

# 115 FW - MADISON, WI





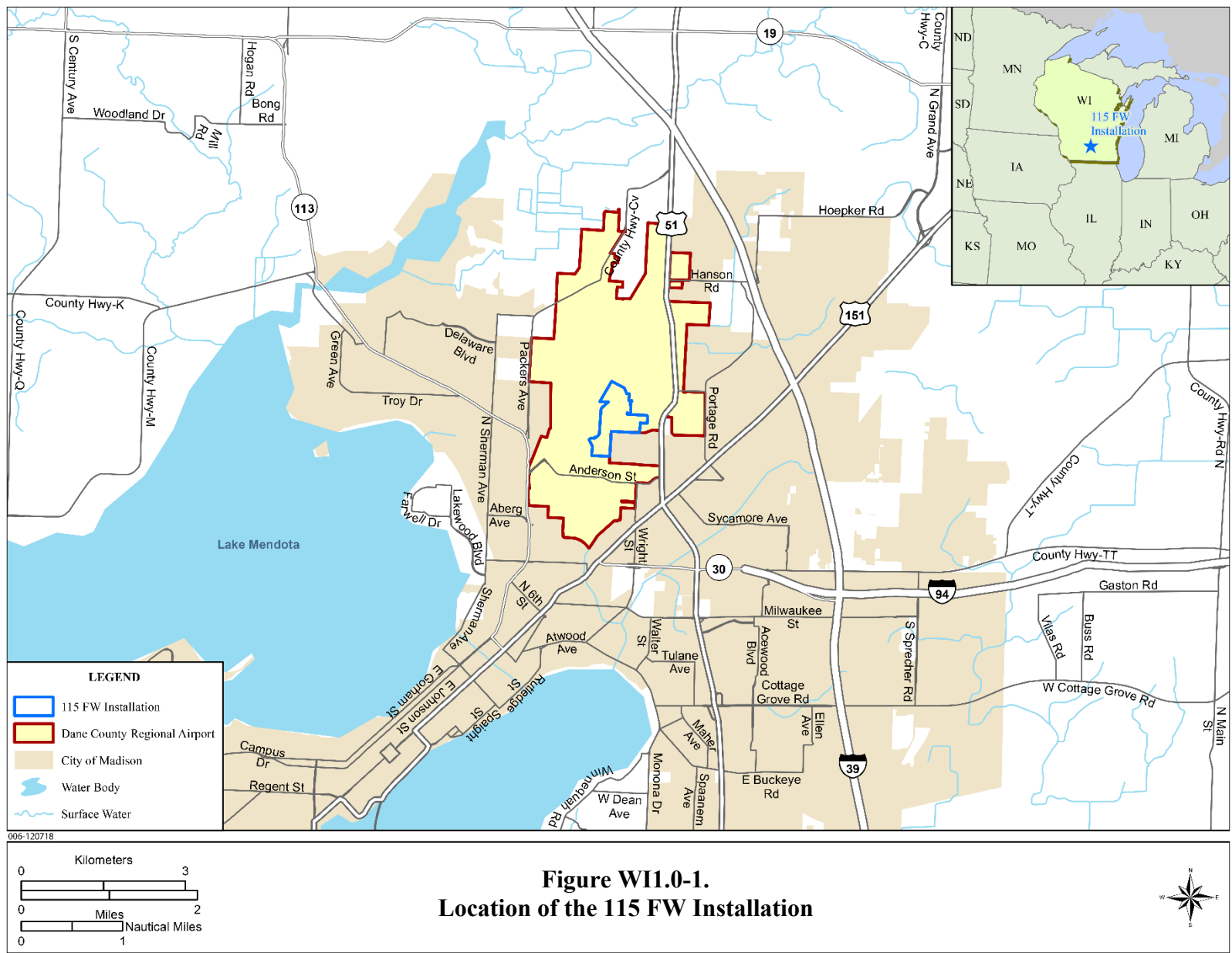
## **WI1.0 115<sup>TH</sup> FIGHTER WING INSTALLATION OVERVIEW**

This section presents an overview of the 115<sup>th</sup> Fighter Wing (115 FW), Madison, Wisconsin; the specifics of the Proposed Action as it relates to both the airfield and the associated airspace; construction and facility modifications required at the installation; and changes to personnel that would result if the F-35A was beddown at the 115 FW installation.

The 115 FW installation (also known as Truax Field) of the Wisconsin Air National Guard (WIANG) is located within the boundaries of Dane County Regional Airport, Wisconsin (Figure WI1.0-1). The installation is approximately 5 miles northeast of the Madison central business district. The 115 FW installation is approximately 155 acres in size (comprised of federally fee-owned land and land leased from Dane County, both of which are licensed by the federal government to the state of Wisconsin for use by the WIANG) and has over 40 buildings/structures (WIANG 2017).

The 115 FW is tasked to carry out both federal and state missions. The federal mission is to staff and train flying and support units to augment Air Combat Command's (ACC's) general-purpose fighter forces to effectively and rapidly deliver F-16 combat power anywhere in the world to perform wartime or peacetime missions, as well as operations other than war. Additionally, the 115 FW provides an Aerospace Control Alert commitment for the region under the North American Aerospace Defense Command and in cooperation with civilian aviation and law enforcement agencies. The 115 FW maintains mobilization readiness and conducts training in support of Total Force capabilities as directed by gaining commands. The state mission is to provide trained and equipped units to protect life and property and to preserve peace, order, and public safety as directed by the Governor of Wisconsin (WIANG 2017). The 115 FW currently operates 18 F-16C/D Primary Aircraft Authorized (PAA) aircraft and 1 RC-26B aircraft.

In the sections that follow, WI2.0 presents the installation-specific description of the Proposed Action at the 115 FW installation. Section WI3.0 addresses the affected environment and environmental consequences that could result if the 115 FW installation was selected as one of the F-35A beddown locations. Refer to Chapter 3 for a complete and detailed definition of resources and the methodology applied to identify potential impacts. Section WI4.0 identifies other, unrelated past, present, and reasonably foreseeable future actions in the affected environment and evaluates whether these actions would cause cumulatively significant effects when considered along with the F-35A beddown actions. This section also represents the irreversible and irretrievable resources that would be committed if the beddown was implemented at the 115 FW installation.



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## **WI2.0 115<sup>TH</sup> FIGHTER WING ALTERNATIVE**

### **WI2.1 115<sup>TH</sup> FIGHTER WING INSTALLATION**

There are four components of this action at the 115 FW installation: (1) conversion from F-16s to F-35As, (2) operations conducted by F-35A aircraft, (3) construction and modification projects to support beddown of the F-35A, and (4) personnel changes to meet F-35A requirements. Each element is explained in more detail below.

#### **WI2.1.1 Aircraft Conversion**

Under this alternative, 18 F-35A aircraft would be based at the 115 FW installation. The beddown would begin in 2023 with delivery of the first F-35A aircraft. The full complement of 18 F-35As would be based at the installation by 2024. Drawdown of the 115 FW's F-16Cs would be complete approximately 6 months before the arrival of the F-35A.

#### **WI2.1.2 Airfield Operations**

The 115 FW is an integral component of the Combat Air Forces (CAF). The CAF defends the homeland of the U.S., as well as deploys forces worldwide to meet threats to ensure the security of the U.S. To fulfill this role, the 115 FW pilots must train as they would fight.

Under this alternative, the National Guard Bureau (NGB) anticipates that by 2024, all 18 F-35A aircraft would be flying up to 6,222 operations per year at the airfield, compared to 4,900 annual operations currently with the F-16C (Table WI2.1-1). Additionally, 968 F-16C annual airfield operations would be expected to continue temporarily to fulfill the alert mission while the F-35A becomes mission capable. This would represent a 47 percent increase in 115 FW operations at the airfield. Once the alert mission transfers to the F-35A, the additional 968 operations would be reduced to zero and the alert sorties would then be inclusive in the 6,222 annual F-35A operations. This would represent a 27 percent increase in 115 FW operations over the long term. In total, Dane County Regional Airport currently supports about 89,885 operations annually (including the military operations), with approximately 90 percent consisting of commercial and civilian flights operating 365 days per year. Based on proposed requirements and deployment patterns under CAF, the F-35A operational aircraft would fly some operations for exercises at other locations during deployments or in preparation for deployments. During such periods, home station flying operations would be reduced accordingly. Some of the home station missions could involve inert ordnance delivery training (within the scope of existing National Environmental Policy Act [NEPA] documentation) at approved ranges.

**Table WI2.1-1. Current and Proposed Annual Airfield Operations at Dane County Regional Airport**

|                            | <i>Total Current Operations</i> | <i>Proposed F-35A Operations</i> |
|----------------------------|---------------------------------|----------------------------------|
| Based F-16                 | 4,900                           | 968 <sup>1</sup>                 |
| Proposed F-35A             | -                               | 6,222                            |
| Other Aircraft             | 84,985                          | 84,985                           |
| Total Airfield Operations  | 89,885                          | 92,175                           |
| Percent Change at Airfield | N/A                             | 3%                               |

*Note:* <sup>1</sup>The alert mission would continue to be flown by up to four F-16 aircraft at Dane County Regional Airport on a temporary basis for an undetermined period of time.

*Legend:* N/A = not applicable.

Under this alternative, total 115 FW annual airfield operations would be expected to increase from 4,900 to 7,190, which includes the proposed F-35A and the F-16 aircraft that would be expected to support the alert mission for an undetermined period of time, which would result in an increase in 115 FW operations of 47 percent, until the F-35A took over the alert mission. This change would represent an approximate 3 percent increase in total aircraft operations at the airfield.

The F-35As would employ the same departure and landing flight tracks as currently used by the F-16Cs. The 115 FW currently uses afterburner on approximately 60 percent of their take-offs at the airfield, but because the F-35A has much more thrust in military power than the F-16, the use of afterburner would be expected to be very limited. NGB anticipates that the F-35A may use afterburner for take-offs no more than 5 percent of the time. F-35A operations would adhere to existing restrictions, and noise abatement procedures currently in place at Dane County Regional Airport, which includes avoidance of Yahara River overflight below 2,000 feet. The F-16C at Dane County Regional Airport currently fly 3 percent of the time between the hours of 10 p.m. and 7 a.m. (environmental night). At this percentage, the F-16C annually fly about 168 operations during environmental nighttime hours, with the majority of the operations after 10 p.m. being associated with arrivals back to the installation. In addition, overseas deployment departures may occur during environmental night, but would be infrequent. In contrast, the civilian and commercial aircraft perform approximately 10 percent of their operations after 10 p.m., or about 8,300 operations per year. The 115 FW would plan to fly a schedule similar to what they currently do with regard to environmental night flights; although contingencies such as weather or special combat mission training may result in rare unplanned operations during this period. Typically, all required “after dark” operations could be achieved prior to 10 p.m.

### **WI2.1.3 Construction**

To support the proposed F-35A operations, additional infrastructure and facilities would be required at the 115 FW installation (Table WI2.1-2). Nineteen infrastructure improvement projects would be needed to support the F-35A beddown. Some of these construction projects also have several options that could be implemented. Table WI2.1-2 describes these projects, the total

affected area in square feet (SF), and new impervious surfaces introduced. Figure WI2.1-1 identifies the construction locations for each project within the installation. It is anticipated that construction would occur between 2020 and 2023.

**Table WI2.1-2. Proposed Construction and Modifications for the 115 FW Installation  
(Page 1 of 2)**

| <i>Action</i>  | <i>Total Area of New Ground Disturbance (SF)</i> | <i>New Impervious Surface (SF)</i> |
|--|--|------------------------------------|
| <b>Project #1 (Option 1) – Flight Simulator</b>  |  |                                    |
| Construct a new 19,000 SF flight simulator building located over the current site of B410. Demolish B410 (4,646 SF).   | 19,000   | 19,000                             |
| <b>Project #1 (Option 2) – Flight Simulator</b>  |  |                                    |
| Construct a 6,000 SF addition to the northwest side of B420 and internal renovations to B420, including AT/FP upgrade, fire suppression, communications security upgrade, blast analysis, structural modifications to meet UFC compliance. | 6,000  | 6,000                              |
| <b>Project #2 – Engine Shop</b>  |  |                                    |
| Undertake interior renovation of B409, including the modification of the doors to fit a 7-ton Gantry crane.  | 0  | 0                                  |
| <b>Project #3 (Option 1) – Aircraft Shelters</b>   |  |                                    |
| Add four new aircraft shelters.  | 24,000   | 0                                  |
| <b>Project #3 (Option 2) – Aircraft Shelters</b>   |  |                                    |
| Add four new aircraft shelters that are fully enclosed.  | 24,000   | 0                                  |
| <b>Project #4 – Maintenance Hangar</b>   |  |                                    |
| Undertake interior renovations to B400, to include power/air, fall protection, ventilation of battery room, and fire protection.   | 0  | 0                                  |
| <b>Project #5 – Weapons Release Shop</b>   |  |                                    |
| Conduct interior renovations to B406, to include installing a 1-ton crane, power/air, fall protection, ventilation of battery room, and fire protection.   | 0  | 0                                  |
| <b>Project #6 (Option 1) – Fuel Cell/Corrosion Control</b>   |  |                                    |
| Undertake interior renovations to B414, including LPS; HVAC; electric; and fire suppression.   | 0  | 0                                  |
| <b>Project #6 (Option 2) – Fuel Cell/Corrosion Control</b>   |  |                                    |
| This project includes construction of a new 22,700 SF building within the footprint of B414. B414 would be demolished.   | 23,000   | 23,000                             |
| <b>Project #6 (Option 3) – Fuel Cell/Corrosion Control</b>   |  |                                    |
| This project includes construction of a new 22,700 SF building within the footprint of the “Hush House” (B1202). The Hush House is a piece of equipment that would be demolished.  | 22,700   | 22,700                             |
| <b>Project #7 (Option 1) – Taxiway F</b>   |  |                                    |
| Widen Taxiway F from 50 feet to 75 feet.   | 15,200   | 15,200                             |
| <b>Project #7 (Option 2) – Taxiway F</b>   |  |                                    |
| Replace Taxiway F, to include a new Taxiway that is 75 feet wide.  | 45,600   | 15,200                             |
| <b>Project #8 – Munitions Maintenance and Inspection</b>   |  |                                    |
| Construct a 1,183 SF munitions maintenance and inspection facility.  | 1,183  | 1,183                              |
| <b>Project #9 – (Option 1) Squadron Operations</b>   |  |                                    |
| Undertake interior modifications to B404 F-16 FMS simulator area for ALIS. In addition, a 300 SF addition would be added to B404.  | 300  | 300                                |
| <b>Project #9 – (Option 2) Squadron Operations – B404</b>  |  |                                    |
| Construct ALIS 1,000 SF addition to Squadron Operations and remodel interior of B404 to meet mission needs. A 300 SF addition to the southwest corner of B404 would be constructed.  | 1,300  | 1,300                              |

