEST MOA                                  B2VOLK WEST
   B-2A       < 35.0
VOLK SOUTH MOA                                 F16GE100 VOLK SOUTH
   F-16C      < 35.0
FALLS 2 MOA                                    F16GE100VOLKFALLS_2
   F-16C      < 35.0
FALLS 1 MOA                                    F16GE100VOLKFALLS
   F-16C      < 35.0
FALLS 2 MOA                                    F16PW220VOLKFALLS_2
   F-16C      < 35.0
VOLK SOUTH MOA                                 F16PW220 VOLK SOUTH
   F-16C      < 35.0
FALLS 1 MOA                                    F16PW220VOLKFALLS
   F-16C      < 35.0
VOLK SOUTH MOA                                 F18E/F VOLK SOUTH
   F-18E/F    < 35.0
FALLS 2 MOA                                    F18E/FVOLKFALLS_2
   F-18E/F    < 35.0
VOLK SOUTH MOA                                 F15PW229 VOLK SOUTH
   F-15E      < 35.0

Total Level ........     52.0        2.2


    Specific Point:  WHITEHALL
    Top 20 contributors to this level:


             Sound Level
<                 Airspace                  >  Mission
   Aircraft     (dB)       HA(%)
FALLS 1 MOA                                    F16GE100VOLKFALLS
   F-16C        46.8         1.1
FALLS 1 MOA                                    F16PW220VOLKFALLS
   F-16C        38.8         0.3
FALLS 1 MOA                                    F18E/FVOLKFALLS
   F-18E/F      35.2         0.2
FALLS 1 MOA                                    F15PW229VOLKFALLS
   F-15E      < 35.0
FALLS 1 MOA                                    F35VOLKFALLS
   F-22       < 35.0
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FALLS 1 MOA                                          F16PW229VOLKFALLS
   F-16C       < 35.0
FALLS 1 MOA                                          B1VOLK FALLS
   B-1         < 35.0
FALLS 1 MOA                                          B52VOLK FALLS
   B-52G       < 35.0
FALLS 1 MOA                                          A10 VOLK FALLS
   A-10A       < 35.0
FALLS 1 MOA                                          C130VOLK FALLS
   C-130H&N&P  < 35.0
FALLS 1 MOA                                          B2VOLK FALLS
   B-2A        < 35.0
VOLK SOUTH MOA                                       F16GE100 VOLK SOUTH
   F-16C       < 35.0
FALLS 2 MOA                                          F16GE100VOLKFALLS_2
   F-16C       < 35.0
VOLK WEST MOA                                        F16GE100 VOLK WEST
   F-16C       < 35.0
FALLS 2 MOA                                          F16PW220VOLKFALLS_2
   F-16C       < 35.0
VOLK SOUTH MOA                                       F16PW220 VOLK SOUTH
   F-16C       < 35.0
VOLK WEST MOA                                        F16PW220 VOLK WEST
   F-16C       < 35.0
VOLK SOUTH MOA                                       F18E/F VOLK SOUTH
   F-18E/F     < 35.0
FALLS 2 MOA                                          F18E/FVOLKFALLS_2
   F-18E/F     < 35.0
VOLK WEST MOA                                        F18E/F VOLK WEST
   F-18E/F     < 35.0

Total Level ........     48.0        1.3


     <Run Log>
     Date:                   6/22/2015
     Start Time:            22:53:22
     Stop Time:             23: 4:22
     Total Running Time:    11 minutes and   1 seconds.
```

```
          VOLK_MRNMAP_PROPOSEDMOAS_2015 - Baseline - MRNMAP.txt
                ***** MOA RANGE NOISEMAP *****
                         Version  3.0
                 Release Date      2/7/2013

                        CASE INFORMATION
Case Name:VOLK_MRNMAP_PROPOSED MOA 2015 - Baseline Scenario

Site Name:VOLK SAA


                        SETUP PARAMETERS
Number of MOAs and Ranges =  5     Number of tracks = 0
Lower Left  Corner of Grid in feet (X Y pair) =  -347398.,  -236702.
Upper Right Corner of Grid in feet (X Y pair) =   371702.,   212398.
Grid spacing =      900. feet      Number of events above an SEL  of 65.0 dB
Temperature =  59 F      Humidity =  70     Flying days per month = 30


                       MOA SPECIFICATIONS

MOA name PRO_VOLK EAST MOA_2
     Lat       Long
    (deg)      (deg)
  44.70029   -90.33611
  44.58334   -90.30000
  44.45000   -89.98333
  44.16667   -89.98333
  44.05000   -89.92833
  43.66666   -89.77083
  43.59166   -88.77499
  44.15945   -88.75415
  44.48334   -88.99998
  44.70029   -90.33611
Floor =    7041 feet AGL     Ceiling =   17041 feet AGL

MOA name PRO_VOLK FALLS MOA_2
     Lat       Long
    (deg)      (deg)
  44.80001   -90.43333
  44.14444   -90.73890
  44.04583   -90.74168
  44.28334   -91.35001
  44.55001   -91.35001
  44.80001   -90.98335
  44.80001   -90.43333
Floor =     500 feet AGL     Ceiling =   17041 feet AGL

MOA name PRO_VOLK SOUTH MOA_2
     Lat       Long
    (deg)      (deg)
  43.66666   -89.77083
  43.99166   -90.58778
  44.00055   -90.58750
  44.00055   -90.36667
  44.05000   -90.28333
  44.05000   -89.92833
  43.66666   -89.77083
Floor =     500 feet AGL     Ceiling =   17041 feet AGL

MOA name PRO_VOLK WEST MOA_2
     Lat       Long
    (deg)      (deg)
  44.80001   -90.43333
  44.80001   -90.36667
```

44.58334	-90.30000
44.45000	-89.98333
44.16667	-89.98333
44.05000	-89.92833
44.05000	-90.28333
44.00055	-90.36667
44.00056	-90.60973
44.00278	-90.61140
44.00778	-90.61140
44.16000	-90.61390
44.16000	-90.67278
44.14444	-90.67278
44.14444	-90.73890
44.80001	-90.43333

Floor = 500 feet AGL   Ceiling = 17041 feet AGL

MOA name R6904C_2

Lat (deg)	Long (deg)
44.16667	-89.98333
44.02500	-90.17500
44.02500	-90.34167
44.35000	-90.34167
44.35000	-89.98333
44.16667	-89.98333

Floor = 2041 feet AGL   Ceiling = 27040 feet AGL

SPECIFIC POINT SPECIFICATION

Number of Specific points = 26

Latitude	Longitude	Name
44.59612	-90.79723	1650HWY10
44.16417	-89.99250	ARMENIA
44.30389	-90.11111	BABCOCK
43.87000	-89.93944	CASTLE ROCK LOOK
44.73251	-91.06335	COONFORK
44.31834	-90.06111	CRANMOOR
44.02500	-90.23556	CUTLER
44.37667	-90.10889	DEXTERVILLE
44.23584	-90.09528	DZR6904
44.22639	-90.00777	EASTR6904
44.21306	-90.13055	FINLEY
44.31000	-89.98778	GRAVPIT1
44.36222	-91.11890	GRAVPIT2
44.43389	-90.30278	GREENWOOD
44.23584	-90.19667	HWY173
44.41973	-90.71667	LKARBUTUS
44.45501	-90.83862	MERRILLAN
44.22945	-90.06055	MIDR6904
44.24195	-90.08139	NWR6904
44.44612	-90.12666	PITTSVILLE
44.28528	-89.87500	PT12M6904
44.31778	-90.28611	REMINGTON
44.00750	-89.79500	ROCHEACRI
44.17528	-90.79417	SHAMROCK
44.22667	-90.10695	SWR6904
44.37334	-91.29029	WHITEHALL

AVOIDANCE SPECIFICATION

Number of Avoidance Areas = 9

Latitude	Longitude	Radius (feet)	Floor (feet AGL)	Name
44.25000	-90.85417	18228.	1500	BLK RIV FLS AIRPORT

```
  43.97500   -90.48500      18228.        1500       BLOYER AIRPORT

  43.83694   -90.13695      18228.        1500       MAUSTON NEW LISBON AIRPORT

  44.03333   -90.08333      18228.        1500       NECEDAH AIRPORT

  44.18470   -90.18024      15190.        1000       NECEDAH NWR 2A

  44.14507   -90.18922      15190.        1000       NECEDAH NWR 2B

  44.11045   -90.17878      18228.        1000       NECEDAH NWR 3A

  44.06948   -90.16016      24304.        1000       NECEDAH NWR 3B

  44.55834   -90.50834      18228.        1500       NEILSVILLE AIRPORT


                          MISSION DATA
Mission name = A10 VOLK EAST
Aircraft code =FM0090100  Speed =  300 kias  Power =  6200.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041         15000        50.0
     15000         17041        50.0


Mission name = A10 VOLK FALLS
Aircraft code =FM0090100  Speed =  300 kias  Power =  6200.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = A10 VOLK SOUTH
Aircraft code =FM0090100  Speed =  300 kias  Power =  6200.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = A10 VOLK WEST
Aircraft code =FM0090100  Speed =  300 kias  Power =  6200.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500          5000        20.0
      5000         10000        50.0
     10000         17041        30.0


Mission name = B1VOLK EAST
Aircraft code =FM0120100  Speed =  270 kias  Power =    98.5
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
```

```
      7041        15000        50.0
     15000        17041        50.0


Mission name = B1VOLK FALLS
Aircraft code =FM0120100  Speed =  270 kias  Power =    98.5
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B1VOLK SOUTH
Aircraft code =FM0120100  Speed =  270 kias  Power =    98.5
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B1VOLK WEST
Aircraft code =FM0120100  Speed =  270 kias  Power =    98.5
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B1_6904C
Aircraft code =FM0120100  Speed =  270 kias  Power =    98.5
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        27040        70.0


Mission name = B2VOLK EAST
Aircraft code =FM0130100  Speed =  230 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041        15000        50.0
     15000        17041        50.0


Mission name = B2VOLK FALLS
Aircraft code =FM0130100  Speed =  230 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B2VOLK SOUTH
Aircraft code =FM0130100  Speed =  230 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
```