**Table WI2.1-2. Proposed Construction and Modifications for the 115 FW Installation  
(Page 2 of 2)**

| <i>Action</i>  | <i>Total Area of New Ground Disturbance (SF)</i> | <i>New Impervious Surface (SF)</i> |
|--|--|------------------------------------|
| <b>Project #10 – (Option 1) Repurpose B420 for AGE Maintenance</b>   |  |                                    |
| Remodel interior of B420 for new AGE Maintenance or remodeled Avionics space (B409), assuming Project #1 Option #1 is selected.  | 0  | 0                                  |
| <b>Project #10 – (Option 2) Repurpose B409 for AGE Maintenance</b>   |  |                                    |
| Remodel interior of Avionics space (B409), assuming Project #1 Option #1 is selected.  | 0  | 0                                  |
| <b>Project #11 – Flow Through Aircraft Shelters – B412</b>   |  |                                    |
| Undertake interior renovations to B412, including power/air, fall protection, and fire protection.   | 0  | 0                                  |
| <b>Project #12 – Remodel B510 (Option 1)</b>   |  |                                    |
| Remodel a portion of B510 that would be vacated by the consolidation in XGFG139001 ADAL CERFP Medical MILCON project for Deployable Spares Kit.  | 3,400  | 0                                  |
| <b>Project #12 – Remodel B420 (Option 2)</b>   |  |                                    |
| Remodel a portion of B420 for Deployable Spares Kit.   | 3,400  | 0                                  |
| <b>Project #13 – Upgrade Aircraft Pavements – Ramp</b>   |  |                                    |
| Upgrade aircraft pavements to support aircraft taxi as a result of new aircraft shelters (Project 3 – either option).  | 67,500   | 0                                  |
| <b>Project #14 – Weapons Loading Training (Option 1)</b>   |  |                                    |
| Construct a new weapons loading training facility adjacent to B414.  | 11,500   | 0                                  |
| <b>Project #14 – Weapons Loading Training (Option 2)</b>   |  |                                    |
| Construct a new weapons loading training facility northwest of facility T1.  | 11,500   | 0                                  |
| <b>Project #15 – AGE</b>   |  |                                    |
| This project includes a 2,000 SF addition to B426 as well as adding new doors and 1,500 SF of new asphalt driveway to B401.  | 3,500  | 3,500                              |
| <b>Project #16 – Distributed Spares (Option 1)</b>   |  |                                    |
| This project includes a 6,000 SF addition to the northeast side of B510.   | 6,000  | 1,000                              |
| <b>Project #16 – Distributed Spares (Option 2)</b>   |  |                                    |
| This project includes a 6,000 SF addition to the east side of B510.  | 6,000  | 3,000                              |
| <b>Project #16 – Distributed Spares (Option 3)</b>   |  |                                    |
| Construction of a new 6,000 SF facility.   | 6,000  | 0                                  |
| <b>Project #17 – Levelator</b>   |  |                                    |
| A levelator would be added to the loading dock of B1207. A levelator is an apparatus that connects the truck to the loading dock and helps with the transfer of goods from the truck to the loading dock. In addition, the asphalt adjacent to the building would be replaced. | 1,200  | 0                                  |
| <b>Project #18 – Refueler parking</b>  |  |                                    |
| Two parking spots would be added for the refueler vehicles.  | 5,700  | 5,700                              |
| <b>Project #19 – Hazardous Materials Storage Facility</b>  |  |                                    |
| Internal renovations to B511 to install new fire suppression system.   | 0  | 0                                  |

*Legend:* ADAL = Addition or Alteration; AGE = Aerospace Ground Equipment; ALIS = Autonomic Logistics Information System; AT/FP = Anti-terrorism/Force Protection; B = Building; CERFP = Chemical, Biological, Radiological, Nuclear and High Yield Explosive Enhanced Response Force Package; FMS = Full Mission Simulator; HVAC = heating, ventilation, and air conditioning; LPS = Lightning Protection System; MILCON = military construction; SF = square feet; UFC = Unified Facilities Criteria.

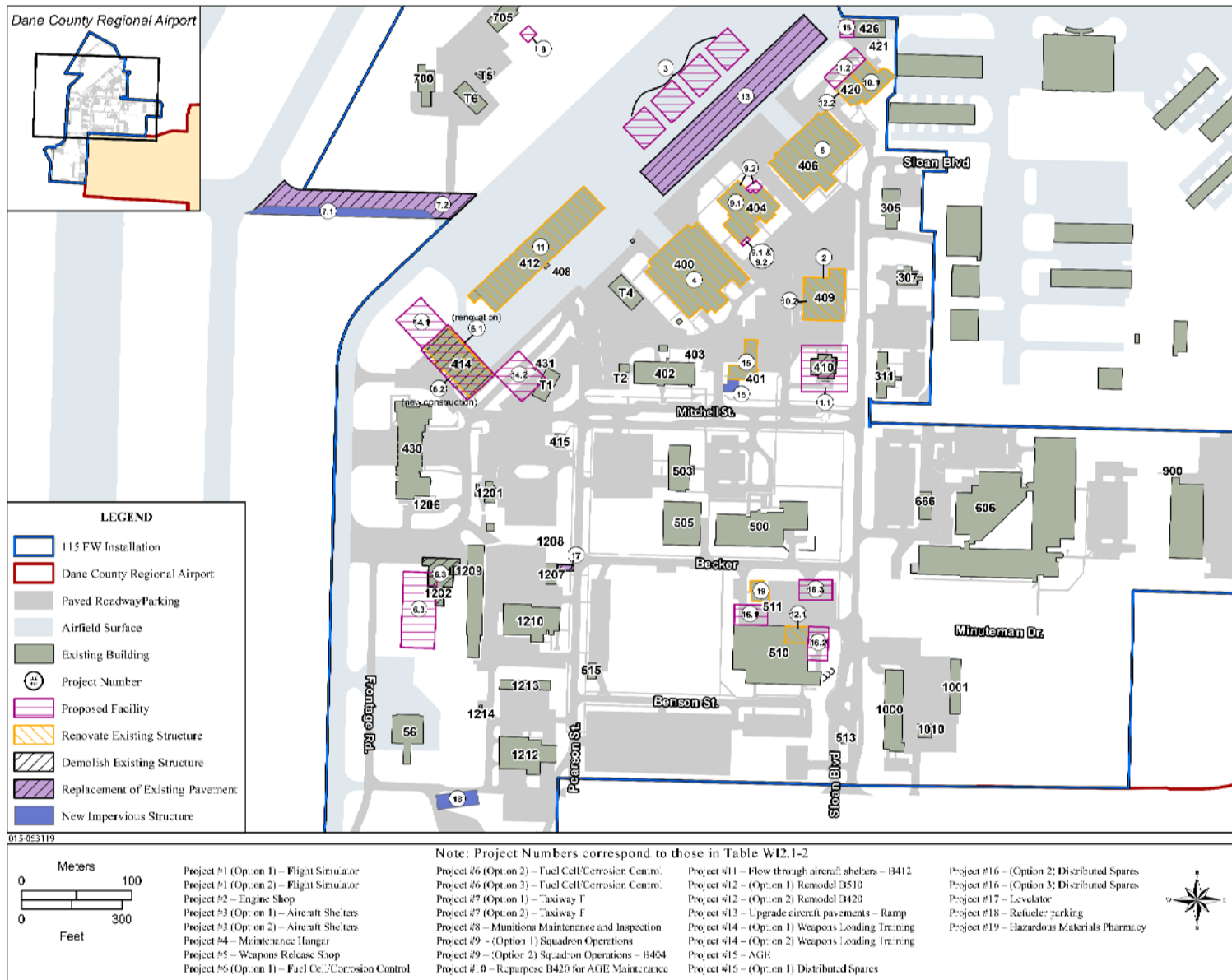


Figure W12.1-1.  
 115 FW Construction and Modifications

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#### **WI2.1.4 Personnel**

The 115 FW supports 230 federal technician civilian employees, 183 Active Guard Reserve (AGR), and 701 traditional guardsmen (Wiang 2017). Additionally, there are 22 Total Force Integration airmen, and 67 state employees. It is expected that the overall number of Air National Guard (ANG) personnel at the 115 FW installation would remain effectively static following conversion to the F-35A. There may be some retraining that occurs, but overall, the number of ANG personnel is expected to remain approximately the same as it currently is at the 115 FW installation. However, as a component of this proposal, a U.S. Air Force (USAF) Active Duty Associate Unit would be installed at the two selected alternatives.

The 115 FW currently has a USAF Active Duty Associate Unit of 4 pilots and 17 maintenance staff in place. As a component of the Proposed Action, this USAF Active Duty Associate Unit would be increased to be comprised of up to 5 pilots, 40 maintenance staff, and approximately 5 other support staff. Therefore, the 115 FW would add up to 1 Active Duty pilot, 23 maintenance staff, and 5 other support staff to their existing USAF Active Duty Associate Unit, resulting in an associate unit of up to approximately 50 total personnel. For more information on the USAF Active Duty Associate Unit, see Section 2.2.1.4. In addition, up to approximately 35 new personnel would be added at each installation to provide security and contract oversight for Full Mission Simulator (FMS) and the Autonomic Logistics Information System (ALIS) (broken down approximately by 7 field service, 15 ALIS support, 10 training, and 3 security personnel).

#### **WI2.2 115<sup>TH</sup> FIGHTER WING: TRAINING AIRSPACE AND RANGES**

The 115 FW uses several airspace units (Table WI2.2-1 and Figure WI2.2-1), including over land Military Operations Areas (MOAs), overlying Air Traffic Control Assigned Airspace (ATCAAs), and Restricted Areas. Section 2.2.2.1 provides definitions of these airspace units. The beddown action would not require changes in Special Use Airspace (SUA) attributes, volume, or proximity; and the type and number of ordnance employed at the ranges is expected to remain the same or decrease. The F-35As are permitted to utilize the Volk Airspace Complex above flight level (FL) 300 for 8 weeks (2 weeks/quarter) each year. The remainder of high altitude training requirements will be met in other existing high altitude ATCAAs as available.

**Table WI2.2-1. 115 FW Military Training Airspace**

| <i>Airspace</i>                | <i>Floor (feet MSL)<sup>1</sup></i> | <i>Ceiling (feet MSL)<sup>1</sup></i> |
|--------------------------------|-------------------------------------|---------------------------------------|
| Volk East MOA                  | 8,000                               | To BNI 18,000                         |
| Volk West MOA                  | 500                                 | To BNI 18,000                         |
| Volk South MOA                 | 500                                 | To BNI 18,000                         |
| Volk Falls MOA                 | 500                                 | To BNI 18,000                         |
| R-6904 A                       | 150 feet AGL                        | 23,000                                |
| R-6904 B                       | Surface                             | 23,000                                |
| Black River ATCAA <sup>2</sup> | 18,000                              | 21,000                                |
| Volk West ATCAA <sup>2</sup>   | 18,000                              | 28,000                                |
| Volk East ATCAA                | 18,000                              | 28,000                                |
| Oshkosh ATCAA                  | 18,000                              | 24,000                                |
| Sheboygan East ATCAA           | 18,000                              | 28,000                                |
| Sheboygan West ATCAA           | 18,000                              | 28,000                                |

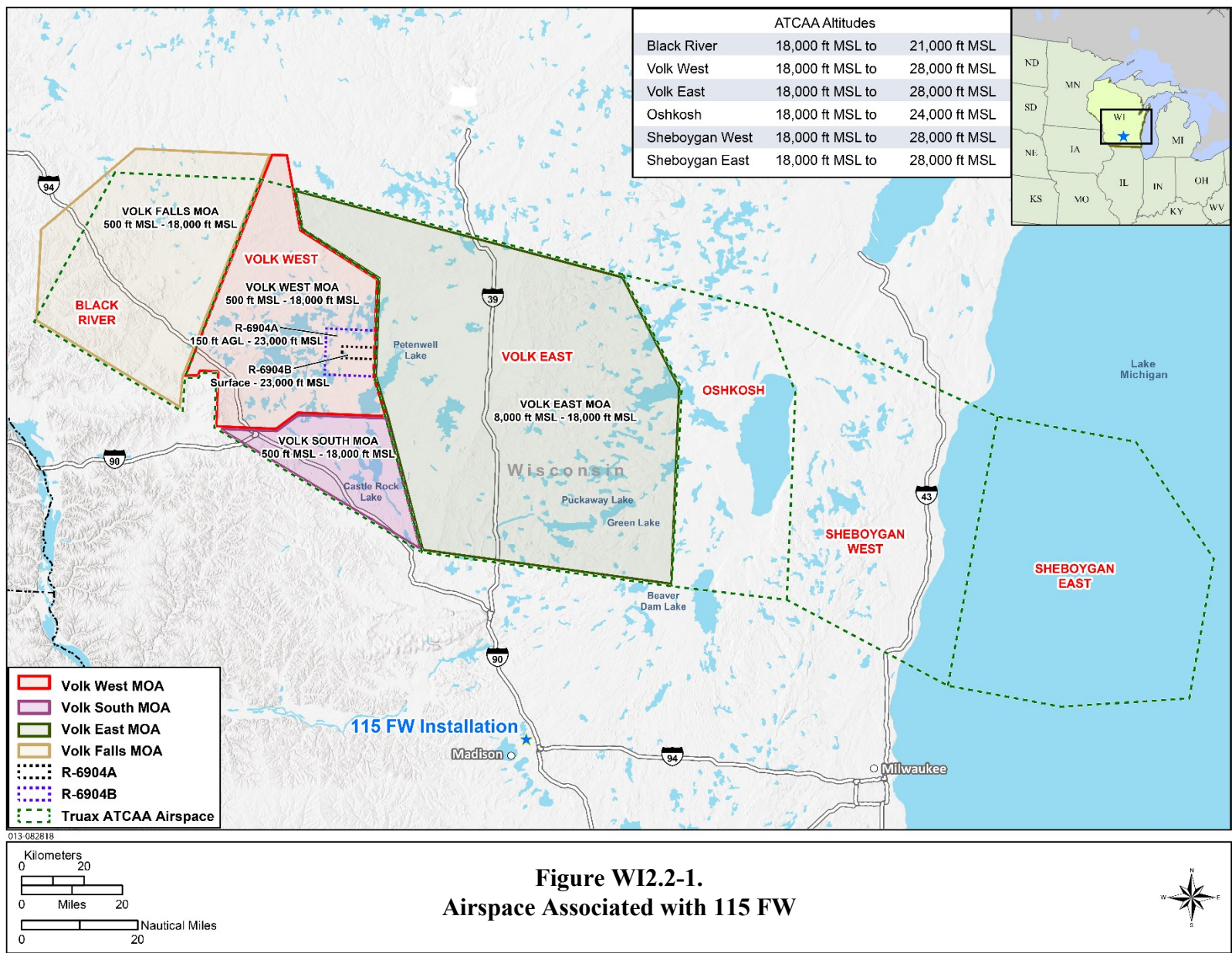
*Notes:* <sup>1</sup>MSL is the elevation (on the ground) or altitude (in the air) of an object, relative to the average sea level. The elevation of a mountain, for example, is marked by its highest point and is typically illustrated as a small circle on a topographic map with the MSL height shown in either feet or meters or both. Because aircraft fly across vast landscapes, where points above the ground can and do vary, MSL is used to denote the “plane” on which the floors and ceilings of SUA are established and the altitude at which aircraft must operate within that SUA.

<sup>2</sup> Ceiling for ATCAA’s is as assigned per FAA per Memorandum of Understanding.

*Legend:* AGL = above ground level; ATCAA = Air Traffic Control Assigned Airspace; BNI = but not including (all MOAs extend to 18,000 feet MSL) unless otherwise noted; MOA = Military Operations Area; MSL = mean sea level; R- = Restricted Area.

*Source:* Federal Aviation Administration (FAA) 2017.

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## **WI2.2.1     Airspace Use**

As the replacement for fighter aircraft, the F-35As would conduct missions and training programs necessary to fulfill its multi-role responsibilities (refer to Chapter 2). All F-35A flight activities would take place in existing airspace, so no airspace modifications would be required. The NGB expects that the F-35A would operate in the airspace currently used by the 115 FW. The 115 FW F-16 aircraft currently conduct up to 2,400 annual sorties (or 200 monthly sorties) lasting between 30-60 minutes in the airspace. Under the Proposed Action, the F-35A aircraft would conduct up to 3,061 annual sorties (approximately 250 monthly sorties) lasting 30-60 minutes in the airspace. Based on this, there would be an increase of approximately 25 percent in the amount of time spent in the airspace under the Proposed Action.

Although the F-35As would perform the F-16 missions, they represent a different aircraft with different capabilities and would fly somewhat differently. Pilots would adapt training activities, where necessary, to ensure their accomplishment within available airspace. No changes to airspace structure are anticipated. The differences in utilization of the existing airspace include use of higher altitudes overall, combined use of existing airspace, and generally higher altitudes for supersonic flights that occur.

The Volk Airspace Complex supports 99 percent of training operations by the F-16s from the 115 FW. Within these airspace units, the 115 FW accounts for about 71 percent of the activity.

The F-35A would be expected to fly more of the time at higher altitudes than the F-16 (Table WI2.2-2), operating more than 90 percent of the time above 10,000 feet mean sea level (MSL), compared to about 62 percent for the F-16C. This would result in the F-35A aircraft conducting most of their operations in ATCAAs and higher altitude regimes. Regardless of the altitude structure and percent use indicated in Table WI2.2-2, F-35A aircraft (as do existing military aircraft) would adhere to all established floors and ceilings of airspace units.

**Table WI2.2-2. Approximate 115 FW Current and Proposed Altitude Distribution**

| <i>Altitude<br/>(feet)</i> | <i>Percentage Use<br/>F-16C<br/>Multi-role</i> | <i>Percentage Use<br/>F-35A<br/>Multi-role</i> |
|----------------------------|--|--|
| 500-2,000 AGL              | 11%  | 1%   |
| 2,000-5,000 AGL            | 7%   | 1%   |
| 5,000-10,000 MSL           | 20%  | 5%   |
| 10,000 MSL-18,000 MSL      | 50%  | 24%  |
| 18,000 MSL-30,000 MSL      | 11%  | 58%  |
| Above 30,000               | 1%   | 11%  |

*Legend:* AGL = above ground level; MSL = mean sea level.

Table WI2.2-3 shows current operations in the airspace used by the 115 FW. It reflects the total number of flight operations and includes the WIANG aircraft, as well as other USAF, Navy, and transient aircraft operations.

**Table WI2.2-3. Approximate 115 FW Current and Proposed Airspace Operations**

| <i>Airspace Unit</i> | <i>All Aircraft Current Airspace Operations</i> | <i>F-16C Current Airspace Operations</i> | <i>Proposed All Aircraft Airspace Operations</i> | <i>Proposed F-35A Airspace Operations</i> |
|----------------------|---|--|--|---|
| Volk East MOA        | 2,701   | 1,728                                    | 3,177  | 2,204                                     |
| Volk West MOA        | 2,701   | 1,728                                    | 3,177  | 2,204                                     |
| Volk South MOA       | 2,401   | 1,536                                    | 2,824  | 1,959                                     |
| Volk Falls MOA       | 2,501   | 1,600                                    | 2,942  | 2,041                                     |
| R-6904 A             | 556   | 386                                      | 662  | 492                                       |
| R-6904 B             | 556   | 386                                      | 662  | 492                                       |
| Black River ATCAA    | 2,251   | 1,440                                    | 2,648  | 1,837                                     |
| Volk West ATCAA      | 2,431   | 1,555                                    | 2,859  | 1,984                                     |
| Volk East ATCAA      | 2,431   | 1,555                                    | 2,859  | 1,984                                     |
| Oshkosh ATCAA        | 1,351   | 864                                      | 1,589  | 1,102                                     |
| Sheboygan East ATCAA | 1,351   | 864                                      | 1,589  | 1,102                                     |
| Sheboygan West ATCAA | 1,351   | 864                                      | 1,589  | 1,102                                     |

*Legend: ATCAA = Air Traffic Control Assigned Airspace; MOA = Military Operations Area; R- = Restricted Area.*

Like the F-16, the F-35A would fly approximately 90-minute long missions, including take-off, transit to and from the training airspace, training activities, and landing. Depending upon the distance, speed, and type of training activity, the F-35A would spend approximately 30-60 minutes in the training airspace. On occasion during an exercise, the F-35A may spend up to 90 minutes in one or more airspace units.

To train with the full capabilities of the aircraft, the F-35A would employ supersonic flight at altitudes, and within airspace, already authorized for such activities. Due to the F-35A’s mission and the aircraft’s capabilities, the NGB anticipates that approximately 10 percent of the time spent in air combat training would involve supersonic flight. Supersonic flight is not allowed in the Volk Airspace Complex below 30,000 feet MSL, so all proposed F-35A supersonic activity would occur above that altitude. Supersonic operations are not approved for the Volk Airspace Complex on a full-time basis. Due to an insufficient flight ceiling in Oshkosh and Sheboygan ATCAAs, only Volk ATCAAs are used for supersonic flight above 30,000 feet MSL.

### **WI2.2.2 Ordinance Use and Defensive Countermeasures**

Most air-to-ground training would be simulated, where nothing is released from the aircraft, and target scoring is done electronically. As was discussed in Chapter 2, Section 2.2.2.7, however, the F-35A (like the F-16) is capable of carrying and employing several types of air-to-air and air-to-ground ordnance (including strafing) and pilots would need training in their use. As the NGB currently envisions, the type and number of ordnance is expected to remain the same or

decrease from that currently employed by the F-16s. F-35A pilots would only use ranges and airspace authorized for the type of ordnance being employed and within the number already approved at a range and/or target. If in the future the NGB identifies weapons systems that are either new or could exceed currently approved levels, appropriate NEPA documentation would need to occur prior to their employment.

Hardwood Range (Restricted Area [R-] 6904A/B) contains varied target sets for supporting laser and practice/inert air-to-ground weapons training. No live-weapons training is permitted at Hardwood Range. It is expected that any live-fire training would be conducted during formal training exercises conducted remotely from the 115 FW installation.

Like the F-16, the F-35A would employ chaff and flares as defensive countermeasures in training. Chaff and flares are the principal defensive mechanisms dispensed by military aircraft to avoid attack by enemy air defense systems. Use of chaff and flares are permitted in all airspace units identified in Table WI2.2-3 and proposed for use by the F-35A. Flares are not permitted to be released below 2,000 feet above ground level (AGL) over non-government-owned or -controlled property. For the purposes of this analysis, it is estimated that F-35A chaff and flare expenditure would not exceed use by legacy F-16s on a per operation basis for the 115 FW.

Based on the emphasis on flight at higher altitudes for the F-35A, roughly 90 percent of flare releases would occur above 15,000 feet MSL. At this altitude, most flares would be released more than seven times higher than the minimum release altitude permitted (2,000 feet AGL) over non-government-owned or -controlled property and ensure complete burnout before reaching the ground.

### **WI2.3      AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES AT THE 115 FW INSTALLATION**

Analysis of affected environment provides a benchmark that enables decision-makers to evaluate the environmental consequences of the proposed beddown alternatives at each installation. For each resource, this installation-specific section uses description of the affected environment and the evaluation of the No Action Alternative. Changes to the affected environment that are attributable to the Proposed Action are then examined for each resource. Thus, the change (increase or decrease) in the resource at each installation can be compared for all alternative locations.

### **WI2.4      PERMITS, AGENCY CONSULTATIONS, AND GOVERNMENT-TO-GOVERNMENT CONSULTATIONS**

The 115 FW operates under agreements with a series of environmental permitting agencies for such resources as air, water, and cultural resources.

*Permitting.* The following section describes the permits that would be required to implement at this alternative location.

- Facilities that discharge stormwater from certain activities (including industrial activities, construction activities, and municipal stormwater collection systems) require Clean Water Act (CWA) Section 402 National Pollutant Discharge Elimination System (NPDES) permits.
  - For construction activities disturbing 1 or more acres, the project would require the application for, and compliance with Wisconsin’s general stormwater permit, “General Permit to Discharge under the WPDES - Land Disturbing Construction Activities.” Site-specific stormwater pollution control plans will be developed, and practices implemented, in conformance with the permit and State Regulations NR 151 and 216.
  - The 115 FW installation has industrial activities as defined in 40 Code of Federal Regulations (CFR) 122, and is covered as a co-permittee under Dane County Regional Airport’s Wisconsin Pollutant Discharge Elimination System (WPDES) permit (WPDES Permit No. WI-0048747-04-0) (WIANG 2016). The conditions of the permit are intended to comply with existing water quality standards contained in Chapters NR 102 and NR 105 of the Wisconsin Administrative Code. The permit also regulates stormwater point discharges and wastewater discharges to the airport’s separate storm sewer system and requires periodic reporting by the Dane County Regional Airport. As required by the installations WPDES stormwater discharge permit specifically, the 115 FW installation has developed and implemented a Stormwater Pollution Prevention Plan (SWPPP) (WIANG 2016) with the purpose to provide a management and engineering strategy specific to the 115 FW installation to improve the quality of stormwater runoff and thereby improve the quality of receiving waters. The existing SWPPP (WIANG 2016), already in place for the installation, would be amended, as necessary, to reflect post-construction operations and potentially new best management practices (BMPs).
  - Additionally, the discharge from one oil/water separator (OWS) operated by WIANG that discharges to Starkweather Creek is covered under the 2015 Dane County Regional Airport WPDES permit.
- Federal projects with a footprint larger than 5,000 SF must maintain predevelopment hydrology and prevent any net increase in stormwater runoff as outlined in Unified Facilities Criteria (UFC) 3-210-10, *Low Impact Development*, and consistent with the U.S. Environmental Protection Agency’s (USEPA’s) *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects* under Section 438 of the Energy Independence and Security Act (EISA) of 2007.
- Control of stormwater flow and pollution controls would be applied in accordance with Chapter 14 of the Dane County Ordinances: Erosion Control Permits and Stormwater Control Permit (Chapter 14, Subchapter II: *Erosion Control and Stormwater*

*Management*). Chapter 14 regulates stormwater pollution and flow for construction activity that disturbs more than 4,000 SF of land area and/or creates more than 20,000 SF of impervious surface. In addition, a cumulative soil annual loss rate of less than or equal to 7.5 tons per acre from construction activity areas will be achieved in accordance with the Dane County Erosion Control and Stormwater Management Manual, by following procedures outlined in Chapter 2, *Erosion Control*, of the Manual.

- The 115 FW will coordinate with the USEPA, Region V and Wisconsin Department of Natural Resources (WDNR) regarding proposed construction near Environmental Restoration Program (ERP) sites on the 115 FW installation.
- A conformity applicability determination is required for federal actions occurring in nonattainment or maintenance areas for criteria pollutants when the total direct and indirect stationary and mobile source emissions of nonattainment pollutants or their precursors exceed *de minimis* thresholds. Because the 115 FW installation is located within an area in attainment for all criteria pollutants, a conformity applicability analysis is not necessary.
- Personnel conducting construction and/or demolition activities will strictly adhere to all applicable occupational safety requirements during construction activities.
- Sampling for asbestos-containing materials (ACMs) and lead-based paint (LBP) would occur prior to demolition and renovation activities for those buildings not previously tested; all materials would be handled in accordance with USAF policy. If ACMs or LBP is present, the 115 FW would employ appropriately trained and licensed contractors to perform the ACM and/or LBP removal work and would notify the construction contractors of the presence of ACMs and/or LBP so that appropriate precautions could be taken to protect the health and safety of the workers.

Some of the construction and modifications would require prior Federal Aviation Administration (FAA) approval of a change to the airport's Airport Layout Plan. Before providing such approval, the FAA would have to comply with NEPA.

*Consultation.* An initial consultation letter was sent to the Wisconsin State Historic Preservation Office (SHPO) in February 2018. Consultation will continue through the Environmental Impact Analysis Process (EIAP).

*Government-to-Government.* An initial phone call to Tribal offices to verify contact information and current Senior-level Tribal Officials before any materials were mailed to the American Indian Tribe was completed in late October/early November 2017. An initial government-to-government consultation letter was sent to 11 federally-recognized American Indian Tribes with ancestral ties to the 115 FW installation and lands beneath the associated airspace in February 2018. These 11 American Indian Tribes included 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 Indian Tribe of Wisconsin, Stockbridge-Munsee Community Band of Mohican Indians, Oneida Nation of Wisconsin, Red Cliff Band of Lake Superior Chippewa, St. Croix of Lake Superior Chippewa Community, and Sokaogon Chippewa Community (Mole Lake Band of Lake Superior Chippewa Indians). After the initial government-to-government consultation letter was sent, NGB followed up with telephone calls and emails in an effort to increase accessibility and encourage communication in the event an American Indian Tribe would have any concerns regarding the Proposed Action or land below the potentially affected airspace areas. No American Indian reservations underlie the airspace associated with the 115 FW. To date, no responses have been received from the federally-recognized American Indian Tribes associated with the 115 FW.

## **WI2.5 PUBLIC INVOLVEMENT / AGENCY CONCERNS**

### **WI2.5.1 Scoping**

A scoping meeting was held on March 8, 2018 in Madison, Wisconsin. There were 356 people that attended the scoping meeting and 595 comments were received from the public and agencies prior to close of the scoping period.

Most comments received were in support of the F-35A beddown at the 115 FW installation. The primary issue was concern about noise generated from the airport. Of the 594 general public comments, 445 were in support of the proposed beddown, 115 expressed concerns about noise. Some of the questions/concerns that the public expressed during the scoping period included:

- Aircraft noise concerns related to:
  - General annoyance
  - Hearing loss
  - Property values
  - Domestic pets
  - Wildlife
  - Sleep interference
  - Impacts to outdoor activities
  - Request for noise mitigation
- Air quality concerns from operation of the F-35A.
- Many of the lower income housing areas are located near the airfield.
- Concern regarding fuel and other toxic chemicals that could leach into aquifers.
- Consideration of other alternative locations.
- There was not enough notification for the meetings, nor was it given in a timely manner. Suggestion for use of social media such as Twitter, Facebook, etc.
- Safety/crash concerns.

- Confusion about why the non-preferred alternatives are still being considered.
- The F-35A aircraft are too expensive and not necessary.
- General opposition to the F-35A beddown.
- General support for the F-35A beddown.

## **WI2.5.2 Draft Environmental Impact Statement Public Comment Period**

A Draft Environmental Impact Statement (EIS) public meeting was held on September 12, 2019 in Madison, Wisconsin. There were over 585 people that attended the meeting and 5,706 comments were received from the public and agencies with regard to the Proposed Action at Madison prior to close of the comment period. See Section 1.6 of the EIS for more details on the public involvement process. The following are the most prevalent comments received from the Madison public on the Draft EIS. See Appendix A6 for a summary of responses to comments on the Draft EIS.