```
     10000        17041        70.0


Mission name = B2VOLK WEST
Aircraft code =FM0130100  Speed =  230 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B52VOLK EAST
Aircraft code =FM0140200  Speed =  250 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041        15000        50.0
     15000        17041        50.0


Mission name = B52VOLK FALLS
Aircraft code =FM0140200  Speed =  250 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B52VOLK SOUTH
Aircraft code =FM0140200  Speed =  250 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B52VOLK WEST
Aircraft code =FM0140200  Speed =  250 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        17041        70.0


Mission name = B52_6904C
Aircraft code =FM0140200  Speed =  250 kias  Power =    88.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      5000        10000        30.0
     10000        27040        70.0


Mission name = C130 VOLK EAST
Aircraft code =FM0290300  Speed =  140 kias  Power =   580.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041        15000        50.0
     15000        17041        50.0
```

```
Mission name = C130 VOLK SOUTH
Aircraft code =FM0290300  Speed =  140 kias  Power =   580.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = C130 VOLK WEST
Aircraft code =FM0290300  Speed =  140 kias  Power =   580.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = C130VOLK FALLS
Aircraft code =FM0290300  Speed =  140 kias  Power =   580.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = F15PW229 VOLK EAST
Aircraft code =FM0430400  Speed =  350 kias  Power =    91.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041        15000        50.0
     15000        17041        50.0


Mission name = F15PW229 VOLK SOUTH
Aircraft code =FM0430400  Speed =  350 kias  Power =    91.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = F15PW229 VOLK WEST
Aircraft code =FM0430400  Speed =  350 kias  Power =    91.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = F15PW229VOLKFALLS
Aircraft code =FM0430400  Speed =  350 kias  Power =    91.0
           Altitude Distribution
```

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	5000	20.0
5000	10000	50.0
10000	17041	30.0

Mission name = F15PW229_6904C
Aircraft code =FM0430400 Speed = 350 kias Power =   91.0
Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
2041	5000	20.0
5000	10000	50.0
10000	27040	30.0

Mission name = F16GE100 VOLK EAST
Aircraft code =FM0440400 Speed = 340 kias Power =   104.0
Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
7041	15000	50.0
15000	17041	50.0

Mission name = F16GE100 VOLK SOUTH
Aircraft code =FM0440400 Speed = 340 kias Power =   104.0
Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	5000	20.0
5000	10000	50.0
10000	17041	30.0

Mission name = F16GE100 VOLK WEST
Aircraft code =FM0440400 Speed = 340 kias Power =   104.0
Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	5000	20.0
5000	10000	50.0
10000	17041	30.0

Mission name = F16GE100VOLKFALLS
Aircraft code =FM0440400 Speed = 340 kias Power =   104.0
Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
500	5000	20.0
5000	10000	50.0
10000	17041	30.0

Mission name = F16GE100_6904C
Aircraft code =FM0440400 Speed = 340 kias Power =   104.0
Altitude Distribution

Lower Alt (feet AGL)	Upper Alt (feet AGL)	Percent Utilization
2041	5000	20.0
5000	10000	50.0
10000	27040	30.0

```
Mission name = F16PW220 VOLK EAST
Aircraft code =FM0440200  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041        15000        50.0
     15000        17041        50.0


Mission name = F16PW220 VOLK SOUTH
Aircraft code =FM0440200  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = F16PW220 VOLK WEST
Aircraft code =FM0440200  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = F16PW220VOLKFALLS
Aircraft code =FM0440200  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = F16PW220_6904C
Aircraft code =FM0440200  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      2041         5000        20.0
      5000        10000        50.0
     10000        27040        30.0


Mission name = F16PW229 VOLK EAST
Aircraft code =FM0440300  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041        15000        50.0
     15000        17041        50.0


Mission name = F16PW229 VOLK SOUTH
Aircraft code =FM0440300  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
```

```
   (feet AGL)   (feet AGL)   Utilization
       500         5000         20.0
      5000        10000         50.0
     10000        17041         30.0


Mission name = F16PW229 VOLK WEST
Aircraft code =FM0440300  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000         20.0
      5000        10000         50.0
     10000        17041         30.0


Mission name = F16PW229VOLKFALLS
Aircraft code =FM0440300  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000         20.0
      5000        10000         50.0
     10000        17041         30.0


Mission name = F16PW229_6904C
Aircraft code =FM0440300  Speed =  350 kias  Power =    90.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      2041         5000         20.0
      5000        10000         50.0
     10000        27040         30.0


Mission name = F18E/F VOLK EAST
Aircraft code =FM0450200  Speed =  420 kias  Power =    97.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041        15000         50.0
     15000        17041         50.0


Mission name = F18E/F VOLK SOUTH
Aircraft code =FM0450200  Speed =  420 kias  Power =    97.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000         20.0
      5000        10000         50.0
     10000        17041         30.0


Mission name = F18E/F VOLK WEST
Aircraft code =FM0450200  Speed =  420 kias  Power =    97.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000         20.0
      5000        10000         50.0
     10000        17041         30.0
```

```
Mission name = F18E/FVOLKFALLS
Aircraft code =FM0450200  Speed =  420 kias  Power =    97.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = F18E/F_6904C
Aircraft code =FM0450200  Speed =  420 kias  Power =    97.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      2041         5000        20.0
      5000        10000        50.0
     10000        27040        30.0


Mission name = F35 VOLK EAST
Aircraft code =FM0850100  Speed =  350 kias  Power =    60.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
      7041        15000        50.0
     15000        17041        50.0


Mission name = F35 VOLK SOUTH
Aircraft code =FM0850100  Speed =  350 kias  Power =    60.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = F35 VOLK WEST
Aircraft code =FM0850100  Speed =  350 kias  Power =    60.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = F35VOLKFALLS
Aircraft code =FM0850100  Speed =  350 kias  Power =    60.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
   (feet AGL)   (feet AGL)   Utilization
       500         5000        20.0
      5000        10000        50.0
     10000        17041        30.0