- 1) General support or opposition to the proposed beddown.
- 2) General complaints about noise.
- 3) Disagreements about how noise is modeled, e.g., Day-Night Average Sound Level (DNL) is not “what one hears.”
- 4) General concerns about Environmental Justice communities.
- 5) There was no obvious use of maximum sound level ( $L_{max}$ ), while previous F-35A Beddown EIS’s contained tables of  $L_{max}$ .
- 6) General disbelief that 5 percent afterburner use would be sufficient; thus, requests to model noise at varying levels of afterburner.
- 7) Disagreement/disbelief in number of “home station” operations.
- 8) Concern about increased noise causing health concerns.
- 9) Suggestions to identify less urban areas for the F-35A aircraft.
- 10) The public demonstrated concern that “incompatible” meant “uninhabitable” with respect to anticipated noise increases in residential areas. Text has been added to the Land Use Definition of Resource section to clarify the difference.
- 11) The public requested more elaboration on potential mitigation.
- 12) Concern about the nuclear capability of the F-35A.
- 13) Concern about a decrease in property values and tax base.
- 14) Perfluorooctane sulfonate (PFOS)/perfluorooctanoic acid (PFOA) issues.
- 15) Concern about noise impacts to people with post-traumatic stress disorder (PTSD), autism, etc. (special needs).
- 16) Request to translate the document, portions of the document, or public affairs materials into Spanish/Hmong.
- 17) Concern because the venue for the public meeting(s) was not closer to the airport.

## **WI2.6      MITIGATION**

The USAF does not have authority to expend appropriated funds on facilities that are not under the direct control of the USAF. However, the FAA has a program that addresses noise and compatible land use near airports. Title 14, CFR, Part 150 - *Airport Noise Compatibility Planning*, the implementing regulations of the *Aviation Safety and Noise Abatement Act of 1979*, as amended, provides a voluntary process an airport sponsor can use to mitigate significant noise impacts from airport users. It is important to note that the Part 150 program is not a guarantee that sound mitigation or abatement will take place. Eligibility for sound insulation in noise-sensitive land uses through the FAA's Airport Improvement Program requires that the impacted property is located within a DNL 65 decibels (dB) or higher noise contour and meet various other criteria in FAA guide documents used for sound mitigation.

Noise Exposure Maps (NEMs) can and do change over time. NEMs include an existing year and a future year (5 years forward in time). These NEMs have to be updated every 5 years or certified to the FAA that they are current. Non-compatible land uses (i.e., residences) can become compatible if the DNL 65 dB noise contour changes shape or becomes smaller due to changes in operational procedures, fleet mix, or nighttime operations.

Upon completion of the Final EIS, a mitigation plan will be prepared in accordance with 32 CFR 989.22(d). The mitigation plan will address specific mitigations identified and agreed to during the EIAP, as discussed in the EIS and identified in the Record of Decision (ROD). The Mitigation and Monitoring Plan will be developed for those installations chosen, and will include metrics to track and monitor those activities that are identified to minimize the impacts. These could include afterburner usage, flight tracks, number of operations, etc. The Mitigation and Monitoring Plan will identify who is responsible for implementing specific mitigation procedures, who is responsible for funding them, and who is responsible for tracking these measures to ensure compliance.

### **WI3.0 115<sup>TH</sup> FIGHTER WING AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

#### **WI3.1 NOISE**

The following sections present the noise environment created by military and civil/commercial aircraft operations around the airfield, followed by an evaluation of the noise generated by military aircraft in training airspace. Both the affected environment and the Proposed Action Alternative (environmental consequences) are analyzed and the results presented. For purposes of this analysis, the No Action Alternative is the same as the affected environment, whereby no F-35A aircraft would be beddown at the installation and current operations would continue.

##### **WI3.1.1 Installation**

The USAF and ANG specify use of the NOISEMAP software program suite to model noise exposure at and around military air bases for military aircraft activity, while the FAA requires the Aviation Environmental Design Tool (AEDT) to model commercial and civil aircraft operations at and around airfields. To comply with both organizations' requirements, the noise analysis utilized both software models at the 115 FW installation.

The civil/commercial aircraft data, derived from the 2016 Integrated Noise Model and converted to AEDT, includes modifications (e.g., to replace some aircraft types with others) requested by Dane County Regional Airport personnel. Civilian aircraft operational information relied on radar data and manual updates provided by FAA representatives at the Dane County Regional Airport. Interviews with members of the 115 FW provided updates to the military flight operations to reflect current operational conditions.

Noise modeling utilized annual average day (AAD) aircraft operations computed by dividing the total yearly airport operations by 365 days per year. The noise modeling relies on aircraft's flight tracks (paths over the ground) and profiles (which includes altitude, airspeed, power settings, and other flight conditions). The noise analysis considers the numbers of each type of operation by aircraft/track/profile, local climate, terrain surrounding the airfield, and similar data related to aircraft engine runs that occur at specific static locations on the ground (e.g., pre- and post-flight and maintenance activities). A team primarily made up of representatives from the installation's flying squadrons and air traffic controllers, as well as the NGB, developed this data through iterative meetings and discussions subsequently compiled into a data validation package. The NGB team reviewed the data validation package and approved the operational details for modeling (115 FW 2019a).

WI3.1.1.1 Affected Environment

For the noise analysis at and around the 115 FW installation, the affected environment is the area that experiences noise generated by aircraft operations. These areas include along taxiways, runways, engine run sites, and in adjacent airspace where aircraft operating at the airfield transit along flight routes, approach or depart the airfield, and conduct closed pattern operations.

Table WI3.1-1 summarizes the modeled annual military flight operations of aircraft based at the 115 FW installation as well as transient military aircraft that visit the airfield on a temporary basis, referred to as ‘transients.’ Table WI3.1-2 summarizes the modeled current annual civil/commercial (e.g., 737, 757, A300s, regional jets) flight operations that operate out of Dane County Regional Airport. In 2016, there were 89,885 flight operations at Dane County Regional Airport, just over 90 percent of which (81,333) were civil/commercial aircraft. Based and transient military aircraft account for under 10 percent of the total flight operations. Of the military aircraft, the F-16C conducts the most flight operations (4,900), or about 5 percent of the total for the airport. The F-16C currently utilizes afterburner for 60 percent of departures and military power for the remaining. Individual flight profiles have been modeled for the two departure types.

**Table WI3.1-1. Annual Airfield Operations for Based and Transient Military Aircraft at Dane County Regional Airport – Current**

| <i>Aircraft Type</i>               | <i>Modeled As</i>              | <i>Arrivals Day</i> | <i>Arrivals Night</i> | <i>Departures Day</i> | <i>Departures Night</i> | <i>Closed Patterns Day</i> | <i>Closed Patterns Night</i> | <i>Total Day</i> | <i>Total Night</i> | <i>Total</i> |
|------------------------------------|--------------------------------|---------------------|-----------------------|-----------------------|-------------------------|----------------------------|------------------------------|------------------|--------------------|--------------|
| <b>Based Military Aircraft</b>     |                                |                     |                       |                       |                         |                            |                              |                  |                    |              |
| F-16C                              | F-16C                          | 2,280               | 120                   | 2,352                 | 48                      | 100                        | 0                            | 4,732            | 168                | 4,900        |
| RC-26                              | C-23                           | 114                 | 6                     | 118                   | 2                       | 0                          | 0                            | 232              | 8                  | 240          |
| C-26                               | C-23                           | 248                 | 2                     | 248                   | 2                       | 0                          | 0                            | 496              | 4                  | 500          |
| UH-60M                             | UH-60A                         | 1,282               | 68                    | 1,336                 | 14                      | 0                          | 0                            | 2,618            | 82                 | 2,700        |
|                                    | <b>Subtotal Based</b>          | <b>3,924</b>        | <b>196</b>            | <b>4,054</b>          | <b>66</b>               | <b>100</b>                 | <b>0</b>                     | <b>8,078</b>     | <b>262</b>         | <b>8,340</b> |
| <b>Transient Military Aircraft</b> |                                |                     |                       |                       |                         |                            |                              |                  |                    |              |
| Fighter                            | F-16C                          | 43                  | 0                     | 43                    | 0                       | 0                          | 0                            | 86               | 0                  | 86           |
| Heavy Cargo                        | C-17                           | 26                  | 0                     | 26                    | 0                       | 0                          | 0                            | 52               | 0                  | 52           |
| Heavy Prop                         | C-130H/N/P                     | 15                  | 0                     | 15                    | 0                       | 0                          | 0                            | 30               | 0                  | 30           |
| Tanker                             | KC-135R                        | 22                  | 0                     | 22                    | 0                       | 0                          | 0                            | 44               | 0                  | 44           |
|                                    | <b>Subtotal Transient</b>      | <b>106</b>          | <b>0</b>              | <b>106</b>            | <b>0</b>                | <b>0</b>                   | <b>0</b>                     | <b>212</b>       | <b>0</b>           | <b>212</b>   |
|                                    | <b>Total Military Aircraft</b> | <b>4,030</b>        | <b>196</b>            | <b>4,160</b>          | <b>66</b>               | <b>100</b>                 | <b>0</b>                     | <b>8,290</b>     | <b>262</b>         | <b>8,552</b> |

Notes: Day = 7 a.m. to 10 p.m., Night = 10 p.m. to 7 a.m.  
For total airfield operations, a closed pattern includes two operations (one departure and one arrival).  
Totals may be off due to rounding.

**Table WI3.1-2. Annual Airfield Operations for Civil/Commercial Aircraft at  
Dane County Regional Airport – Current**

| <i>Aircraft Type</i> | <i>Arrivals Day</i> | <i>Arrivals Night</i> | <i>Departures Day</i> | <i>Departures Night</i> | <i>Closed Patterns Day</i> | <i>Closed Patterns Night</i> | <i>Total Day</i> | <i>Total Night</i> | <i>Total</i>  |
|----------------------|---------------------|-----------------------|-----------------------|-------------------------|----------------------------|------------------------------|------------------|--------------------|---------------|
| 717200               | 1,144               | 0                     | 1,144                 | 0                       | 0                          | 0                            | 2,288            | 0                  | 2,288         |
| 737800               | 208                 | 208                   | 104                   | 208                     | 0                          | 0                            | 312              | 416                | 728           |
| 757PW                | 156                 | 104                   | 156                   | 156                     | 0                          | 0                            | 312              | 260                | 572           |
| A300B4-203           | 156                 | 0                     | 156                   | 0                       | 0                          | 0                            | 312              | 0                  | 312           |
| A319-131             | 312                 | 260                   | 520                   | 104                     | 0                          | 0                            | 832              | 364                | 1,196         |
| A320-211             | 312                 | 208                   | 416                   | 52                      | 0                          | 0                            | 728              | 260                | 988           |
| BEC33                | 58                  | 7                     | 58                    | 7                       | 0                          | 0                            | 116              | 14                 | 130           |
| BEC58P               | 2,024               | 223                   | 2,024                 | 223                     | 2,138                      | 101                          | 6,186            | 547                | 6,733         |
| CL600                | 1,350               | 149                   | 1,349                 | 149                     | 0                          | 0                            | 2,699            | 298                | 2,997         |
| CL601                | 1,196               | 104                   | 1,508                 | 0                       | 0                          | 0                            | 2,704            | 104                | 2,808         |
| CNA172               | 3,600               | 400                   | 3,600                 | 400                     | 5,700                      | 299                          | 12,900           | 1,099              | 13,999        |
| CNA206               | 900                 | 98                    | 900                   | 98                      | 950                        | 50                           | 2,750            | 246                | 2,996         |
| CNA20T               | 45                  | 5                     | 45                    | 5                       | 0                          | 0                            | 90               | 10                 | 100           |
| CNA441               | 450                 | 50                    | 450                   | 50                      | 0                          | 0                            | 900              | 100                | 1,000         |
| CNA500               | 584                 | 65                    | 584                   | 65                      | 0                          | 0                            | 1,168            | 130                | 1,298         |
| CNA750               | 180                 | 20                    | 180                   | 20                      | 0                          | 0                            | 360              | 40                 | 400           |
| CRJ9-ER              | 3,068               | 572                   | 2,912                 | 572                     | 0                          | 0                            | 5,980            | 1,144              | 7,124         |
| EMB145               | 2,600               | 520                   | 2,756                 | 364                     | 0                          | 0                            | 5,356            | 884                | 6,240         |
| EMB170               | 312                 | 0                     | 312                   | 0                       | 0                          | 0                            | 624              | 0                  | 624           |
| EMB175               | 936                 | 52                    | 1,040                 | 0                       | 0                          | 0                            | 1,976            | 52                 | 2,028         |
| GASEPF               | 1,181               | 131                   | 1,181                 | 131                     | 2,315                      | 122                          | 4,677            | 384                | 5,061         |
| GASEPV               | 2,249               | 249                   | 2,249                 | 249                     | 7,125                      | 288                          | 11,623           | 786                | 12,409        |
| GII                  | 675                 | 74                    | 675                   | 74                      | 0                          | 0                            | 1,350            | 148                | 1,498         |
| GIV                  | 111                 | 12                    | 111                   | 12                      | 0                          | 0                            | 222              | 24                 | 246           |
| MD88                 | 1,248               | 208                   | 1,092                 | 312                     | 0                          | 0                            | 2,340            | 520                | 2,860         |
| PA28                 | 584                 | 65                    | 584                   | 65                      | 0                          | 0                            | 1,168            | 130                | 1,298         |
| PA31                 | 1,530               | 170                   | 1,530                 | 170                     | 0                          | 0                            | 3,060            | 340                | 3,400         |
| <b>Total</b>         | <b>27,169</b>       | <b>3,954</b>          | <b>27,636</b>         | <b>3,486</b>            | <b>18,228</b>              | <b>860</b>                   | <b>73,033</b>    | <b>8,300</b>       | <b>81,333</b> |

Notes: Day = 7 a.m. to 10 p.m., Night = 10 p.m. to 7 a.m.

For total airfield operations, a closed pattern includes two operations (one departure and one arrival).

Totals may be off due to rounding.

### Noise Exposure

Noise exposure computed with the NOISEMAP software program is presented graphically in a plot of contour lines of DNL, a table of DNL at specific noise-sensitive representative locations, and counts of on- and off-airport acreages within each noise contour.

Figure WI3.1-1 and Table WI3.1-3 present a graphical depiction and tabular description of the 16 points of interest (POIs), representing a cross section of nearby schools, places of worship, and daycare centers, which inform on the adjacent residential area conditions. This is not intended to be an exhaustive list of POIs, but rather representative. Only the Richardson School location, which is located on airport property, currently exceeds 65 A-weighted decibels (dBA) DNL. Northside Kinder Care, Ridgeway Church, Chapel of Faith, and the residential areas near Packers

Avenue and Quincy Avenue are currently exposed to DNL between 60 and 65 dB. The remaining POI locations experience DNL less than 60 dB.