Mission name = F35_6904C
Aircraft code =FM0850100  Speed =  350 kias  Power =    60.0
           Altitude Distribution
    Lower Alt    Upper Alt     Percent
```

(feet AGL)	(feet AGL)	Utilization
2041	5000	20.0
5000	10000	50.0
10000	27040	30.0

MOA OPERATION DATA

MOA name = PRO_VOLK EAST MOA_2

Mission Name	Daily Day OPS	Daily Night OPS	Monthly Day OPS	Monthly Night OPS	Yearly Day OPS	Yearly Night OPS	Time On Range (minutes)
A10 VOLK EAST	0.072	0.003	2.17	0.08	26.	1.	23.
B1VOLK EAST	0.058	0.003	1.75	0.08	21.	1.	23.
B2VOLK EAST	0.058	0.003	1.75	0.08	21.	1.	23.
B52VOLK EAST	0.058	0.003	1.75	0.08	21.	1.	23.
C130 VOLK EAST	0.356	0.019	10.67	0.58	128.	7.	23.
F15PW229 VOLK EAST	0.072	0.003	2.17	0.08	26.	1.	23.
F16GE100 VOLK EAST	4.561	0.239	136.83	7.17	1642.	86.	23.
F16PW220 VOLK EAST	1.681	0.089	50.42	2.67	605.	32.	23.
F16PW229 VOLK EAST	0.072	0.003	2.17	0.08	26.	1.	23.
F18E/F VOLK EAST	0.072	0.003	2.17	0.08	26.	1.	23.
F35 VOLK EAST	0.072	0.003	2.17	0.08	26.	1.	23.

MOA name = PRO_VOLK FALLS MOA_2

Mission Name	Daily Day OPS	Daily Night OPS	Monthly Day OPS	Monthly Night OPS	Yearly Day OPS	Yearly Night OPS	Time On Range (minutes)
A10 VOLK FALLS	0.067	0.003	2.00	0.08	24.	1.	25.
B1VOLK FALLS	0.053	0.003	1.58	0.08	19.	1.	25.
B2VOLK FALLS	0.053	0.003	1.58	0.08	19.	1.	25.
B52VOLK FALLS	0.053	0.003	1.58	0.08	19.	1.	25.
C130VOLK FALLS	0.331	0.017	9.92	0.50	119.	6.	25.
F15PW229VOLKFALLS	0.067	0.003	2.00	0.08	24.	1.	25.
F16GE100VOLKFALLS	4.222	0.222	126.67	6.67	1520.	80.	25.
F16PW220VOLKFALLS	1.558	0.083	46.75	2.50	561.	30.	25.
F16PW229VOLKFALLS	0.067	0.003	2.00				

Mission Name	Daily Day OPS	Daily Night OPS	Monthly Day OPS	Monthly Night OPS	Yearly Day OPS	Yearly Night OPS	Time On Range (minutes)
				0.08	24.	1.	25.
F18E/FVOLKFALLS	0.067	0.003	2.00	0.08	24.	1.	25.
F35VOLKFALLS	0.067	0.003	2.00	0.08	24.	1.	25.

MOA name = PRO_VOLK SOUTH MOA_2

Mission Name	Daily Day OPS	Daily Night OPS	Monthly Day OPS	Monthly Night OPS	Yearly Day OPS	Yearly Night OPS	Time On Range (minutes)
A10 VOLK SOUTH	0.064	0.003	1.92	0.08	23.	1.	23.
B1VOLK SOUTH	0.050	0.003	1.50	0.08	18.	1.	23.
B2VOLK SOUTH	0.050	0.003	1.50	0.08	18.	1.	23.
B52VOLK SOUTH	0.050	0.003	1.50	0.08	18.	1.	23.
C130 VOLK SOUTH	0.317	0.017	9.50	0.50	114.	6.	23.
F15PW229 VOLK SOUTH	0.064	0.003	1.92	0.08	23.	1.	23.
F16GE100 VOLK SOUTH	4.053	0.214	121.58	6.42	1459.	77.	23.
F16PW220 VOLK SOUTH	1.494	0.078	44.83	2.33	538.	28.	23.
F16PW229 VOLK SOUTH	0.064	0.003	1.92	0.08	23.	1.	23.
F18E/F VOLK SOUTH	0.064	0.003	1.92	0.08	23.	1.	23.
F35 VOLK SOUTH	0.064	0.003	1.92	0.08	23.	1.	23.

MOA name = PRO_VOLK WEST MOA_2

Mission Name	Daily Day OPS	Daily Night OPS	Monthly Day OPS	Monthly Night OPS	Yearly Day OPS	Yearly Night OPS	Time On Range (minutes)
A10 VOLK WEST	0.072	0.003	2.17	0.08	26.	1.	23.
B1VOLK WEST	0.058	0.003	1.75	0.08	21.	1.	23.
B2VOLK WEST	0.058	0.003	1.75	0.08	21.	1.	23.
B52VOLK WEST	0.058	0.003	1.75	0.08	21.	1.	23.
C130 VOLK WEST	0.356	0.019	10.67	0.58	128.	7.	23.
F15PW229 VOLK WEST	0.072	0.003	2.17	0.08	26.	1.	23.
F16GE100 VOLK WEST	4.561	0.239	136.83	7.17	1642.	86.	23.
F16PW220 VOLK WEST	1.681	0.089	50.42	2.67	605.	32.	23.
F16PW229 VOLK WEST	0.072	0.003	2.17	0.08	26.	1.	23.
F18E/F VOLK WEST	0.072	0.003	2.17				

Mission Name	Daily Day OPS	Daily Night OPS	Monthly Day OPS	Monthly Night OPS	Yearly Day OPS	Yearly Night OPS	Time On Range (minutes)
				0.08	26.	1.	23.
F35 VOLK WEST	0.072	0.003	2.17	0.08	26.	1.	23.

MOA name = R6904C_2

Mission Name	Daily Day OPS	Daily Night OPS	Monthly Day OPS	Monthly Night OPS	Yearly Day OPS	Yearly Night OPS	Time On Range (minutes)
B1_6904C	0.014	0.003	0.42	0.08	5.	1.	26.
B52_6904C	0.014	0.003	0.42	0.08	5.	1.	26.
F15PW229_6904C	0.014	0.003	0.42	0.08	5.	1.	26.
F16GE100_6904C	1.019	0.053	30.58	1.58	367.	19.	26.
F16PW220_6904C	0.353	0.019	10.58	0.58	127.	7.	26.
F16PW229_6904C	0.014	0.003	0.42	0.08	5.	1.	26.
F18E/F_6904C	0.014	0.003	0.42	0.08	5.	1.	26.
F35_6904C	0.014	0.003	0.42	0.08	5.	1.	26.

***** MOA RANGE NOISEMAP *****
RESULTS

The noise metric is Ldnmr.

MOA RESULTS

MOA Name	MOA Area (sq statute miles)	Uniform Distributed Sound Level (dB)	Number of Daily Events Above SEL of 65.0 dB
PRO_VOLK EAST MOA_2	3682.3	36.0	0.0
PRO_VOLK FALLS MOA_2	1510.0	49.5	0.0
PRO_VOLK SOUTH MOA_2	471.1	55.6	0.0
PRO_VOLK WEST MOA_2	1281.9	50.5	0.0
R6904C_2	352.9	46.4	0.0

AVOIDANCE AREA RESULTS

Avoidance Area Name	Uniform Distributed Sound Level (dB)	Number of Daily Events Above SEL of 65.0 dB
BLK RIV FLS AIRPORT	46.8	13.9
BLOYER AIRPORT	46.2	7.3
MAUSTON NEW LISBON A	46.1	30.0
NECEDAH AIRPORT	46.5	31.6
NECEDAH NWR 2A	50.7	27.8
NECEDAH NWR 2B	50.6	25.4

NECEDAH NWR 3A	49.7	21.4
NECEDAH NWR 3B	47.6	21.8
NEILSVILLE AIRPORT	42.6	9.0

***** MOA RANGE NOISEMAP *****
RESULTS

SPECIFIC POINT RESULTS

Specific Point: 1650HWY10
Top 20 contributors to this level:

< Airspace > / Aircraft	Sound Level (dB)	HA(%)	Mission
PRO_VOLK FALLS MOA_2			F16GE100VOLKFALLS
F-16C	48.3	1.3	
PRO_VOLK FALLS MOA_2			F16PW220VOLKFALLS
F-16C	40.3	0.4	
PRO_VOLK FALLS MOA_2			F18E/FVOLKFALLS
F-18E/F	36.7	0.3	
PRO_VOLK FALLS MOA_2			F15PW229VOLKFALLS
F-15E	35.3	0.2	
PRO_VOLK FALLS MOA_2			F35VOLKFALLS
F-22	< 35.0		
PRO_VOLK FALLS MOA_2			F16PW229VOLKFALLS
F-16C	< 35.0		
PRO_VOLK FALLS MOA_2			B1VOLK FALLS
B-1	< 35.0		
PRO_VOLK FALLS MOA_2			B52VOLK FALLS
B-52G	< 35.0		
PRO_VOLK FALLS MOA_2			A10 VOLK FALLS
A-10A	< 35.0		
PRO_VOLK FALLS MOA_2			C130VOLK FALLS
C-130H&N&P	< 35.0		
PRO_VOLK FALLS MOA_2			B2VOLK FALLS
B-2A	< 35.0		
PRO_VOLK SOUTH MOA_2			F16GE100 VOLK SOUTH
F-16C	< 35.0		
PRO_VOLK WEST MOA_2			F16GE100 VOLK WEST
F-16C	< 35.0		
PRO_VOLK SOUTH MOA_2			F16PW220 VOLK SOUTH
F-16C	< 35.0		
R6904C_2			F16GE100_6904C
F-16C	< 35.0		
PRO_VOLK SOUTH MOA_2			F18E/F VOLK SOUTH
F-18E/F	< 35.0		
PRO_VOLK SOUTH MOA_2			F15PW229 VOLK SOUTH
F-15E	< 35.0		
PRO_VOLK WEST MOA_2			F16PW220 VOLK WEST
F-16C	< 35.0		
PRO_VOLK WEST MOA_2			F18E/F VOLK WEST
F-18E/F	< 35.0		
R6904C_2			F16PW220_6904C
F-16C	< 35.0		

Total Level 49.5 1.5

Specific Point: ARMENIA
Top 20 contributors to this level:

< Airspace / Aircraft	Sound Level (dB)	HA(%)	> Mission
R6904C_2			F16GE100_6904C
F-16C	42.9	0.6	
PRO_VOLK WEST MOA_2			F16GE100 VOLK WEST
F-16C	40.7	0.5	
R6904C_2			F16PW220_6904C
F-16C	< 35.0		
R6904C_2			F18E/F_6904C
F-18E/F	< 35.0		
R6904C_2			F15PW229_6904C
F-15E	< 35.0		
PRO_VOLK WEST MOA_2			F16PW220 VOLK WEST
F-16C	< 35.0		
PRO_VOLK WEST MOA_2			F18E/F VOLK WEST
F-18E/F	< 35.0		
PRO_VOLK WEST MOA_2			F15PW229 VOLK WEST
F-15E	< 35.0		
R6904C_2			F35_6904C
F-22	< 35.0		
R6904C_2			F16PW229_6904C
F-16C	< 35.0		
PRO_VOLK WEST MOA_2			F35 VOLK WEST
F-22	< 35.0		
R6904C_2			B1_6904C
B-1	< 35.0		
PRO_VOLK WEST MOA_2			F16PW229 VOLK WEST
F-16C	< 35.0		
R6904C_2			B52_6904C
B-52G	< 35.0		
PRO_VOLK WEST MOA_2			B1VOLK WEST
B-1	< 35.0		
PRO_VOLK WEST MOA_2			B52VOLK WEST
B-52G	< 35.0		
PRO_VOLK WEST MOA_2			A10 VOLK WEST
A-10A	< 35.0		
PRO_VOLK WEST MOA_2			C130 VOLK WEST
C-130H&N&P	< 35.0		
PRO_VOLK WEST MOA_2			B2VOLK WEST
B-2A	< 35.0		
PRO_VOLK SOUTH MOA_2			F16GE100 VOLK SOUTH
F-16C	< 35.0		

Total Level 46.4 1.0

Specific Point: BABCOCK
Top 20 contributors to this level:

Sound Level
< Airspace > Mission

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   Aircraft     (dB)       HA(%)
PRO_VOLK WEST MOA_2                                 F16GE100 VOLK WEST
   F-16C        49.3        1.5
R6904C_2                                            F16GE100_6904C
   F-16C        44.7        0.8
PRO_VOLK WEST MOA_2                                 F16PW220 VOLK WEST
   F-16C        41.2        0.5
PRO_VOLK WEST MOA_2                                 F18E/F VOLK WEST
   F-18E/F      37.6        0.3
R6904C_2                                            F16PW220_6904C
   F-16C        36.6        0.3
PRO_VOLK WEST MOA_2                                 F15PW229 VOLK WEST
   F-15E        36.2        0.2
R6904C_2                                            F18E/F_6904C
   F-18E/F      35.9        0.2
R6904C_2                                            F15PW229_6904C
   F-15E      < 35.0
PRO_VOLK WEST MOA_2                                 F35 VOLK WEST
   F-22       < 35.0
PRO_VOLK WEST MOA_2                                 F16PW229 VOLK WEST
   F-16C      < 35.0
R6904C_2                                            F35_6904C
   F-22       < 35.0
R6904C_2                                            F16PW229_6904C
   F-16C      < 35.0
R6904C_2                                            B1_6904C
   B-1        < 35.0
PRO_VOLK WEST MOA_2                                 B1VOLK WEST
   B-1        < 35.0
R6904C_2                                            B52_6904C
   B-52G      < 35.0
PRO_VOLK WEST MOA_2                                 B52VOLK WEST
   B-52G      < 35.0
PRO_VOLK WEST MOA_2                                 A10 VOLK WEST
   A-10A      < 35.0
PRO_VOLK WEST MOA_2                                 C130 VOLK WEST
   C-130H&N&P < 35.0
PRO_VOLK WEST MOA_2                                 B2VOLK WEST
   B-2A       < 35.0
PRO_VOLK SOUTH MOA_2                                F16GE100 VOLK SOUTH
   F-16C      < 35.0


Total Level ........     51.9        2.1



    Specific Point:  CASTLE ROCK LOOK
    Top 20 contributors to this level:


             Sound Level
    <                 Airspace                 >   Mission
       Aircraft     (dB)       HA(%)
    PRO_VOLK SOUTH MOA_2                            F16GE100 VOLK SOUTH
       F-16C        53.2        2.6
    PRO_VOLK SOUTH MOA_2                            F16PW220 VOLK SOUTH
       F-16C        45.1        0.8
    PRO_VOLK SOUTH MOA_2                            F18E/F VOLK SOUTH
       F-18E/F      41.6        0.5
    PRO_VOLK SOUTH MOA_2                            F15PW229 VOLK SOUTH
       F-15E        40.2        0.4
    PRO_VOLK SOUTH MOA_2                            F35 VOLK SOUTH
       F-22       < 35.0
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    PRO_VOLK SOUTH MOA_2                              F16PW229 VOLK SOUTH
       F-16C      < 35.0
    PRO_VOLK SOUTH MOA_2                              B1VOLK SOUTH
       B-1        < 35.0
    PRO_VOLK SOUTH MOA_2                              B52VOLK SOUTH
       B-52G      < 35.0
    PRO_VOLK SOUTH MOA_2                              A10 VOLK SOUTH
       A-10A      < 35.0
    PRO_VOLK SOUTH MOA_2                              C130 VOLK SOUTH
       C-130H&N&P < 35.0
    PRO_VOLK SOUTH MOA_2                              B2VOLK SOUTH
       B-2A       < 35.0
    PRO_VOLK WEST MOA_2                               F16GE100 VOLK WEST
       F-16C      < 35.0
    PRO_VOLK FALLS MOA_2                              F16GE100VOLKFALLS
       F-16C      < 35.0
    R6904C_2                                          F16GE100_6904C
       F-16C      < 35.0
    PRO_VOLK WEST MOA_2                               F16PW220 VOLK WEST
       F-16C      < 35.0
    PRO_VOLK FALLS MOA_2                              F16PW220VOLKFALLS
       F-16C      < 35.0
    PRO_VOLK WEST MOA_2                               F18E/F VOLK WEST
       F-18E/F    < 35.0
    PRO_VOLK FALLS MOA_2                              F18E/FVOLKFALLS
       F-18E/F    < 35.0
    R6904C_2                                          F16PW220_6904C
       F-16C      < 35.0
    PRO_VOLK WEST MOA_2                               F15PW229 VOLK WEST
       F-15E      < 35.0


Total Level ........     54.3        3.0



    Specific Point:  COONFORK
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                    >  Mission
       Aircraft     (dB)       HA(%)
    PRO_VOLK FALLS MOA_2                              F16GE100VOLKFALLS
       F-16C        39.5        0.4
    PRO_VOLK FALLS MOA_2                              F16PW220VOLKFALLS
       F-16C      < 35.0
    PRO_VOLK FALLS MOA_2                              F18E/FVOLKFALLS
       F-18E/F    < 35.0
    PRO_VOLK FALLS MOA_2                              F15PW229VOLKFALLS
       F-15E      < 35.0
    PRO_VOLK FALLS MOA_2                              F35VOLKFALLS
       F-22       < 35.0
    PRO_VOLK FALLS MOA_2                              F16PW229VOLKFALLS
       F-16C      < 35.0
    PRO_VOLK FALLS MOA_2                              B1VOLK FALLS
       B-1        < 35.0
    PRO_VOLK FALLS MOA_2                              B52VOLK FALLS
       B-52G      < 35.0
    PRO_VOLK FALLS MOA_2                              A10 VOLK FALLS
       A-10A      < 35.0
    PRO_VOLK FALLS MOA_2                              C130VOLK FALLS
       C-130H&N&P < 35.0
    PRO_VOLK FALLS MOA_2                              B2VOLK FALLS
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   B-2A      < 35.0
PRO_VOLK SOUTH MOA_2                            F16GE100 VOLK SOUTH
   F-16C     < 35.0
PRO_VOLK WEST MOA_2                             F16GE100 VOLK WEST
   F-16C     < 35.0
PRO_VOLK SOUTH MOA_2                            F16PW220 VOLK SOUTH
   F-16C     < 35.0
R6904C_2                                        F16GE100_6904C
   F-16C     < 35.0
PRO_VOLK SOUTH MOA_2                            F18E/F VOLK SOUTH
   F-18E/F   < 35.0
PRO_VOLK SOUTH MOA_2                            F15PW229 VOLK SOUTH
   F-15E     < 35.0
PRO_VOLK WEST MOA_2                             F16PW220 VOLK WEST
   F-16C     < 35.0
PRO_VOLK WEST MOA_2                             F18E/F VOLK WEST
   F-18E/F   < 35.0
R6904C_2                                        F16PW220_6904C
   F-16C     < 35.0


Total Level ........     40.7        0.5



Specific Point:  CRANMOOR
Top 20 contributors to this level:


             Sound Level
<                Airspace                  >  Mission
   Aircraft     (dB)       HA(%)
PRO_VOLK WEST MOA_2                           F16GE100 VOLK WEST
   F-16C        47.8        1.2
R6904C_2                                      F16GE100_6904C
   F-16C        44.7        0.8
PRO_VOLK WEST MOA_2                           F16PW220 VOLK WEST
   F-16C        39.7        0.4
R6904C_2                                      F16PW220_6904C
   F-16C        36.6        0.3
PRO_VOLK WEST MOA_2                           F18E/F VOLK WEST
   F-18E/F      36.1        0.2
R6904C_2                                      F18E/F_6904C
   F-18E/F      35.8        0.2
R6904C_2                                      F15PW229_6904C
   F-15E     < 35.0
PRO_VOLK WEST MOA_2                           F15PW229 VOLK WEST
   F-15E     < 35.0
PRO_VOLK WEST MOA_2                           F35 VOLK WEST
   F-22      < 35.0
R6904C_2                                      F35_6904C
   F-22      < 35.0
PRO_VOLK WEST MOA_2                           F16PW229 VOLK WEST
   F-16C     < 35.0
R6904C_2                                      F16PW229_6904C
   F-16C     < 35.0
R6904C_2                                      B1_6904C
   B-1       < 35.0
PRO_VOLK WEST MOA_2                           B1VOLK WEST
   B-1       < 35.0
R6904C_2                                      B52_6904C
   B-52G     < 35.0
PRO_VOLK WEST MOA_2                           B52VOLK WEST
   B-52G     < 35.0
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    PRO_VOLK WEST MOA_2                                 A10 VOLK WEST
       A-10A      < 35.0
    PRO_VOLK WEST MOA_2                                 C130 VOLK WEST
       C-130H&N&P < 35.0
    PRO_VOLK WEST MOA_2                                 B2VOLK WEST
       B-2A       < 35.0
    PRO_VOLK SOUTH MOA_2                                F16GE100 VOLK SOUTH
       F-16C      < 35.0


Total Level ........     50.8        1.9



    Specific Point:  CUTLER
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                         >  Mission
       Aircraft     (dB)       HA(%)
    PRO_VOLK SOUTH MOA_2                                F16GE100 VOLK SOUTH
       F-16C        49.7        1.6
    PRO_VOLK SOUTH MOA_2                                F16PW220 VOLK SOUTH
       F-16C        41.6        0.5
    PRO_VOLK SOUTH MOA_2                                F18E/F VOLK SOUTH
       F-18E/F      38.1        0.3
    PRO_VOLK SOUTH MOA_2                                F15PW229 VOLK SOUTH
       F-15E        36.7        0.3
    PRO_VOLK SOUTH MOA_2                                F35 VOLK SOUTH
       F-22       < 35.0
    PRO_VOLK SOUTH MOA_2                                F16PW229 VOLK SOUTH
       F-16C      < 35.0
    R6904C_2                                            F16GE100_6904C
       F-16C      < 35.0
    PRO_VOLK SOUTH MOA_2                                B1VOLK SOUTH
       B-1        < 35.0
    PRO_VOLK SOUTH MOA_2                                B52VOLK SOUTH
       B-52G      < 35.0
    R6904C_2                                            F16PW220_6904C
       F-16C      < 35.0
    R6904C_2                                            F18E/F_6904C
       F-18E/F    < 35.0
    R6904C_2                                            F15PW229_6904C
       F-15E      < 35.0
    PRO_VOLK SOUTH MOA_2                                A10 VOLK SOUTH
       A-10A      < 35.0
    PRO_VOLK SOUTH MOA_2                                C130 VOLK SOUTH
       C-130H&N&P < 35.0
    R6904C_2                                            F35_6904C
       F-22       < 35.0
    R6904C_2                                            F16PW229_6904C
       F-16C      < 35.0
    R6904C_2                                            B1_6904C
       B-1        < 35.0
    R6904C_2                                            B52_6904C
       B-52G      < 35.0
    PRO_VOLK SOUTH MOA_2                                B2VOLK SOUTH
       B-2A       < 35.0
    PRO_VOLK WEST MOA_2                                 F16GE100 VOLK WEST
       F-16C      < 35.0


Total Level ........     50.9        1.9
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Specific Point: DEXTERVILLE
Top 20 contributors to this level:

< Airspace >	Aircraft	Sound Level (dB)	HA(%)	Mission
PRO_VOLK WEST MOA_2	F-16C	49.3	1.5	F16GE100 VOLK WEST
PRO_VOLK WEST MOA_2	F-16C	41.2	0.5	F16PW220 VOLK WEST
PRO_VOLK WEST MOA_2	F-18E/F	37.6	0.3	F18E/F VOLK WEST
PRO_VOLK WEST MOA_2	F-15E	36.2	0.2	F15PW229 VOLK WEST
PRO_VOLK WEST MOA_2	F-22	< 35.0		F35 VOLK WEST
PRO_VOLK WEST MOA_2	F-16C	< 35.0		F16PW229 VOLK WEST
PRO_VOLK WEST MOA_2	B-1	< 35.0		B1VOLK WEST
PRO_VOLK WEST MOA_2	B-52G	< 35.0		B52VOLK WEST
PRO_VOLK WEST MOA_2	A-10A	< 35.0		A10 VOLK WEST
PRO_VOLK WEST MOA_2	C-130H&N&P	< 35.0		C130 VOLK WEST
PRO_VOLK WEST MOA_2	B-2A	< 35.0		B2VOLK WEST
PRO_VOLK SOUTH MOA_2	F-16C	< 35.0		F16GE100 VOLK SOUTH
PRO_VOLK FALLS MOA_2	F-16C	< 35.0		F16GE100VOLKFALLS
PRO_VOLK SOUTH MOA_2	F-16C	< 35.0		F16PW220 VOLK SOUTH
R6904C_2	F-16C	< 35.0		F16GE100_6904C
PRO_VOLK SOUTH MOA_2	F-18E/F	< 35.0		F18E/F VOLK SOUTH
PRO_VOLK SOUTH MOA_2	F-15E	< 35.0		F15PW229 VOLK SOUTH
PRO_VOLK FALLS MOA_2	F-16C	< 35.0		F16PW220VOLKFALLS
PRO_VOLK FALLS MOA_2	F-18E/F	< 35.0		F18E/FVOLKFALLS
R6904C_2	F-16C	< 35.0		F16PW220_6904C

Total Level 50.4 1.8

Specific Point: DZR6904
Top 20 contributors to this level:

< Airspace >	Aircraft	Sound Level (dB)	HA(%)	Mission
PRO_VOLK WEST MOA_2				F16GE100 VOLK WEST

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   F-16C        49.1        1.5
R6904C_2                                       F16GE100_6904C
   F-16C        44.7        0.8
PRO_VOLK WEST MOA_2                            F16PW220 VOLK WEST
   F-16C        41.1        0.5
PRO_VOLK WEST MOA_2                            F18E/F VOLK WEST
   F-18E/F      37.4        0.3
R6904C_2                                       F16PW220_6904C
   F-16C        36.7        0.3
PRO_VOLK WEST MOA_2                            F15PW229 VOLK WEST
   F-15E        36.0        0.2
R6904C_2                                       F18E/F_6904C
   F-18E/F      35.9        0.2
R6904C_2                                       F15PW229_6904C
   F-15E      < 35.0
PRO_VOLK WEST MOA_2                            F35 VOLK WEST
   F-22       < 35.0
PRO_VOLK WEST MOA_2                            F16PW229 VOLK WEST
   F-16C      < 35.0
R6904C_2                                       F35_6904C
   F-22       < 35.0
R6904C_2                                       F16PW229_6904C
   F-16C      < 35.0
R6904C_2                                       B1_6904C
   B-1        < 35.0
PRO_VOLK WEST MOA_2                            B1VOLK WEST
   B-1        < 35.0
R6904C_2                                       B52_6904C
   B-52G      < 35.0
PRO_VOLK WEST MOA_2                            B52VOLK WEST
   B-52G      < 35.0
PRO_VOLK WEST MOA_2                            A10 VOLK WEST
   A-10A      < 35.0
PRO_VOLK WEST MOA_2                            C130 VOLK WEST
   C-130H&N&P < 35.0
PRO_VOLK WEST MOA_2                            B2VOLK WEST
   B-2A       < 35.0
PRO_VOLK SOUTH MOA_2                           F16GE100 VOLK SOUTH
   F-16C      < 35.0


Total Level ........     51.8        2.1



    Specific Point:  EASTR6904
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                 >  Mission
       Aircraft     (dB)       HA(%)
    R6904C_2                                      F16GE100_6904C
       F-16C        44.5        0.8
    PRO_VOLK WEST MOA_2                           F16GE100 VOLK WEST
       F-16C        43.3        0.6