**Table WI3.1-3. DNL at Representative Points of Interest – Current**

| <i>Map ID</i> | <i>Description</i>                           | <i>DNL (dBA)</i> |
|---------------|--|------------------|
| 1             | Play Haven Child Care                        | 56               |
| 2             | Northside Kinder Care                        | 62               |
| 3             | Smartie Pants Early Learning Center (former) | 55               |
| 4             | UW Health at the American Center             | 52               |
| 5             | Holy Transfiguration Orthodox Mission        | 53               |
| 6             | Bashford United Methodist Church             | 55               |
| 7             | Burke Lutheran Church                        | 54               |
| 8             | Ridgeway Church                              | 61               |
| 9             | Chapel of Faith Anglican Church              | 60               |
| 10            | Lake View Elementary                         | 58               |
| 11            | Portage Road at Hoepker Road                 | 53               |
| 12            | Packers Avenue at Wheeler Road               | 62               |
| 13            | Milwaukee Street at Farwell Street           | 56               |
| 14            | The Richardson School                        | 68               |
| 15            | Madison Baptist Academy                      | 57               |
| 16            | Quincy Avenue and Carpenter Street           | 62               |

*Legend:* dBA = A-weighted decibel; DNL = Day-Night Average Sound Level.  
*Source:* 115 FW 2019a.

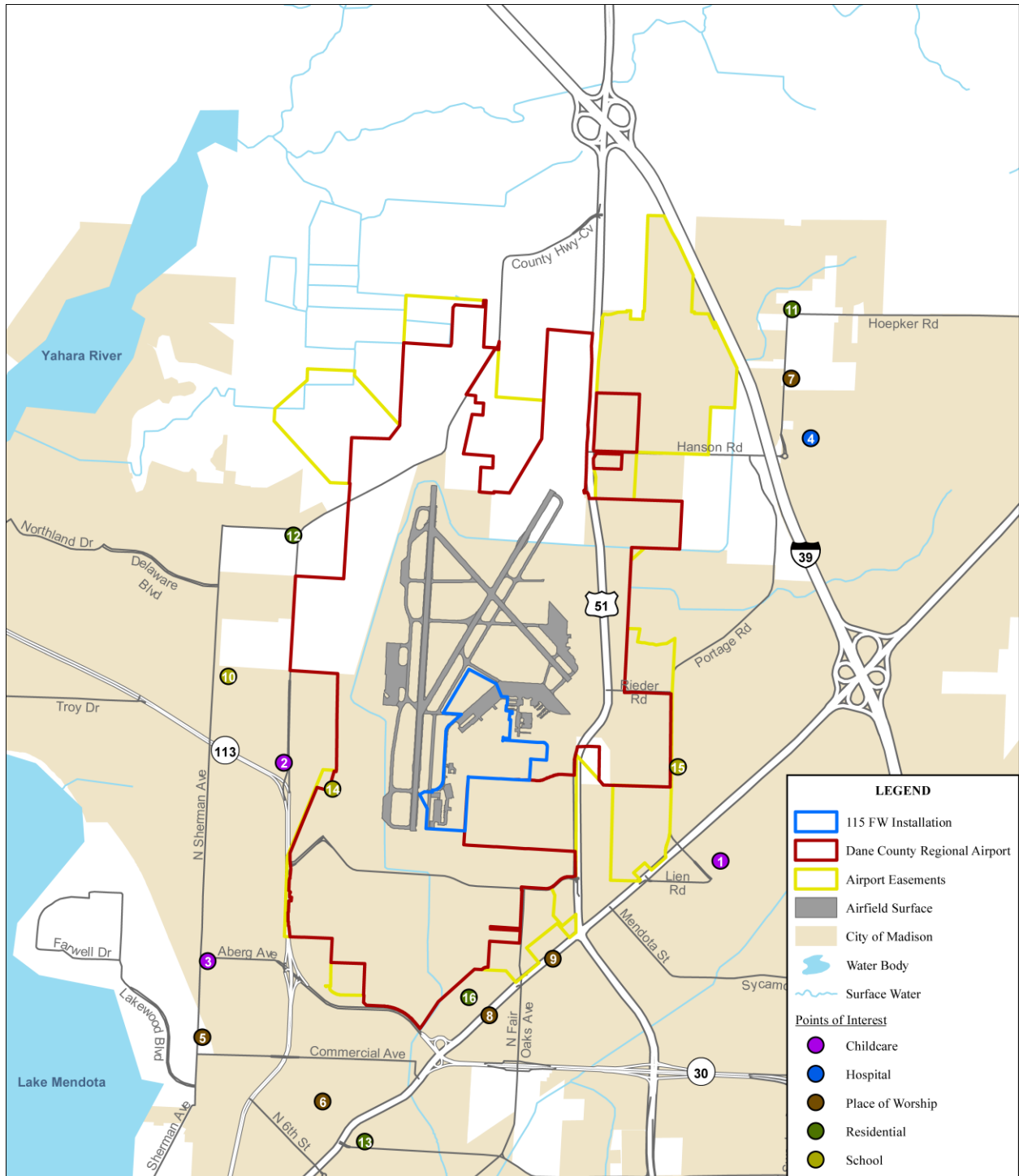
Figure WI3.1-2 shows the DNL contours for the affected environment at Dane County Regional Airport, in 5 dB increments from 65 to 85 dB DNL. As shown, the 65 dB DNL contour extends outside of the airport boundary approximately 0.2 mile to the north and northwest, and remains within the airport boundary to the south.

Table WI3.1-4 lists the acreage lying within noise contours of 65 to 85 dB DNL under the affected environment. There are 600 acres within the current 65 dB DNL contour off airport property with 507 of those exposed to 65 to 70 dB and 93 acres exposed to 70 to 75 dB. The airport owns avigation easements on 248 of the acres exposed to 65 to 70 dB and 89 of the acres exposed to 70 dB or greater.

**Table WI3.1-4. Acreage Within Noise Contour Bands – Current**

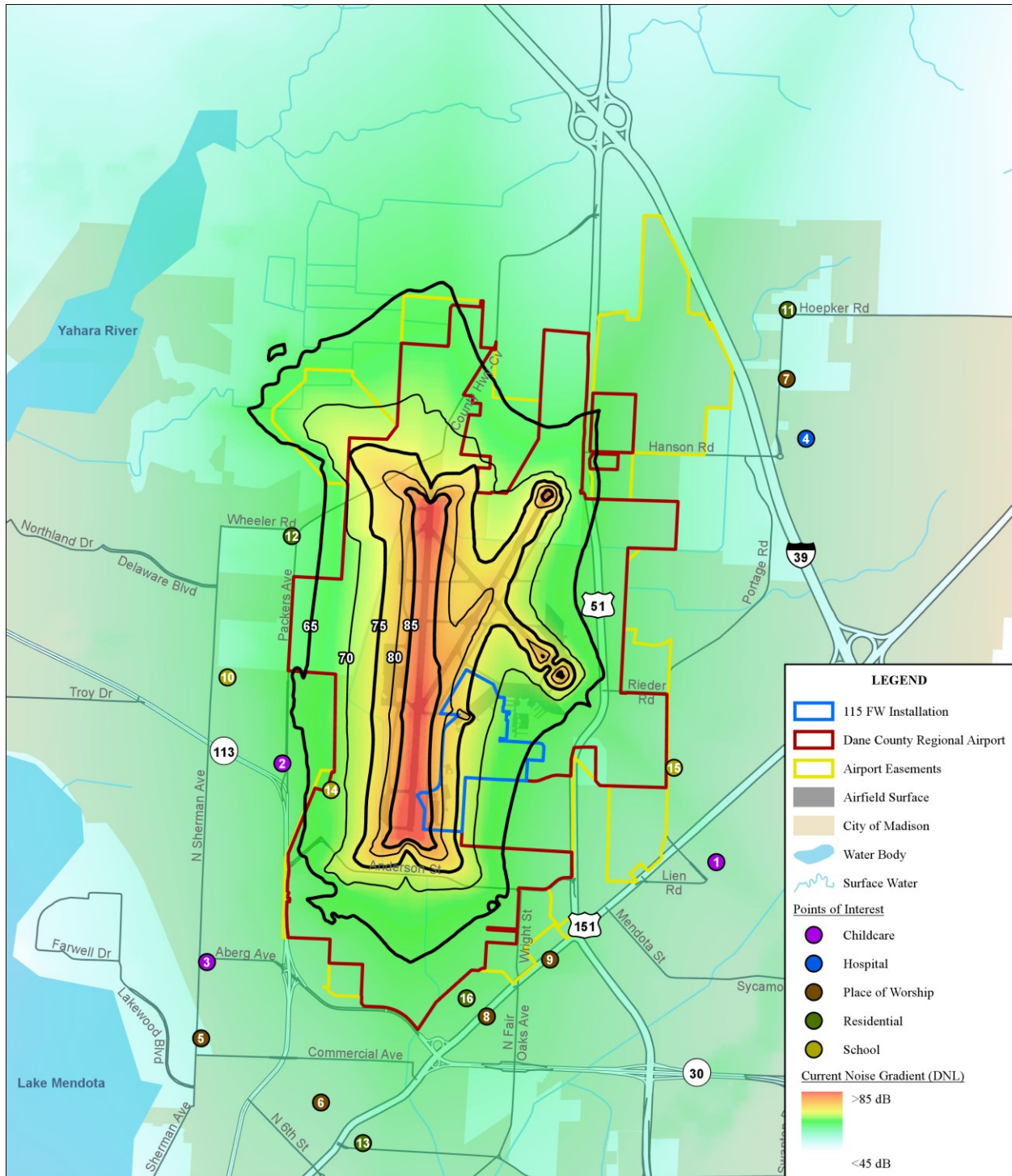
| <i>DNL Level (dBA)</i> | <i>On Airport Property</i> | <i>Off-Airport Property</i> | <i>Total</i> |
|------------------------|----------------------------|-----------------------------|--------------|
| 65–70                  | 718                        | 507                         | 1225         |
| 70–75                  | 534                        | 93                          | 627          |
| 75–80                  | 392                        | 0                           | 392          |
| 80–85                  | 220                        | 0                           | 220          |
| 85+                    | 195                        | 0                           | 195          |
| <b>Total</b>           | <b>2,059</b>               | <b>600</b>                  | <b>2,659</b> |

*Note:* Totals may be off due to rounding.  
*Legend:* dBA = A-weighted decibel; DNL = Day-Night Average Sound Level.  
*Source:* 115 FW 2019a.



**Figure W13.1-1.**  
**Points of Interest in the Vicinity of the 115 FW Installation**

Source: 115 FW 2019a.



**Figure W13.1-2.**  
**Current DNL Contours at Dane County**  
**Regional Airport**

Source: 115 FW 2019a.

Table WI3.1-5 presents noise exposure within each DNL contour band for off-airport acreage, population, and households. According to the U.S. Census Bureau, households are defined as a house, an apartment, a mobile home, a group of rooms, or a single room occupied (or if vacant, intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live separately from any other people in the building and that have direct access from the outside of the building or through a common hall. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated people sharing living quarters (U.S. Census Bureau 2010). Contour bands were overlaid over aerial imagery and household buildings within each 5 dB contour band were counted manually. Buildings intersected by contour lines were counted as if exposed to the higher of the two bands. The number of people per household was determined independently for each U.S. Census block group (from the American Community Survey, 5-year estimates and U.S. Census Bureau 2010). Adopting this methodology gives a more accurate estimate of the number of people who may be exposed to noise levels within the noise contour band. Exposure to noise levels of 65 dB DNL and greater includes an estimated 551 people and 299 households.

**Table WI3.1-5. Off-Airport Noise Exposure within Contour Bands at  
Dane County Regional Airport – Current**

| <i>Contour Band<br/>(dB DNL)</i> | <i>Population</i> | <i>Households</i> |
|----------------------------------|-------------------|-------------------|
| 65–70                            | 551               | 299               |
| 70–75                            | 0                 | 0                 |
| 75–80                            | 0                 | 0                 |
| 80–85                            | 0                 | 0                 |
| 85+                              | 0                 | 0                 |
| <b>Total</b>                     | <b>551</b>        | <b>299</b>        |

*Legend:* dB = decibel; DNL = Day-Night Average Sound Level.

### *Supplemental Metrics*

To supplement the cumulative metric analysis, the greatest single-event sound exposure levels (SELs) are provided for each POI, as listed in Table WI3.1-6. SEL accounts for both the magnitude and duration of individual events, making it a good metric to compare disparate noise events. Table WI3.1-6 also includes the corresponding number of weekly events as well as the DNL values for reference. For instance, at POI #2 (Northside Kinder Care) the current DNL is 62 dB with a maximum SEL of 105 with less than one event per week. The loudest events tend to occur closest to the airfield and nearest the flight tracks that align with the airport runways. All of the loudest SELs are due to the based F-16C aircraft at the 115 FW installation. The greatest SEL of 110 occurs at the Richardson School, which is on airport property. Quincy Avenue and Ridgeway Church are located to the southeast under the southern departure path and experience SELs up to 108 and 107, respectively.

**Table WI3.1-6. Loudest Events at Each POI, Calculated in SEL – Current**

| Map ID | Named Point of Interest                      | DNL | SEL (dBA) | Average Events per Week Day | Average Events per Week Night |
|--------|--|-----|-----------|-----------------------------|-------------------------------|
| 1      | Play Haven Child Care                        | 56  | 95        | 3.6                         | 0.1                           |
| 2      | Northside Kinder Care                        | 62  | 105       | 0.1                         | 0                             |
| 3      | Smartie Pants Early Learning Center (former) | 55  | 98        | 0.1                         | 0                             |
| 4      | UW Health at the American Center             | 52  | 100       | 1.8                         | 0                             |
| 5      | Holy Transfiguration Orthodox Mission        | 53  | 97        | 0.1                         | 0                             |
| 6      | Bashford United Methodist Church             | 55  | 100       | 0.1                         | 0                             |
| 7      | Burke Lutheran Church                        | 54  | 102       | 1.8                         | 0                             |
| 8      | Ridgeway Church                              | 61  | 107       | 5.4                         | 0.1                           |
| 9      | Chapel of Faith Anglican Church              | 60  | 105       | 5.4                         | 0.1                           |
| 10     | Lake View Elementary                         | 58  | 100       | 0.1                         | 0                             |
| 11     | Portage Road at Hoepker Road                 | 53  | 103       | 1.8                         | 0                             |
| 12     | Packers Avenue at Wheeler Road               | 62  | 105       | 6.7                         | 0.1                           |
| 13     | Milwaukee Street at Farwell Street           | 56  | 100       | 0.1                         | 0                             |
| 14     | The Richardson School                        | 68  | 110       | 0.1                         | 0                             |
| 15     | Madison Baptist Academy                      | 57  | 97        | 3.6                         | 0.1                           |
| 16     | Quincy Avenue and Carpenter Street           | 62  | 108       | 5.4                         | 0.1                           |

Legend: dB = decibel; dBA = A-weighted decibel; DNL = Day-Night Average Sound Level; POI = Point of Interest; SEL = Sound Exposure Level.

**Classroom Speech Interference.** To evaluate the potential for classroom learning interference, the exterior Equivalent Noise Level ( $L_{eq}$ ) was computed for daytime events occurring during school hours for the identified POIs. Table WI3.1-7 lists the computed  $L_{eq}$  as well as the Number of Events Above (NA) 50 dB and time above 50 dB for an average school day. Six of the 16 POIs identified near the installation are schools or child care centers. Under the affected environment, the greatest  $L_{eq}$  of 69 dB occurs at the Richardson School followed by 63 dB at Northside Kinder Care. All other POIs are below 60 dB  $L_{eq}$ .