    R6904C_2                                      F16PW220_6904C
       F-16C        36.4        0.2
    R6904C_2                                      F18E/F_6904C
       F-18E/F      35.7        0.2
    PRO_VOLK WEST MOA_2                           F16PW220 VOLK WEST
       F-16C        35.2        0.2
    R6904C_2                                      F15PW229_6904C
       F-15E      < 35.0
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    PRO_VOLK WEST MOA_2                            F18E/F VOLK WEST
       F-18E/F    < 35.0
    PRO_VOLK WEST MOA_2                            F15PW229 VOLK WEST
       F-15E      < 35.0
    R6904C_2                                       F35_6904C
       F-22       < 35.0
    R6904C_2                                       F16PW229_6904C
       F-16C      < 35.0
    PRO_VOLK WEST MOA_2                            F35 VOLK WEST
       F-22       < 35.0
    PRO_VOLK WEST MOA_2                            F16PW229 VOLK WEST
       F-16C      < 35.0
    R6904C_2                                       B1_6904C
       B-1        < 35.0
    R6904C_2                                       B52_6904C
       B-52G      < 35.0
    PRO_VOLK WEST MOA_2                            B1VOLK WEST
       B-1        < 35.0
    PRO_VOLK WEST MOA_2                            B52VOLK WEST
       B-52G      < 35.0
    PRO_VOLK WEST MOA_2                            A10 VOLK WEST
       A-10A      < 35.0
    PRO_VOLK WEST MOA_2                            C130 VOLK WEST
       C-130H&N&P < 35.0
    PRO_VOLK WEST MOA_2                            B2VOLK WEST
       B-2A       < 35.0
    PRO_VOLK SOUTH MOA_2                           F16GE100 VOLK SOUTH
       F-16C      < 35.0


Total Level ........     48.3        1.3



    Specific Point:  FINLEY
    Top 20 contributors to this level:


                Sound Level
    <                Airspace                   >  Mission
       Aircraft     (dB)       HA(%)
    PRO_VOLK WEST MOA_2                            F16GE100 VOLK WEST
       F-16C        48.6        1.4
    R6904C_2                                       F16GE100_6904C
       F-16C        44.7        0.8
    PRO_VOLK WEST MOA_2                            F16PW220 VOLK WEST
       F-16C        40.6        0.4
    PRO_VOLK WEST MOA_2                            F18E/F VOLK WEST
       F-18E/F      37.0        0.3
    R6904C_2                                       F16PW220_6904C
       F-16C        36.7        0.3
    R6904C_2                                       F18E/F_6904C
       F-18E/F      35.9        0.2
    PRO_VOLK WEST MOA_2                            F15PW229 VOLK WEST
       F-15E        35.6        0.2
    R6904C_2                                       F15PW229_6904C
       F-15E      < 35.0
    PRO_VOLK WEST MOA_2                            F35 VOLK WEST
       F-22       < 35.0
    R6904C_2                                       F35_6904C
       F-22       < 35.0
    PRO_VOLK WEST MOA_2                            F16PW229 VOLK WEST
       F-16C      < 35.0
    R6904C_2                                       F16PW229_6904C
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      F-16C      < 35.0
   R6904C_2                                      B1_6904C
      B-1        < 35.0
   PRO_VOLK WEST MOA_2                           B1VOLK WEST
      B-1        < 35.0
   R6904C_2                                      B52_6904C
      B-52G      < 35.0
   PRO_VOLK WEST MOA_2                           B52VOLK WEST
      B-52G      < 35.0
   PRO_VOLK WEST MOA_2                           A10 VOLK WEST
      A-10A      < 35.0
   PRO_VOLK WEST MOA_2                           C130 VOLK WEST
      C-130H&N&P < 35.0
   PRO_VOLK WEST MOA_2                           B2VOLK WEST
      B-2A       < 35.0
   PRO_VOLK SOUTH MOA_2                          F16GE100 VOLK SOUTH
      F-16C      < 35.0


Total Level ........     51.4        2.0



   Specific Point:  GRAVPIT1
   Top 20 contributors to this level:


                Sound Level
   <                 Airspace                 >  Mission
      Aircraft     (dB)       HA(%)
   R6904C_2                                      F16GE100_6904C
      F-16C        43.5        0.7
   PRO_VOLK WEST MOA_2                           F16GE100 VOLK WEST
      F-16C        38.8        0.3
   R6904C_2                                      F16PW220_6904C
      F-16C        35.4        0.2
   R6904C_2                                      F18E/F_6904C
      F-18E/F    < 35.0
   R6904C_2                                      F15PW229_6904C
      F-15E      < 35.0
   PRO_VOLK WEST MOA_2                           F16PW220 VOLK WEST
      F-16C      < 35.0
   R6904C_2                                      F35_6904C
      F-22       < 35.0
   PRO_VOLK WEST MOA_2                           F18E/F VOLK WEST
      F-18E/F    < 35.0
   R6904C_2                                      F16PW229_6904C
      F-16C      < 35.0
   PRO_VOLK WEST MOA_2                           F15PW229 VOLK WEST
      F-15E      < 35.0
   R6904C_2                                      B1_6904C
      B-1        < 35.0
   PRO_VOLK WEST MOA_2                           F35 VOLK WEST
      F-22       < 35.0
   R6904C_2                                      B52_6904C
      B-52G      < 35.0
   PRO_VOLK WEST MOA_2                           F16PW229 VOLK WEST
      F-16C      < 35.0
   PRO_VOLK WEST MOA_2                           B1VOLK WEST
      B-1        < 35.0
   PRO_VOLK WEST MOA_2                           B52VOLK WEST
      B-52G      < 35.0
   PRO_VOLK WEST MOA_2                           A10 VOLK WEST
      A-10A      < 35.0
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    PRO_VOLK WEST MOA_2                                    C130 VOLK WEST
       C-130H&N&P < 35.0
    PRO_VOLK WEST MOA_2                                    B2VOLK WEST
       B-2A       < 35.0
    PRO_VOLK SOUTH MOA_2                                   F16GE100 VOLK SOUTH
       F-16C      < 35.0


Total Level ........     46.2        1.0



    Specific Point:  GRAVPIT2
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                          >  Mission
       Aircraft     (dB)       HA(%)
    PRO_VOLK FALLS MOA_2                                   F16GE100VOLKFALLS
       F-16C        48.3        1.3
    PRO_VOLK FALLS MOA_2                                   F16PW220VOLKFALLS
       F-16C        40.3        0.4
    PRO_VOLK FALLS MOA_2                                   F18E/FVOLKFALLS
       F-18E/F      36.7        0.3
    PRO_VOLK FALLS MOA_2                                   F15PW229VOLKFALLS
       F-15E        35.3        0.2
    PRO_VOLK FALLS MOA_2                                   F35VOLKFALLS
       F-22       < 35.0
    PRO_VOLK FALLS MOA_2                                   F16PW229VOLKFALLS
       F-16C      < 35.0
    PRO_VOLK FALLS MOA_2                                   B1VOLK FALLS
       B-1        < 35.0
    PRO_VOLK FALLS MOA_2                                   B52VOLK FALLS
       B-52G      < 35.0
    PRO_VOLK FALLS MOA_2                                   A10 VOLK FALLS
       A-10A      < 35.0
    PRO_VOLK FALLS MOA_2                                   C130VOLK FALLS
       C-130H&N&P < 35.0
    PRO_VOLK FALLS MOA_2                                   B2VOLK FALLS
       B-2A       < 35.0
    PRO_VOLK SOUTH MOA_2                                   F16GE100 VOLK SOUTH
       F-16C      < 35.0
    PRO_VOLK WEST MOA_2                                    F16GE100 VOLK WEST
       F-16C      < 35.0
    PRO_VOLK SOUTH MOA_2                                   F16PW220 VOLK SOUTH
       F-16C      < 35.0
    R6904C_2                                               F16GE100_6904C
       F-16C      < 35.0
    PRO_VOLK SOUTH MOA_2                                   F18E/F VOLK SOUTH
       F-18E/F    < 35.0
    PRO_VOLK SOUTH MOA_2                                   F15PW229 VOLK SOUTH
       F-15E      < 35.0
    PRO_VOLK WEST MOA_2                                    F16PW220 VOLK WEST
       F-16C      < 35.0
    PRO_VOLK WEST MOA_2                                    F18E/F VOLK WEST
       F-18E/F    < 35.0
    R6904C_2                                               F16PW220_6904C
       F-16C      < 35.0


Total Level ........     49.5        1.5
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Specific Point: GREENWOOD
Top 20 contributors to this level:

< Airspace / Aircraft	Sound Level (dB)	HA(%)	> Mission
PRO_VOLK WEST MOA_2 / F-16C	49.3	1.5	F16GE100 VOLK WEST
PRO_VOLK WEST MOA_2 / F-16C	41.3	0.5	F16PW220 VOLK WEST
PRO_VOLK WEST MOA_2 / F-18E/F	37.6	0.3	F18E/F VOLK WEST
PRO_VOLK WEST MOA_2 / F-15E	36.2	0.2	F15PW229 VOLK WEST
PRO_VOLK WEST MOA_2 / F-22	< 35.0		F35 VOLK WEST
PRO_VOLK WEST MOA_2 / F-16C	< 35.0		F16PW229 VOLK WEST
PRO_VOLK WEST MOA_2 / B-1	< 35.0		B1VOLK WEST
PRO_VOLK WEST MOA_2 / B-52G	< 35.0		B52VOLK WEST
PRO_VOLK WEST MOA_2 / A-10A	< 35.0		A10 VOLK WEST
PRO_VOLK WEST MOA_2 / C-130H&N&P	< 35.0		C130 VOLK WEST
PRO_VOLK WEST MOA_2 / B-2A	< 35.0		B2VOLK WEST
PRO_VOLK SOUTH MOA_2 / F-16C	< 35.0		F16GE100 VOLK SOUTH
PRO_VOLK FALLS MOA_2 / F-16C	< 35.0		F16GE100VOLKFALLS
PRO_VOLK SOUTH MOA_2 / F-16C	< 35.0		F16PW220 VOLK SOUTH
R6904C_2 / F-16C	< 35.0		F16GE100_6904C
PRO_VOLK SOUTH MOA_2 / F-18E/F	< 35.0		F18E/F VOLK SOUTH
PRO_VOLK SOUTH MOA_2 / F-15E	< 35.0		F15PW229 VOLK SOUTH
PRO_VOLK FALLS MOA_2 / F-16C	< 35.0		F16PW220VOLKFALLS
PRO_VOLK FALLS MOA_2 / F-18E/F	< 35.0		F18E/FVOLKFALLS
R6904C_2 / F-16C	< 35.0		F16PW220_6904C

Total Level 50.5 1.8

Specific Point: HWY173
Top 20 contributors to this level:

< Airspace / Aircraft	Sound Level (dB)	HA(%)	> Mission
PRO_VOLK WEST MOA_2 / F-16C	49.3	1.5	F16GE100 VOLK WEST
R6904C_2			F16GE100_6904C

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   F-16C       44.7        0.8
PRO_VOLK WEST MOA_2                              F16PW220 VOLK WEST
   F-16C       41.3        0.5
PRO_VOLK WEST MOA_2                              F18E/F VOLK WEST
   F-18E/F     37.6        0.3
R6904C_2                                         F16PW220_6904C
   F-16C       36.7        0.3
PRO_VOLK WEST MOA_2                              F15PW229 VOLK WEST
   F-15E       36.2        0.2
R6904C_2                                         F18E/F_6904C
   F-18E/F     35.9        0.2
R6904C_2                                         F15PW229_6904C
   F-15E     < 35.0
PRO_VOLK WEST MOA_2                              F35 VOLK WEST
   F-22      < 35.0
PRO_VOLK WEST MOA_2                              F16PW229 VOLK WEST
   F-16C     < 35.0
R6904C_2                                         F35_6904C
   F-22      < 35.0
R6904C_2                                         F16PW229_6904C
   F-16C     < 35.0
R6904C_2                                         B1_6904C
   B-1       < 35.0
PRO_VOLK WEST MOA_2                              B1VOLK WEST
   B-1       < 35.0
R6904C_2                                         B52_6904C
   B-52G     < 35.0
PRO_VOLK WEST MOA_2                              B52VOLK WEST
   B-52G     < 35.0
PRO_VOLK WEST MOA_2                              A10 VOLK WEST
   A-10A     < 35.0
PRO_VOLK WEST MOA_2                              C130 VOLK WEST
   C-130H&N&P < 35.0
PRO_VOLK WEST MOA_2                              B2VOLK WEST
   B-2A      < 35.0
PRO_VOLK SOUTH MOA_2                             F16GE100 VOLK SOUTH
   F-16C     < 35.0


Total Level ........     51.9        2.2



Specific Point:  LKARBUTUS
Top 20 contributors to this level:


             Sound Level
<                 Airspace                     >  Mission
   Aircraft     (dB)       HA(%)
PRO_VOLK FALLS MOA_2                             F16GE100VOLKFALLS
   F-16C       47.7        1.2
PRO_VOLK FALLS MOA_2                             F16PW220VOLKFALLS
   F-16C       39.6        0.4
PRO_VOLK FALLS MOA_2                             F18E/FVOLKFALLS
   F-18E/F     36.1        0.2
PRO_VOLK FALLS MOA_2                             F15PW229VOLKFALLS
   F-15E     < 35.0
PRO_VOLK FALLS MOA_2                             F35VOLKFALLS
   F-22      < 35.0
PRO_VOLK FALLS MOA_2                             F16PW229VOLKFALLS
   F-16C     < 35.0
PRO_VOLK FALLS MOA_2                             B1VOLK FALLS
   B-1       < 35.0
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    PRO_VOLK FALLS MOA_2                              B52VOLK FALLS
       B-52G      < 35.0
    PRO_VOLK FALLS MOA_2                              A10 VOLK FALLS
       A-10A      < 35.0
    PRO_VOLK FALLS MOA_2                              C130VOLK FALLS
       C-130H&N&P < 35.0
    PRO_VOLK FALLS MOA_2                              B2VOLK FALLS
       B-2A       < 35.0
    PRO_VOLK SOUTH MOA_2                              F16GE100 VOLK SOUTH
       F-16C      < 35.0
    PRO_VOLK WEST MOA_2                               F16GE100 VOLK WEST
       F-16C      < 35.0
    PRO_VOLK SOUTH MOA_2                              F16PW220 VOLK SOUTH
       F-16C      < 35.0
    R6904C_2                                          F16GE100_6904C
       F-16C      < 35.0
    PRO_VOLK SOUTH MOA_2                              F18E/F VOLK SOUTH
       F-18E/F    < 35.0
    PRO_VOLK SOUTH MOA_2                              F15PW229 VOLK SOUTH
       F-15E      < 35.0
    PRO_VOLK WEST MOA_2                               F16PW220 VOLK WEST
       F-16C      < 35.0
    PRO_VOLK WEST MOA_2                               F18E/F VOLK WEST
       F-18E/F    < 35.0
    R6904C_2                                          F16PW220_6904C
       F-16C      < 35.0


Total Level ........     48.8        1.4



    Specific Point:  MERRILLAN
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                   >  Mission
       Aircraft     (dB)       HA(%)
    PRO_VOLK FALLS MOA_2                              F16GE100VOLKFALLS
       F-16C        48.3        1.3
    PRO_VOLK FALLS MOA_2                              F16PW220VOLKFALLS
       F-16C        40.3        0.4
    PRO_VOLK FALLS MOA_2                              F18E/FVOLKFALLS
       F-18E/F      36.7        0.3
    PRO_VOLK FALLS MOA_2                              F15PW229VOLKFALLS
       F-15E        35.3        0.2
    PRO_VOLK FALLS MOA_2                              F35VOLKFALLS
       F-22       < 35.0
    PRO_VOLK FALLS MOA_2                              F16PW229VOLKFALLS
       F-16C      < 35.0
    PRO_VOLK FALLS MOA_2                              B1VOLK FALLS
       B-1        < 35.0
    PRO_VOLK FALLS MOA_2                              B52VOLK FALLS
       B-52G      < 35.0
    PRO_VOLK FALLS MOA_2                              A10 VOLK FALLS
       A-10A      < 35.0
    PRO_VOLK FALLS MOA_2                              C130VOLK FALLS
       C-130H&N&P < 35.0
    PRO_VOLK FALLS MOA_2                              B2VOLK FALLS
       B-2A       < 35.0
    PRO_VOLK SOUTH MOA_2                              F16GE100 VOLK SOUTH
       F-16C      < 35.0
    PRO_VOLK WEST MOA_2                               F16GE100 VOLK WEST
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   F-16C      < 35.0
PRO_VOLK SOUTH MOA_2                          F16PW220 VOLK SOUTH
   F-16C      < 35.0
R6904C_2                                      F16GE100_6904C
   F-16C      < 35.0
PRO_VOLK SOUTH MOA_2                          F18E/F VOLK SOUTH
   F-18E/F    < 35.0
PRO_VOLK SOUTH MOA_2                          F15PW229 VOLK SOUTH
   F-15E      < 35.0
PRO_VOLK WEST MOA_2                           F16PW220 VOLK WEST
   F-16C      < 35.0
PRO_VOLK WEST MOA_2                           F18E/F VOLK WEST
   F-18E/F    < 35.0
R6904C_2                                      F16PW220_6904C
   F-16C      < 35.0


Total Level ........     49.5        1.5



Specific Point:  MIDR6904
Top 20 contributors to this level:


             Sound Level
<                Airspace                  >  Mission
   Aircraft     (dB)       HA(%)
PRO_VOLK WEST MOA_2                           F16GE100 VOLK WEST
   F-16C        47.7        1.2
R6904C_2                                      F16GE100_6904C
   F-16C        44.7        0.8
PRO_VOLK WEST MOA_2                           F16PW220 VOLK WEST
   F-16C        39.7        0.4
R6904C_2                                      F16PW220_6904C
   F-16C        36.6        0.3
PRO_VOLK WEST MOA_2                           F18E/F VOLK WEST
   F-18E/F      36.0        0.2
R6904C_2                                      F18E/F_6904C
   F-18E/F      35.9        0.2
R6904C_2                                      F15PW229_6904C
   F-15E      < 35.0
PRO_VOLK WEST MOA_2                           F15PW229 VOLK WEST
   F-15E      < 35.0
PRO_VOLK WEST MOA_2                           F35 VOLK WEST
   F-22       < 35.0
R6904C_2                                      F35_6904C
   F-22       < 35.0
PRO_VOLK WEST MOA_2                           F16PW229 VOLK WEST
   F-16C      < 35.0
R6904C_2                                      F16PW229_6904C
   F-16C      < 35.0
R6904C_2                                      B1_6904C
   B-1        < 35.0
R6904C_2                                      B52_6904C
   B-52G      < 35.0
PRO_VOLK WEST MOA_2                           B1VOLK WEST
   B-1        < 35.0
PRO_VOLK WEST MOA_2                           B52VOLK WEST
   B-52G      < 35.0
PRO_VOLK WEST MOA_2                           A10 VOLK WEST
   A-10A      < 35.0
PRO_VOLK WEST MOA_2                           C130 VOLK WEST
   C-130H&N&P < 35.0
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    PRO_VOLK WEST MOA_2                                    B2VOLK WEST
       B-2A        < 35.0
    PRO_VOLK SOUTH MOA_2                                   F16GE100 VOLK SOUTH
       F-16C       < 35.0


Total Level ........     50.8        1.9



    Specific Point:  NWR6904
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                          >  Mission
       Aircraft     (dB)       HA(%)
    PRO_VOLK WEST MOA_2                                    F16GE100 VOLK WEST
       F-16C        48.7        1.4
    R6904C_2                                               F16GE100_6904C
       F-16C        44.7        0.8
    PRO_VOLK WEST MOA_2                                    F16PW220 VOLK WEST
       F-16C        40.7        0.5
    PRO_VOLK WEST MOA_2                                    F18E/F VOLK WEST
       F-18E/F      37.0        0.3
    R6904C_2                                               F16PW220_6904C
       F-16C        36.7        0.3
    R6904C_2                                               F18E/F_6904C
       F-18E/F      35.9        0.2
    PRO_VOLK WEST MOA_2                                    F15PW229 VOLK WEST
       F-15E        35.6        0.2
    R6904C_2                                               F15PW229_6904C
       F-15E       < 35.0
    PRO_VOLK WEST MOA_2                                    F35 VOLK WEST
       F-22        < 35.0
    R6904C_2                                               F35_6904C
       F-22        < 35.0
    PRO_VOLK WEST MOA_2                                    F16PW229 VOLK WEST
       F-16C       < 35.0
    R6904C_2                                               F16PW229_6904C
       F-16C       < 35.0
    R6904C_2                                               B1_6904C
       B-1         < 35.0
    PRO_VOLK WEST MOA_2                                    B1VOLK WEST
       B-1         < 35.0
    R6904C_2                                               B52_6904C
       B-52G       < 35.0
    PRO_VOLK WEST MOA_2                                    B52VOLK WEST
       B-52G       < 35.0
    PRO_VOLK WEST MOA_2                                    A10 VOLK WEST
       A-10A       < 35.0
    PRO_VOLK WEST MOA_2                                    C130 VOLK WEST
       C-130H&N&P < 35.0
    PRO_VOLK WEST MOA_2                                    B2VOLK WEST
       B-2A        < 35.0
    PRO_VOLK SOUTH MOA_2                                   F16GE100 VOLK SOUTH
       F-16C       < 35.0


Total Level ........     51.4        2.0



    Specific Point:  PITTSVILLE
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    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                  >  Mission
       Aircraft     (dB)       HA(%)
    PRO_VOLK WEST MOA_2                            F16GE100 VOLK WEST
       F-16C        47.8        1.2
    PRO_VOLK WEST MOA_2                            F16PW220 VOLK WEST
       F-16C        39.8        0.4
    PRO_VOLK WEST MOA_2                            F18E/F VOLK WEST
       F-18E/F      36.1        0.2
    PRO_VOLK WEST MOA_2                            F15PW229 VOLK WEST
       F-15E      < 35.0
    PRO_VOLK WEST MOA_2                            F35 VOLK WEST
       F-22       < 35.0
    PRO_VOLK WEST MOA_2                            F16PW229 VOLK WEST
       F-16C      < 35.0
    PRO_VOLK WEST MOA_2                            B1VOLK WEST
       B-1        < 35.0
    PRO_VOLK WEST MOA_2                            B52VOLK WEST
       B-52G      < 35.0
    PRO_VOLK WEST MOA_2                            A10 VOLK WEST
       A-10A      < 35.0
    PRO_VOLK WEST MOA_2                            C130 VOLK WEST