**Table WI3.1-7. Classroom Speech Interference – Current**

| POI Number | Named POI                                    | Exterior $L_{eq(8)}$ (dBA) | Speech Interfering Events per School Day (hour) <sup>1</sup> | Time above 50 dBA per 8-hour school day (minutes) <sup>1</sup> |
|------------|--|----------------------------|--|--|
| 1          | Play Haven Child Care                        | 56                         | 3  | 1  |
| 2          | Northside Kinder Care                        | 63                         | 4  | 1  |
| 3          | Smartie Pants Early Learning Center (former) | 56                         | 2  | 1  |
| 10         | Lake View Elementary                         | 59                         | 3  | 1  |
| 14         | The Richardson School                        | 69                         | 6  | 2  |
| 15         | Madison Baptist Academy                      | 57                         | 4  | 1  |

Note: <sup>1</sup> Assumes even distribution of daytime operations throughout the day.

Legend: dBA = A-weighted decibel;  $L_{eq(8)}$  = 8-Hour Equivalent Noise Level; POI = Point of Interest.

Source: 115 FW 2019a.

The NA represents the average number of potential speech interfering events per hour during a typical 8-hour school day, which exceed 50 dB indoors. As depicted in Table WI3.1-7, the number

of current speech interference events range from two at the former Smartie Pants Early Learning Center to six at the Richardson School.

The time above metric is calculated to show the total number of minutes per day that the noise level exceeds 50 dB in the classroom with windows open. Under the affected environment, the maximum of 2 minutes of speech interfering events occurs at the Richardson School and all other POIs experience approximately 1 minute.

**Residential Speech Interference.** Residential speech interference considers the number of hourly interruptions likely to interfere with speech-related activities (i.e., conversation and watching television) during a 15-hour day (from 7 a.m. until 10 p.m.). Interior levels of 50 dB represent the threshold for interference during the daytime. This analysis uses standard values for attenuation of 15 dB for windows open and 25 dB for windows closed conditions. Table WI3.1-8 summarizes the results of this analysis for all 16 POIs. Typically, this metric is applied only to residential locations but many location types (i.e., school and places of worship) are located within or adjacent to residential areas so their computed results represent the nearby residences.

**Table WI3.1-8. Residential Speech Interference Events per hour (Daytime) – Current**

| <i>POI Number</i> | <i>Named POI</i>                             | <i>Windows Open<sup>1, 2</sup></i> | <i>Windows Closed<sup>1, 3</sup></i> |
|-------------------|--|------------------------------------|--------------------------------------|
| 1                 | Play Haven Child Care                        | 3                                  | 1                                    |
| 2                 | Northside Kinder Care                        | 4                                  | 1                                    |
| 3                 | Smartie Pants Early Learning Center (former) | 2                                  | 0                                    |
| 4                 | UW Health at the American Center             | 2                                  | 0                                    |
| 5                 | Holy Transfiguration Orthodox Mission        | 1                                  | 0                                    |
| 6                 | Bashford United Methodist Church             | 2                                  | 0                                    |
| 7                 | Burke Lutheran Church                        | 2                                  | 0                                    |
| 8                 | Ridgeway Church                              | 2                                  | 0                                    |
| 9                 | Chapel of Faith Anglican Church              | 2                                  | 0                                    |
| 10                | Lake View Elementary                         | 3                                  | 0                                    |
| 11                | Portage Road at Hoepker Road                 | 1                                  | 0                                    |
| 12                | Packers Avenue at Wheeler Road               | 4                                  | 1                                    |
| 13                | Milwaukee Street at Farwell Street           | 2                                  | 1                                    |
| 14                | The Richardson School                        | 6                                  | 2                                    |
| 15                | Madison Baptist Academy                      | 4                                  | 1                                    |
| 16                | Quincy Avenue and Carpenter Street           | 3                                  | 1                                    |

*Notes:* <sup>1</sup>Assumes even distribution of daytime operations throughout the day.

<sup>2</sup>Assumes 15 dB attenuation.

<sup>3</sup>Assumes 25 dB attenuation.

*Legend:* POI = Point of Interest

*Source:* 115 FW 2019a.

In the “windows closed” condition, there are currently two events per average hour occurring at the Richardson School, while six POIs experience one event per hour and the remaining nine POIs experience none. With windows open, the number of residential speech interference events range from a high of six in the vicinity of the Richardson School (POI #14) to a low of one in the vicinity of the Portage Road (POI #11) and the Holy Transfiguration Orthodox Mission (POI #5).

**Sleep Disturbance.** A common concern in residential areas exposed to environmental noise is the potential for sleep disturbance. Sleep disturbance only applies to residential areas but the analysis has been computed for all POIs because many other types of POIs (schools and places of worship) are located near residential areas. Table WI3.1-9 shows the probability of awakening for each POI based on the American National Standards Institute (ANSI) S12.9 standard, which takes into account all of the nighttime events (10 p.m. through 7 a.m.). The table shows the cumulative probability of awakening at least once during that period for both windows closed and windows open. While residences may not be present at each of the POIs, the points are good representations of the noise environment in their immediate vicinity.

**Table WI3.1-9. Probability of Awakening – Current**

| <i>POI Number</i> | <i>Named POI</i>                             | <i>Windows Open<sup>1</sup></i> | <i>Windows Closed<sup>2</sup></i> |
|-------------------|--|---------------------------------|-----------------------------------|
| 1                 | Play Haven Child Care                        | 1%                              | <1%                               |
| 2                 | Northside Kinder Care                        | 1%                              | <1%                               |
| 3                 | Smartie Pants Early Learning Center (former) | 1%                              | <1%                               |
| 4                 | UW Health at the American Center             | <1%                             | <1%                               |
| 5                 | Holy Transfiguration Orthodox Mission        | <1%                             | <1%                               |
| 6                 | Bashford United Methodist Church             | 1%                              | <1%                               |
| 7                 | Burke Lutheran Church                        | <1%                             | <1%                               |
| 8                 | Ridgeway Church                              | 1%                              | 1%                                |
| 9                 | Chapel of Faith Anglican Church              | 1%                              | <1%                               |
| 10                | Lake View Elementary                         | 1%                              | <1%                               |
| 11                | Portage Road at Hoepker Road                 | <1%                             | <1%                               |
| 12                | Packers Avenue at Wheeler Road               | 1%                              | <1%                               |
| 13                | Milwaukee Street at Farwell Street           | 1%                              | 1%                                |
| 14                | The Richardson School                        | 3%                              | 2%                                |
| 15                | Madison Baptist Academy                      | 1%                              | <1%                               |
| 16                | Quincy Avenue and Carpenter Street           | 2%                              | 1%                                |

*Notes:* <sup>1</sup>Assumes 15 dB attenuation.

<sup>2</sup>Assumes 25 dB attenuation.

*Legend:* POI = Point of Interest.

*Source:* 115 FW 2019a.

Under the affected environment, the Richardson School has a probability of awakening of 2 percent for windows closed, while the remaining POIs do not exceed 1 percent. With windows open, the greatest probability of awakening of 3 percent occurs at the Richardson School followed by 2 percent at Quincy Avenue and Carpenter Street. The other 14 POIs do not exceed 1 percent probability of awakening for windows open. Civil aircraft are the main cause of potential sleep disturbance due to the minimal nighttime flights by military aircraft.

**Potential for Hearing Loss.** Potential for Hearing Loss (PHL) applies to people living in high noise environments. The threshold for assessing PHL is exposure to noise greater than 80 dB DNL. Under the affected environment, there are no residential areas on or adjacent to the airfields that are exposed to contour bands of 80 dB DNL and greater (see Table WI3.1-6), so PHL does not apply.

**Occupational Noise.** USAF occupational noise exposure prevention procedures, such as hearing protection and monitoring, are currently used and comply with all applicable Occupational Safety and Health Administration (OSHA) and USAF occupational noise exposure regulations.

**Other Noise Sources.** Other generators of noise, such as general vehicle traffic, and other maintenance and landscaping activities, are a common ongoing occurrence at Dane County Regional Airport. While these sources may contribute to the overall noise environment, they are not distinguishable from aircraft-generated noise at and adjacent to the airport. For this reason, other noise sources were not considered under the affected environment and they are not analyzed under environmental consequences.

#### WI3.1.1.2 Environmental Consequences

##### *Proposed Action*

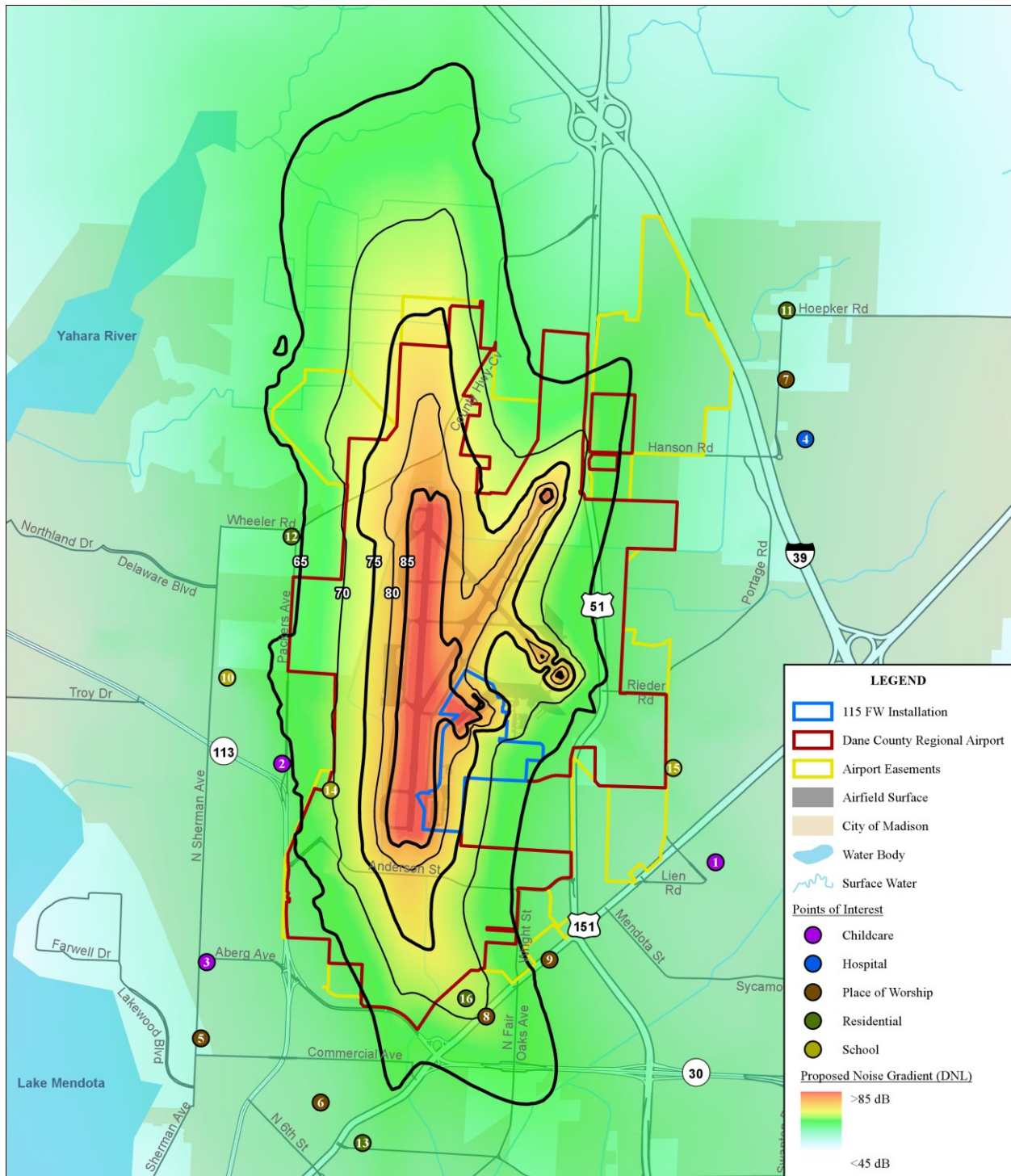
The Proposed Action Alternative involves the beddown of 18 F-35A aircraft at the 115 FW installation and drawdown of 18 F-16s. Proposed annual F-35A flight operations total 6,222, an increase of 2,290 operations when compared to current operations (or the No Action Alternative). The F-35A aircraft would account for approximately 7 percent of total aircraft (military and civil/commercial) operations at Dane County Regional Airport. Civil operations were determined to remain relatively constant between the affected environment and the Proposed Action implementation.

Other than occasional arrivals and departures, F-35As would not be expected to operate after 10 p.m. or before 7 a.m. NGB estimates F-35A would only require afterburner on up to 5 percent of departures and military power for the remaining 95 percent. Individual flight profiles have been modeled for the two departure types. The F-35A engine is capable of high speed low thrust operation for maintenance and repair allowing static run-ups to occur on the ramp rather than in the Hush House, which would be demolished under the Proposed Action.