       C-130H&N&P < 35.0
    PRO_VOLK WEST MOA_2                            B2VOLK WEST
       B-2A       < 35.0
    PRO_VOLK SOUTH MOA_2                           F16GE100 VOLK SOUTH
       F-16C      < 35.0
    PRO_VOLK FALLS MOA_2                           F16GE100VOLKFALLS
       F-16C      < 35.0
    PRO_VOLK SOUTH MOA_2                           F16PW220 VOLK SOUTH
       F-16C      < 35.0
    R6904C_2                                       F16GE100_6904C
       F-16C      < 35.0
    PRO_VOLK SOUTH MOA_2                           F18E/F VOLK SOUTH
       F-18E/F    < 35.0
    PRO_VOLK SOUTH MOA_2                           F15PW229 VOLK SOUTH
       F-15E      < 35.0
    PRO_VOLK FALLS MOA_2                           F16PW220VOLKFALLS
       F-16C      < 35.0
    PRO_VOLK FALLS MOA_2                           F18E/FVOLKFALLS
       F-18E/F    < 35.0
    R6904C_2                                       F16PW220_6904C
       F-16C      < 35.0


Total Level ........     49.0       1.4



    Specific Point:  PT12M6904
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                  >  Mission
       Aircraft     (dB)       HA(%)
    PRO_VOLK EAST MOA_2                            F16GE100 VOLK EAST
       F-16C      < 35.0
    PRO_VOLK EAST MOA_2                            F16PW220 VOLK EAST
       F-16C      < 35.0
    PRO_VOLK EAST MOA_2                            F18E/F VOLK EAST
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      F-18E/F    < 35.0
   PRO_VOLK EAST MOA_2                          F15PW229 VOLK EAST
      F-15E      < 35.0
   PRO_VOLK EAST MOA_2                          F35 VOLK EAST
      F-22       < 35.0
   PRO_VOLK EAST MOA_2                          F16PW229 VOLK EAST
      F-16C      < 35.0
   PRO_VOLK EAST MOA_2                          B1VOLK EAST
      B-1        < 35.0
   PRO_VOLK EAST MOA_2                          B52VOLK EAST
      B-52G      < 35.0
   PRO_VOLK EAST MOA_2                          C130 VOLK EAST
      C-130H&N&P < 35.0
   PRO_VOLK EAST MOA_2                          A10 VOLK EAST
      A-10A      < 35.0
   PRO_VOLK EAST MOA_2                          B2VOLK EAST
      B-2A       < 35.0
   PRO_VOLK SOUTH MOA_2                         F16GE100 VOLK SOUTH
      F-16C      < 35.0
   PRO_VOLK WEST MOA_2                          F16GE100 VOLK WEST
      F-16C      < 35.0
   PRO_VOLK FALLS MOA_2                         F16GE100VOLKFALLS
      F-16C      < 35.0
   PRO_VOLK SOUTH MOA_2                         F16PW220 VOLK SOUTH
      F-16C      < 35.0
   R6904C_2                                     F16GE100_6904C
      F-16C      < 35.0
   PRO_VOLK SOUTH MOA_2                         F18E/F VOLK SOUTH
      F-18E/F    < 35.0
   PRO_VOLK SOUTH MOA_2                         F15PW229 VOLK SOUTH
      F-15E      < 35.0
   PRO_VOLK WEST MOA_2                          F16PW220 VOLK WEST
      F-16C      < 35.0
   PRO_VOLK FALLS MOA_2                         F16PW220VOLKFALLS
      F-16C      < 35.0


Total Level ........     35.2        0.2



   Specific Point:  REMINGTON
   Top 20 contributors to this level:


                Sound Level
   <                 Airspace                 >  Mission
      Aircraft     (dB)       HA(%)
   PRO_VOLK WEST MOA_2                          F16GE100 VOLK WEST
      F-16C        49.3        1.5
   R6904C_2                                     F16GE100_6904C
      F-16C        44.7        0.8
   PRO_VOLK WEST MOA_2                          F16PW220 VOLK WEST
      F-16C        41.3        0.5
   PRO_VOLK WEST MOA_2                          F18E/F VOLK WEST
      F-18E/F      37.6        0.3
   R6904C_2                                     F16PW220_6904C
      F-16C        36.6        0.3
   PRO_VOLK WEST MOA_2                          F15PW229 VOLK WEST
      F-15E        36.2        0.2
   R6904C_2                                     F18E/F_6904C
      F-18E/F      35.8        0.2
   R6904C_2                                     F15PW229_6904C
      F-15E      < 35.0
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    PRO_VOLK WEST MOA_2                              F35 VOLK WEST
       F-22        < 35.0
    PRO_VOLK WEST MOA_2                              F16PW229 VOLK WEST
       F-16C       < 35.0
    R6904C_2                                         F35_6904C
       F-22        < 35.0
    R6904C_2                                         F16PW229_6904C
       F-16C       < 35.0
    R6904C_2                                         B1_6904C
       B-1         < 35.0
    PRO_VOLK WEST MOA_2                              B1VOLK WEST
       B-1         < 35.0
    R6904C_2                                         B52_6904C
       B-52G       < 35.0
    PRO_VOLK WEST MOA_2                              B52VOLK WEST
       B-52G       < 35.0
    PRO_VOLK WEST MOA_2                              A10 VOLK WEST
       A-10A       < 35.0
    PRO_VOLK WEST MOA_2                              C130 VOLK WEST
       C-130H&N&P < 35.0
    PRO_VOLK WEST MOA_2                              B2VOLK WEST
       B-2A        < 35.0
    PRO_VOLK SOUTH MOA_2                             F16GE100 VOLK SOUTH
       F-16C       < 35.0

Total Level ........     51.9        2.2


    Specific Point:  ROCHEACRI
    Top 20 contributors to this level:


                 Sound Level
    <                 Airspace                  >  Mission
       Aircraft     (dB)       HA(%)
    PRO_VOLK EAST MOA_2                              F16GE100 VOLK EAST
       F-16C       < 35.0
    PRO_VOLK EAST MOA_2                              F16PW220 VOLK EAST
       F-16C       < 35.0
    PRO_VOLK EAST MOA_2                              F18E/F VOLK EAST
       F-18E/F     < 35.0
    PRO_VOLK EAST MOA_2                              F15PW229 VOLK EAST
       F-15E       < 35.0
    PRO_VOLK EAST MOA_2                              F35 VOLK EAST
       F-22        < 35.0
    PRO_VOLK EAST MOA_2                              F16PW229 VOLK EAST
       F-16C       < 35.0
    PRO_VOLK EAST MOA_2                              B1VOLK EAST
       B-1         < 35.0
    PRO_VOLK EAST MOA_2                              B52VOLK EAST
       B-52G       < 35.0
    PRO_VOLK EAST MOA_2                              C130 VOLK EAST
       C-130H&N&P < 35.0
    PRO_VOLK EAST MOA_2                              A10 VOLK EAST
       A-10A       < 35.0
    PRO_VOLK EAST MOA_2                              B2VOLK EAST
       B-2A        < 35.0
    PRO_VOLK SOUTH MOA_2                             F16GE100 VOLK SOUTH
       F-16C       < 35.0
    PRO_VOLK WEST MOA_2                              F16GE100 VOLK WEST
       F-16C       < 35.0
    PRO_VOLK FALLS MOA_2                             F16GE100VOLKFALLS
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   F-16C      < 35.0
PRO_VOLK SOUTH MOA_2                              F16PW220 VOLK SOUTH
   F-16C      < 35.0
R6904C_2                                          F16GE100_6904C
   F-16C      < 35.0
PRO_VOLK SOUTH MOA_2                              F18E/F VOLK SOUTH
   F-18E/F    < 35.0
PRO_VOLK SOUTH MOA_2                              F15PW229 VOLK SOUTH
   F-15E      < 35.0
PRO_VOLK WEST MOA_2                               F16PW220 VOLK WEST
   F-16C      < 35.0
PRO_VOLK FALLS MOA_2                              F16PW220VOLKFALLS
   F-16C      < 35.0


Total Level ........     35.3        0.2



Specific Point:  SHAMROCK
Top 20 contributors to this level:


             Sound Level
<                 Airspace                     >  Mission
   Aircraft     (dB)       HA(%)
PRO_VOLK FALLS MOA_2                              F16GE100VOLKFALLS
   F-16C        46.0        1.0
PRO_VOLK FALLS MOA_2                              F16PW220VOLKFALLS
   F-16C        38.0        0.3
PRO_VOLK FALLS MOA_2                              F18E/FVOLKFALLS
   F-18E/F    < 35.0
PRO_VOLK FALLS MOA_2                              F15PW229VOLKFALLS
   F-15E      < 35.0
PRO_VOLK FALLS MOA_2                              F35VOLKFALLS
   F-22       < 35.0
PRO_VOLK FALLS MOA_2                              F16PW229VOLKFALLS
   F-16C      < 35.0
PRO_VOLK FALLS MOA_2                              B1VOLK FALLS
   B-1        < 35.0
PRO_VOLK FALLS MOA_2                              B52VOLK FALLS
   B-52G      < 35.0
PRO_VOLK FALLS MOA_2                              A10 VOLK FALLS
   A-10A      < 35.0
PRO_VOLK FALLS MOA_2                              C130VOLK FALLS
   C-130H&N&P < 35.0
PRO_VOLK FALLS MOA_2                              B2VOLK FALLS
   B-2A       < 35.0
PRO_VOLK SOUTH MOA_2                              F16GE100 VOLK SOUTH
   F-16C      < 35.0
PRO_VOLK WEST MOA_2                               F16GE100 VOLK WEST
   F-16C      < 35.0
PRO_VOLK SOUTH MOA_2                              F16PW220 VOLK SOUTH
   F-16C      < 35.0
R6904C_2                                          F16GE100_6904C
   F-16C      < 35.0
PRO_VOLK SOUTH MOA_2                              F18E/F VOLK SOUTH
   F-18E/F    < 35.0
PRO_VOLK SOUTH MOA_2                              F15PW229 VOLK SOUTH
   F-15E      < 35.0
PRO_VOLK WEST MOA_2                               F16PW220 VOLK WEST
   F-16C      < 35.0
PRO_VOLK WEST MOA_2                               F18E/F VOLK WEST
   F-18E/F    < 35.0
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R6904C_2	F-16C	< 35.0		F16PW220_6904C

Total Level 47.2 1.1

Specific Point: SWR6904
Top 20 contributors to this level:

< Airspace	Aircraft	Sound Level (dB)	HA(%)	> Mission
PRO_VOLK WEST MOA_2	F-16C	49.3	1.5	F16GE100 VOLK WEST
R6904C_2	F-16C	44.7	0.8	F16GE100_6904C
PRO_VOLK WEST MOA_2	F-16C	41.2	0.5	F16PW220 VOLK WEST
PRO_VOLK WEST MOA_2	F-18E/F	37.6	0.3	F18E/F VOLK WEST
R6904C_2	F-16C	36.7	0.3	F16PW220_6904C
PRO_VOLK WEST MOA_2	F-15E	36.2	0.2	F15PW229 VOLK WEST
R6904C_2	F-18E/F	35.9	0.2	F18E/F_6904C
R6904C_2	F-15E	< 35.0		F15PW229_6904C
PRO_VOLK WEST MOA_2	F-22	< 35.0		F35 VOLK WEST
PRO_VOLK WEST MOA_2	F-16C	< 35.0		F16PW229 VOLK WEST
R6904C_2	F-22	< 35.0		F35_6904C
R6904C_2	F-16C	< 35.0		F16PW229_6904C
R6904C_2	B-1	< 35.0		B1_6904C
PRO_VOLK WEST MOA_2	B-1	< 35.0		B1VOLK WEST
R6904C_2	B-52G	< 35.0		B52_6904C
PRO_VOLK WEST MOA_2	B-52G	< 35.0		B52VOLK WEST
PRO_VOLK WEST MOA_2	A-10A	< 35.0		A10 VOLK WEST
PRO_VOLK WEST MOA_2	C-130H&N&P	< 35.0		C130 VOLK WEST
PRO_VOLK WEST MOA_2	B-2A	< 35.0		B2VOLK WEST
PRO_VOLK SOUTH MOA_2	F-16C	< 35.0		F16GE100 VOLK SOUTH

Total Level 51.9 2.1

Specific Point: WHITEHALL
Top 20 contributors to this level:

VOLK_MRNMAP_PROPOSEDMOAS_2015 - Baseline - MRNMAP.txt