## Noise Exposure

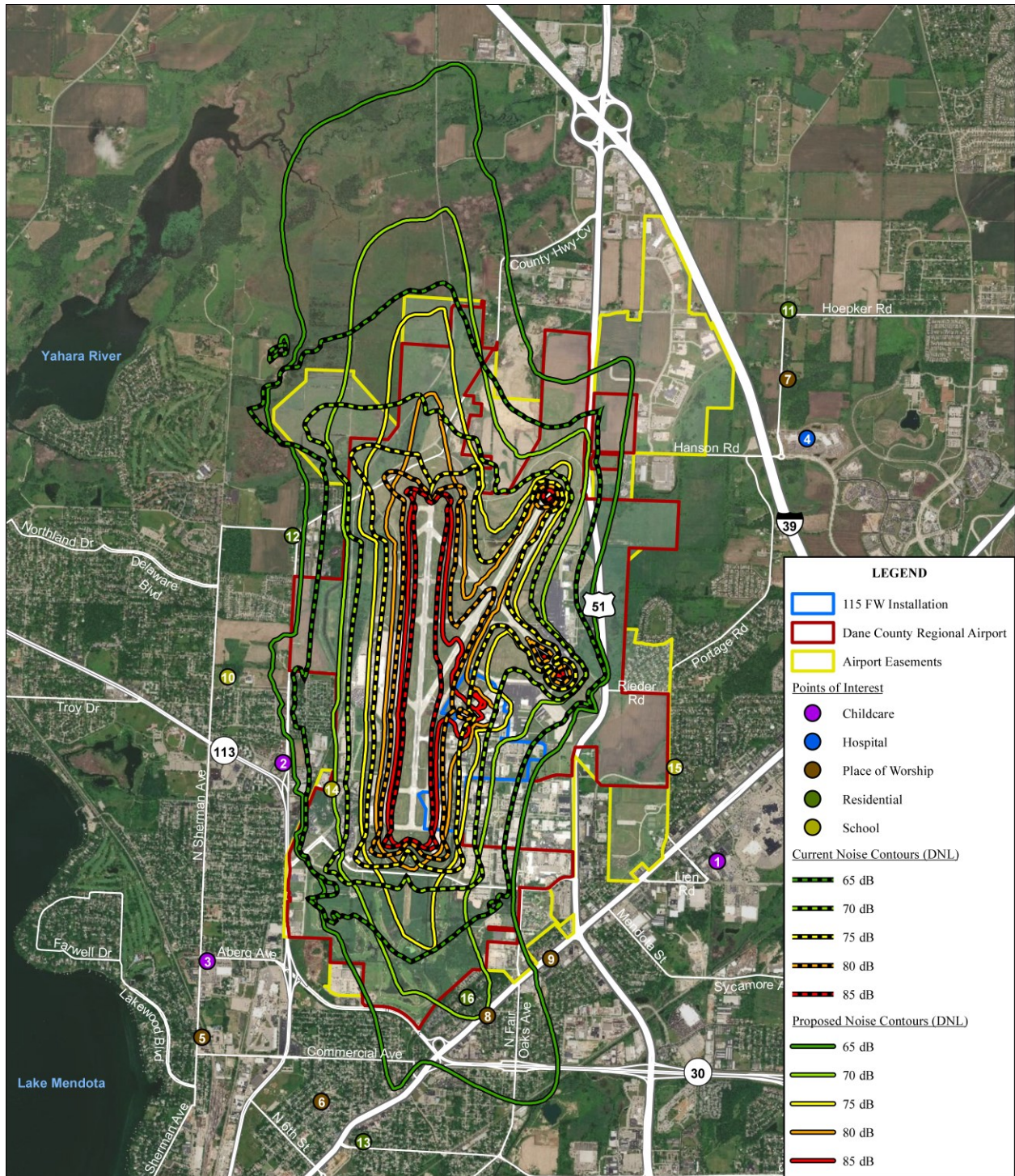
Figure WI3.1-3 shows the DNL contour bands for the Proposed Action Alternative at Dane County Regional Airport in 5 dB increments from 65 to 85 dB DNL. The gradient coloring provides a ‘heat map’ of sound from low to high levels to supplement the discrete contour lines. As shown, the 65 dB DNL contour would extend outside of the airport boundary approximately 1.3 miles to the north, 0.6 mile to the northwest, and approximately 0.8 mile to the south. To the northwest, the 70 and 75 dB DNL contours would extend off the airport boundary. To the south, the 70 dB DNL contour also would extend off the airport property to Highway 151. Figure WI3.1-4 compares the No Action and Proposed Action DNL contour bands. The primary cause for the growth to the north and south would be due to the F-35A departures, which are louder than the F-16C it would replace, as well as an increase in military aircraft operations. Both the afterburner and military departure profiles produce roughly similar noise levels along the departure flight tracks to the north and south because afterburner power use would be completed shortly after liftoff while the aircraft is still over the runway within the base boundary.

Table WI3.1-10 lists the computed DNL for each of the 16 POIs under the Proposed Action Alternative. This table also shows the change in DNL when compared to the No Action conditions above. Under the Proposed Action Alternative, DNL values at the POIs would range from 53 dB to 71 dB. Of the 16 POI locations, two would experience noise levels equal to 70 dB DNL (Richardson School and Ridgeway Church) and one residential POI (Quincy Avenue at Carpenter Street) would be exposed to 71 dB. The Richardson School is on airport property approximately a half mile west of the runway and in close proximity to aircraft taking off from the runway while Ridgeway Church and Quincy Avenue are located under a southern departure flight track that crosses Highway 151. The largest increase of 9 dB DNL would be experienced by the Ridgeway Church and Quincy Avenue due to their close proximity to the southern departure flight path. Twelve of the remaining POIs would experience an increase of 1 to 4 dB DNL; Play Haven Child Care would experience no change and Lake View Elementary a decrease of 1 dB. The F-35A generates sound levels up to 6 dB greater than the F-16C during departures, which is the primary cause for the increases at POIs. The secondary cause of the increase in DNL would be due to the increase in operations.



**Figure WI3.1-3.**  
**Proposed DNL Contours at**  
**Dane County Regional Airport**

Source: 115 FW 2019a.



**Figure WI3.1-4.**  
**Current and Proposed DNL Noise Contours at**  
**Dane County Regional Airport**

Source: 115 FW 2019a.

**Table WI3.1-10. Proposed Action Alternative DNL at Points of Interest**

| <i>POI Number</i> | <i>Description</i>                           | <i>Proposed Action Alternative DNL (dB)</i> | <i>Change from No Action Alternative in DNL (dB)</i> |
|-------------------|--|---|--|
| 1                 | Play Haven Child Care                        | 56  | 0  |
| 2                 | Northside Kinder Care                        | 64  | +2   |
| 3                 | Smartie Pants Early Learning Center (former) | 56  | +1   |
| 4                 | UW Health at the American Center             | 53  | +1   |
| 5                 | Holy Transfiguration Orthodox Mission        | 55  | +2   |
| 6                 | Bashford United Methodist Church             | 58  | +3   |
| 7                 | Burke Lutheran Church                        | 56  | +2   |
| 8                 | Ridgeway Church                              | 70  | +9   |
| 9                 | Chapel of Faith Anglican Church              | 63  | +3   |
| 10                | Lake View Elementary                         | 57  | -1   |
| 11                | Portage Road at Hoepker Road                 | 56  | +3   |
| 12                | Packers Avenue at Wheeler Road               | 64  | +2   |
| 13                | Milwaukee Street at Farwell Street           | 60  | +4   |
| 14                | The Richardson School                        | 70  | +2   |
| 15                | Madison Baptist Academy                      | 58  | +1   |
| 16                | Quincy Avenue and Carpenter Street           | 71  | +9   |

Legend: dB = decibel; DNL = Day-Night Average Sound Level; POI = Point of Interest.

Source: 115 FW 2019a.

Table WI3.1-11 shows the acreage of the areas defined by the various noise contour bands under the Proposed Action Alternative, and compares those to the values for the affected environment. Most of the growth in contours from the Proposed Action Alternative appear to the north and south direction due to the F-35A being louder in the immediate runway environment and on departure than the F-16C. When compared to the affected environment, 949 more acres outside of the airport property would be newly exposed to 65 to 70 dB DNL, 320 more acres to 70 to 75 dB, and 51 more acres exposed to 75 to 80 dB DNL. The airport owns aviation easements on 71 acres of the area newly exposed to 70 to 75 dB and 34 of the acres newly exposed to 75 to 80 dB DNL. Under the Proposed Action, a total of 1,318 households and 2,766 people would be within the 65 dB DNL, an increase of 1,019 households and 2,215 people from the affected environment. This would be considered a significant impact to those persons affected.

**Table WI3.1-11. Proposed Action Off-Airport Noise Exposure**

| <i>DNL (dB)</i> | <i>Proposed Action Alternative Acreage</i> | <i>Proposed Action Alternative Estimated Population</i> | <i>Proposed Action Alternative Households</i> | <i>Change from Current Acreage</i> | <i>Change from Current Estimated Population</i> | <i>Change from Current Households</i> |
|-----------------|--|---|---|------------------------------------|---|---------------------------------------|
| 65 – 70         | 1,456                                      | 2,474   | 1,186   | +949                               | +1,923  | +887                                  |
| 70 – 75         | 413  | 292   | 132   | +320                               | +292  | +132                                  |
| 75 – 80         | 51   | 0   | 0   | +51                                | 0   | +0                                    |
| 80 – 85         | 0  | 0   | 0   | 0                                  | 0   | 0                                     |
| 85+             | 0  | 0   | 0   | 0                                  | 0   | 0                                     |
| <b>Total</b>    | <b>1,920</b>                               | <b>2,766</b>  | <b>1,318</b>                                  | <b>+1,320</b>                      | <b>+2,215</b>                                   | <b>+1,019</b>                         |

Legend: dB = decibel; DNL = Day-Night Average Sound Level.

Source: 115 FW 2019a.

### Supplemental Metrics

Consistent with the affected environment supplemental analysis, single-event SELs are provided at each POI. Table WI3.1-12 shows the events producing the highest SELs, and lists the number of day and night events per week for each. Also included are the DNL values, which demonstrate that some “loud” events may occur in an area of a lower DNL. Under the Proposed Action Alternative, the loudest SELs at most POIs would be generated by F-35A events while F-16C (from the alert mission) would remain the top contributor at five POIs. The maximum SEL would increase by 1 to 8 dB at ten POIs.

***Classroom Learning Interference.*** As noted under the affected environment, 6 of the 16 POIs identified near Dane County Regional Airport are schools. Table WI3.1-13 lists these points along with the outdoor  $L_{eq}$ , number of indoor speech interfering events per hour, and duration of time above 50 dB. Under the Proposed Action, four schools would experience increases of 1 to 2 dB  $L_{eq}$ . The Richardson School would reach 71 dB  $L_{eq}$  followed by Northside Kinder Care at 65 dB  $L_{eq}$ . Other school locations would remain below 60 dB  $L_{eq}$ . The Richardson School would be impacted the most due to its location on airport property. Lake View Elementary would experience a decrease of 2 dB  $L_{eq}$ . The school is located to the west of the airfield and was primarily affected by F-16C afterburner take-offs for the affected environment and the F-35A would utilize afterburner less often, decreasing the impacts to that location.

Approximately 80 to 90 percent of the interfering events under the Proposed Action would continue to be caused by civil aircraft operations. In the Proposed Action Alternative, the number of interfering events per hour would remain similar to the affected environment except Lake View Elementary and the Richardson School would experience one additional event per average hour. The time above 50 dB would increase by 1 to 2 minutes at all POIs except Play Haven, which would not change from the affected environment. The maximum time above of 4 minutes would occur at the Richardson School due to its location on airport property closest to the runways.

***Residential Speech Interference.*** Residential speech interference examines the speech interfering events above 50 dB as tabulated in Table WI3.1-14. Under the Proposed Action, the majority of locations would experience an increase of one additional event per hour for either windows open or windows closed. Only the Richardson School would exceed one interfering event per average hour with windows closed while all 16 locations would experience greater than one with windows open, ranging from two to seven per hour. The majority of interfering events would continue to be caused by civil aircraft.

**Table WI3.1-12. Loudest Events at Each POI, Measured in SEL – Proposed Action Alternative**

| <i>Map ID</i> | <i>Named Point of Interest</i>               | <i>Current DNL</i> | <i>Current SEL (dBA)</i> | <i>Current Average Events Per Week (Daytime)</i> | <i>Current Average Events Per Week (Night)</i> | <i>Proposed Action DNL</i> | <i>Proposed Action SEL (dBA)</i> | <i>Proposed Action Average Events Per Week (Daytime)</i> | <i>Proposed Action Average Events Per Week (Night)</i> |
|---------------|--|--------------------|--------------------------|--|--|----------------------------|----------------------------------|--|--|
| 1             | Play Haven Child Care                        | 56                 | 95                       | 3.6  | 0.1  | 56                         | 98                               | 0.7  | 0  |
| 2             | Northside Kinder Care                        | 62                 | 105                      | 0.1  | 0  | 64                         | 106                              | 0.6  | 0  |
| 3             | Smartie Pants Early Learning Center (former) | 55                 | 98                       | 0.1  | 0  | 56                         | 98                               | 0.1  | 0  |
| 4             | UW Health at the American Center             | 52                 | 100                      | 1.8  | 0  | 53                         | 100                              | 1.8  | 0  |
| 5             | Holy Transfiguration Orthodox Mission        | 53                 | 97                       | 0.1  | 0  | 55                         | 97                               | 0.1  | 0  |
| 6             | Bashford United Methodist Church             | 55                 | 100                      | 0.1  | 0  | 58                         | 101                              | 0.1  | 0  |
| 7             | Burke Lutheran Church                        | 54                 | 102                      | 1.8  | 0  | 56                         | 103                              | 1.8  | 0  |
| 8             | Ridgeway Church                              | 61                 | 107                      | 5.4  | 0.1  | 70                         | 114                              | 7.4  | 0.2  |
| 9             | Chapel of Faith Anglican Church              | 60                 | 105                      | 5.4  | 0.1  | 63                         | 107                              | 7.4  | 0.2  |
| 10            | Lake View Elementary                         | 58                 | 100                      | 0.1  | 0  | 57                         | 100                              | 0.1  | 0  |
| 11            | Portage Road at Hoepker Road                 | 53                 | 103                      | 1.8  | 0  | 56                         | 105                              | 1.8  | 0  |
| 12            | Packers Avenue at Wheeler Road               | 62                 | 105                      | 6.7  | 0.1  | 64                         | 105                              | 0.7  | 0  |
| 13            | Milwaukee Street at Farwell Street           | 56                 | 100                      | 0.1  | 0  | 60                         | 104                              | 0.8  | 0  |
| 14            | The Richardson School                        | 68                 | 110                      | 0.1  | 0  | 70                         | 111                              | 1.1  | 0  |
| 15            | Madison Baptist Academy                      | 57                 | 97                       | 3.6  | 0.1  | 58                         | 97                               | 0.5  | 0  |
| 16            | Quincy Avenue and Carpenter Street           | 62                 | 108                      | 5.4  | 0.1  | 71                         | 116                              | 7.4  | 0.2  |

Legend: dBA = A-weighted decibel; DNL = Day-Night Average Sound Level; POI = Point of Interest; SEL = Sound Exposure Level.

**Table WI3.1-13. Classroom Speech Interference – Proposed Action Alternative**

| <i>POI Number</i> | <i>Named POI</i>                             | <i>Outdoor Leq(8) (dBA) Current</i> | <i>Outdoor Leq(8) (dBA) Proposed</i> | <i>Outdoor Leq(8) (dBA) Change Relative to Current</i> | <i>Number of Events Interrupting Speech per School Day (hour)<sup>1</sup></i> | <i>Time above 50 dBA per 8-hour School Day (minutes)<sup>1</sup></i> |
|-------------------|--|-------------------------------------|--------------------------------------|--|---|--|
| 1                 | Play Haven Child Care                        | 56                                  | 57                                   | +1   | 3   | 1  |
| 2                 | Northside Kinder Care                        | 63                                  | 65                                   | +2   | 4   | 2  |
| 3                 | Smartie Pants Early Learning Center (former) | 56                                  | 56                                   | 0  | 2   | 2  |
| 10                | Lake View Elementary                         | 59                                  | 57                                   | -2   | 4   | 3  |
| 14                | The Richardson School                        | 69                                  | 71                                   | +2   | 7   | 4  |
| 15                | Madison Baptist Academy                      | 57                                  | 58                                   | +1   | 4   | 2  |

Note: <sup>1</sup>Assumes even distribution of daytime operations throughout the day.  
Totals may be off due to rounding.

Legend: dBA = A-weighted decibel; Leq(8) = 8-Hour Equivalent Noise Level; POI = Point of Interest.

Source: 115 FW 2019a.