```
             Sound Level
<                Airspace                  >  Mission
   Aircraft     (dB)       HA(%)
PRO_VOLK FALLS MOA_2                           F16GE100VOLKFALLS
   F-16C        45.2        0.8
PRO_VOLK FALLS MOA_2                           F16PW220VOLKFALLS
   F-16C        37.2        0.3
PRO_VOLK FALLS MOA_2                           F18E/FVOLKFALLS
   F-18E/F    < 35.0
PRO_VOLK FALLS MOA_2                           F15PW229VOLKFALLS
   F-15E      < 35.0
PRO_VOLK FALLS MOA_2                           F35VOLKFALLS
   F-22       < 35.0
PRO_VOLK FALLS MOA_2                           F16PW229VOLKFALLS
   F-16C      < 35.0
PRO_VOLK FALLS MOA_2                           B1VOLK FALLS
   B-1        < 35.0
PRO_VOLK FALLS MOA_2                           B52VOLK FALLS
   B-52G      < 35.0
PRO_VOLK FALLS MOA_2                           A10 VOLK FALLS
   A-10A      < 35.0
PRO_VOLK FALLS MOA_2                           C130VOLK FALLS
   C-130H&N&P < 35.0
PRO_VOLK FALLS MOA_2                           B2VOLK FALLS
   B-2A       < 35.0
PRO_VOLK SOUTH MOA_2                           F16GE100 VOLK SOUTH
   F-16C      < 35.0
PRO_VOLK WEST MOA_2                            F16GE100 VOLK WEST
   F-16C      < 35.0
PRO_VOLK SOUTH MOA_2                           F16PW220 VOLK SOUTH
   F-16C      < 35.0
R6904C_2                                       F16GE100_6904C
   F-16C      < 35.0
PRO_VOLK SOUTH MOA_2                           F18E/F VOLK SOUTH
   F-18E/F    < 35.0
PRO_VOLK SOUTH MOA_2                           F15PW229 VOLK SOUTH
   F-15E      < 35.0
PRO_VOLK WEST MOA_2                            F16PW220 VOLK WEST
   F-16C      < 35.0
PRO_VOLK WEST MOA_2                            F18E/F VOLK WEST
   F-18E/F    < 35.0
R6904C_2                                       F16PW220_6904C
   F-16C      < 35.0

Total Level ........     46.3        1.0


     <Run Log>
     Date:                    6/22/2015
     Start Time:             22:23:29
     Stop Time:              22:33:23
     Total Running Time:      9 minutes and  55 seconds.
```