**Table WI3.1-14. Residential Speech Interference – Proposed Action Alternative**

| <i>POI Number</i> | <i>Named POI</i>                             | <i>Windows Open<sup>2</sup> Proposed Action</i> | <i>Windows Closed<sup>3</sup> Proposed Action</i> | <i>Windows Open<sup>2</sup> Change</i> | <i>Windows Closed<sup>3</sup> Change</i> |
|-------------------|--|---|---|--|--|
| 1                 | Play Haven Child Care                        | 3   | 1   | 0                                      | 0  |
| 2                 | Northside Kinder Care                        | 4   | 1   | 0                                      | 0  |
| 3                 | Smartie Pants Early Learning Center (former) | 2   | 1   | 0                                      | +1                                       |
| 4                 | UW Health at the American Center             | 3   | 0   | +1                                     | 0  |
| 5                 | Holy Transfiguration Orthodox Mission        | 2   | 0   | +1                                     | 0  |
| 6                 | Bashford United Methodist Church             | 2   | 1   | 0                                      | +1                                       |
| 7                 | Burke Lutheran Church                        | 2   | 1   | 0                                      | +1                                       |
| 8                 | Ridgeway Church                              | 3   | 1   | +1                                     | +1                                       |
| 9                 | Chapel of Faith Anglican Church              | 3   | 1   | +1                                     | +1                                       |
| 10                | Lake View Elementary                         | 4   | 1   | +1                                     | +1                                       |
| 11                | Portage Road at Hoepker Road                 | 2   | 1   | +1                                     | +1                                       |
| 12                | Packers Avenue at Wheeler Road               | 5   | 1   | +1                                     | 0  |
| 13                | Milwaukee Street at Farwell Street           | 3   | 1   | +1                                     | 0  |
| 14                | The Richardson School                        | 7   | 2   | +1                                     | 0  |
| 15                | Madison Baptist Academy                      | 4   | 1   | 0                                      | 0  |
| 16                | Quincy Avenue and Carpenter Street           | 3   | 1   | 0                                      | 0  |

Notes: <sup>1</sup>Assumes even distribution of daytime operations throughout the day.

<sup>2</sup>Assumes 15 dB attenuation.

<sup>3</sup>Assumes 25 dB attenuation.

Legend: POI = Point of Interest.

Source: 115 FW 2019a.

**Sleep Disturbance.** Table WI3.1-15 shows the probability of awakening for each POI by if it is consistent with the ANSI standard S12.9 methodology used in the affected environment analysis. Note that while residences may not be present at each of the POIs, the points serve as good representations of the noise environment in the immediate vicinity, which often include residences.

Under the Proposed Action Alternative, six locations would experience a probability of awakening of 2 and 4 percent for windows open. With windows closed, the Richardson School and Quincy Avenue would experience a probability of awakening of 2 percent while the other 14 POIs would be 1 percent or less. The small increase in the probability of awakening of up to 1 percent would be due to the relatively low number of night flight operations for both the affected environment and the Proposed Action. Civil aircraft would remain the primary cause of the potential for awakening.

**Table WI3.1-15. Probability of Awakening – Proposed Action Alternative**

| <i>POI Number</i> | <i>Named POI</i>                             | <i>Windows Open<sup>1</sup></i> | <i>Windows Closed<sup>2</sup></i> |
|-------------------|--|---------------------------------|-----------------------------------|
| 1                 | Play Haven Child Care                        | 1%                              | 1%                                |
| 2                 | Northside Kinder Care                        | 2%                              | 1%                                |
| 3                 | Smartie Pants Early Learning Center (former) | 1%                              | 1%                                |
| 4                 | UW Health at the American Center             | 1%                              | <1%                               |
| 5                 | Holy Transfiguration Orthodox Mission        | 1%                              | 1%                                |
| 6                 | Bashford United Methodist Church             | 1%                              | 1%                                |
| 7                 | Burke Lutheran Church                        | 1%                              | <1%                               |
| 8                 | Ridgeway Church                              | 2%                              | 1%                                |
| 9                 | Chapel of Faith Anglican Church              | 1%                              | 1%                                |
| 10                | Lake View Elementary                         | 1%                              | 1%                                |
| 11                | Portage Road at Hoepker Road                 | 1%                              | <1%                               |
| 12                | Packers Avenue at Wheeler Road               | 2%                              | 1%                                |
| 13                | Milwaukee Street at Farwell Street           | 2%                              | 1%                                |
| 14                | The Richardson School                        | 4%                              | 2%                                |
| 15                | Madison Baptist Academy                      | 1%                              | 1%                                |
| 16                | Quincy Avenue and Carpenter Street           | 3%                              | 2%                                |

Notes: <sup>1</sup>Assumes 15 dB attenuation.

<sup>2</sup>Assumes 25 dB attenuation.

Legend: POI = Point of Interest.

**Potential for Hearing Loss.** Under the Proposed Action Alternative, no residential areas on or adjacent to Dane County Regional Airport would be exposed to DNL greater than or equal to 80 dB. Therefore, a PHL is not anticipated. This conclusion is justified because hearing loss due to noise exposure would generally require daily exposure over 40 years, or longer, to DNL greater than 80 dB.

**Occupational Noise.** NGB occupational noise exposure prevention procedures, such as hearing protection and monitoring, would continue to be applied under the Proposed Action Alternative. These procedures would comply with all applicable OSHA and NGB occupational noise exposure regulations and ensure no significant adverse impacts under the Proposed Action Alternative.

**Other Noise Sources.** Noise is an unavoidable, short-term byproduct of construction activities. The major noise events for this construction would take place inside airport boundaries at the 115 FW installation with only a negligible increase in traffic noise caused by vehicles entering and exiting the airport for construction deliveries and work force arrivals and departures. During

construction, steps would be taken to minimize any impacts. These include making sure all equipment is in good operating condition, with an emphasis on maintenance of mufflers, bearings, and moving machinery parts. Stationary equipment with a potential to emit noise would be placed away from sensitive noise receivers. Whenever possible, noise events would be scheduled to avoid noise-sensitive times. Construction workers would comply with OSHA exposure regulations to ensure no significant adverse effects from noise exposure.

### *No Action Alternative*

Under the No Action Alternative, the acoustic environment at and around the airport would not differ from the conditions presented under the affected environment. Therefore, refer to Section WI3.1.1.1 for noise exposure and supplemental noise metrics. Impacts under the No Action Alternative would not be significant.

### **WI3.1.2     Airspace**

The U.S. Government prescribes the use of the Onset-Rate Adjusted Monthly Day-Night Average Sound Level ( $L_{dnmr}$ ) for aircraft noise analysis in the SUA environment.  $L_{dnmr}$  is based on the month with the most aircraft activity in each airspace unit to account for the sporadic nature of operations.  $L_{dnmr}$  is similar to the DNL except that an additional penalty is applied to account for the startle effect of aircraft operating at low altitudes and at high rates of speed (over 400 knots) generating quick sound level increases. The penalty is calculated from the rate of increase in sound level and varies from 0 to 11 dB. Noise modeling, using the MR\_NMAP, was accomplished by determining the use of each airspace unit and building each aircraft's flight profiles based on the aircraft's configuration (airspeed and power setting) and the amount of time spent at various altitudes throughout the airspace.

BOOMAP was used to calculate the C-weighted DNL (CDNL) resulting from the proposed supersonic operations in the Volk MOA Complex. This metric captures the impulsive characteristics of supersonic noise as DNL. Supersonic flight activity only occurs where authorized.

In rural and open areas, the analysis of effects is vastly different compared to areas near population centers. In these areas, public concerns can include effects to wildlife, domestic animals, natural sounds, and outdoor recreation. Each of these effects can be difficult to assess because of limited research. Many studies have been conducted on noise impacts to animals. However, if the animal of concern has not been included in any of these studies, biological expertise is required to determine if additional research is required or a surrogate animal can be used for the assessment of impacts. See Section WI3.11, *Biological Resources*, for a discussion of noise impacts to wildlife.

WI3.1.2.1 Affected Environment

The 115 FW uses the Volk MOA Complex, including overlying ATCAAs, for training during each mission (see Figure WI2.2-1). Under the affected environment, there are up to 2,400 sorties per year in the Volk Airspace Complex attributable to the F-16s of the 115 FW. In addition to local sorties generated by the 115 FW, the Volk Airspace Complex has transient users that make up about 35 percent of the total activity. The complex also hosts up to two Northern Lightning exercises per year for 2 weeks each. The number of aircraft participating in each exercise varies, but in all cases creates higher than normal flight activity during the 2-week exercise period. An Environmental Assessment (EA) was completed in 2016, which evaluated the modification and extension of the Volk MOAs. The operational numbers used in that EA formed the baseline for this analysis. The distribution of aircraft in each MOA and the aircraft profiles (times spent at various altitudes and power settings) are also the same (NGB 2016).

*Noise Exposure*

**Subsonic.** Table WI3.1-16 shows the  $L_{dnmr}$  levels for the affected environment within each of the respective MOAs/ATCAAs/Restricted Areas. Noise levels in areas under the MOAs range from 36 to 56 dB  $L_{dnmr}$ , which includes the ATCAAs directly over them. Note that the listed ATCAAs without modeled MOAs beneath them are listed as “<35 dB” because the computed  $L_{dnmr}$  caused by aircraft activity is likely below the ambient sound level. In these areas with aircraft flying at higher altitudes, the noise contribution from subsonic flight activity is negligible on the ground.

**Table WI3.1-16.  $L_{dnmr}$  Beneath SUA – Affected Environment**

| <i>Description</i>            | <i><math>L_{dnmr}</math> (dB)</i> |
|-------------------------------|-----------------------------------|
| Volk Falls MOA                | 50                                |
| Volk West MOA/Volk West ATCAA | 51                                |
| Volk South MOA                | 56                                |
| Volk East MOA/Volk East ATCAA | 36                                |
| Black River ATCAA             | 50                                |
| R-6904A/B                     | 52                                |
| Oshkosh ATCAA                 | <35                               |
| Sheboygan W ATCAA             | <35                               |
| Sheboygan E ATCAA             | <35                               |

*Legend:* ATCAA = Air Traffic Control Assigned Airspace; dB = decibel;  
 $L_{dnmr}$  = Onset-Rate Adjusted Day-Night Average Sound Level;  
 MOA = Military Operations Area; R- = Restricted Area.

*Source:* 115 FW 2019a.

**Supersonic.** Supersonic operations are not approved for the Volk Airspace Complex on a full-time basis. Due to an insufficient flight ceiling in Oshkosh and Sheboygan ATCAAs, other eligible ATCAAs will be used for supersonic flight above 30,000 feet MSL as available. A busy month for supersonic flight operations occurs during the Northern Lightning exercise, when 120 F-16C sorties and 60 “other” sorties would engage in air-to-air training that involves supersonic flight.

The current data for calculation of CDNL noise contours (due to sonic booms) result from these 180 sorties in the complex.

Table WI3.1-17 shows the CDNL highest levels calculated for affected environment within each of the respective MOA/ATCAAs. The highest concentration of sonic boom activity (and resulting in maximum CDNL) is in the area where the borders of Volk East and West MOAs and the R-6904C meet, which is 47 and 48 C-weighted decibels (dBC). Normal land use restriction recommendations start when CDNL is at 62 and greater dBC; therefore, a level at 48 dBC is well below the recommended land use restrictions level.

**Table WI3.1-17. CDNL Beneath SUA – Affected Environment**

| <i>Description</i>            | <i>CDNL (dBC)</i> |
|-------------------------------|-------------------|
| Volk Falls MOA                | 43                |
| Volk West MOA/Volk West ATCAA | 47                |
| Volk South MOA                | 45                |
| Volk East MOA/Volk East ATCAA | 48                |
| Black River ATCAA             | 43                |
| R-6904A/B                     | 47                |
| Oshkosh ATCAA                 | 36                |
| Sheboygan W ATCAA             | <35               |
| Sheboygan E ATCAA             | <35               |

*Legend:* ATCAA = Air Traffic Control Assigned Airspace; CDNL = C-weighted Day-Night Average Sound Level; dBC = C-weighted decibel; MOA = Military Operations Area; R- = Restricted Area.

*Source:* 115 FW 2019a.

### WI3.1.2.2 Environmental Consequences

#### *Proposed Action*

This section presents noise conditions in the airspace and ranges that would be used by F-35A aircraft under the 115 FW alternative. Under the Proposed Action Alternative, there would be an increase of approximately 28 percent of sorties, with each sortie lasting 30-60 minutes. Therefore, there would be an approximately 28 percent increase in time spent in the Volk Airspace Complex by 115 FW aircraft. Although the F-35A would be expected to operate more often at higher altitudes than the F-16, no other changes in airspace or airspace use are proposed. The noise analysis accounts for subsonic flight operations and supersonic operations in airspace that is authorized for supersonic flight. Subsonic noise is quantified by dB L<sub>dnmr</sub>; the cumulative sonic boom environment is quantified by CDNL and by the number of booms per month that would be heard on the surface.

#### Noise Exposure

***Subsonic.*** Table WI3.1-18 shows the L<sub>dnmr</sub> levels for the Proposed Action Alternative conditions within each of the respective MOAs/ATCAAs/Restricted Areas in addition to the level of change

between the two alternatives. The areas under the MOAs range from 40 to 57 dB. These include the ATCAAs directly over them. Note that the listed ATCAAs are the ones without modeled MOAs beneath them, and they are simply listed as “<35 dB.” Depending on the location, the increases range from 1 to 4 dB due to the increased sortie rate of the F-35A. The largest change would be under the Volk East MOA, which would still be near the background noise level, even with the increase. No areas would reach or exceed 65 dB  $L_{dnmr}$ .

The noise levels computed in Table WI3.1-18 represent only the military aircraft contributions to sound levels and does not consider other sources, such as road traffic and wind. Typical ambient  $L_{dnmr}$  for ‘quiet suburban residential’ areas range from 49 to 52 dB while rural is typically less than 49 dB (ANSI 2013). Although Volk East MOA would experience an increase of 4 dB  $L_{dnmr}$  due to aircraft noise, the proposed level likely would not exceed current ambient levels due to other noise sources.

**Table WI3.1-18. Comparison of the Proposed Action Alternative  $L_{dnmr}$  Beneath SUA to the Affected Environment**

| <i>Description</i>            | <i>Current <math>L_{dnmr}</math> (dB)</i> | <i>Proposed Action Alternative <math>L_{dnmr}</math> (dB)</i> | <i>Change in <math>L_{dnmr}</math> (dB)</i> |
|-------------------------------|---|---|---|
| Volk Falls MOA                | 50  | 51  | 1   |
| Volk West MOA/Volk West ATCAA | 51  | 52  | 1   |
| Volk South MOA                | 56  | 57  | 1   |
| Volk East MOA/Volk East ATCAA | 36  | 40  | 4   |
| Black River ATCAA             | 50  | 52  | 1   |
| R-6904A/B                     | 52  | 54  | 2   |
| Oshkosh ATCAA                 | <35                                       | <35   | N/A   |
| Sheboygan W ATCAA             | <35                                       | <35   | N/A   |
| Sheboygan E ATCAA             | <35                                       | <35   | N/A   |

*Legend* ATCAA = Air Traffic Control Assigned Airspace; dB = decibel;  $L_{dnmr}$  = Onset-Rate Adjusted Day-Night Average Sound Level; MOA = Military Operations Area; N/A = not applicable; R- = Restricted Area.

*Source:* 115 FW 2019a.

**Supersonic.** Supersonic operations are not approved for the Volk Airspace Complex on a full-time basis and cannot be performed in Oshkosh and Sheboygan ATCAAs at any time due to insufficient ceiling altitudes. A busy month for supersonic flight operations would occur during the Northern Lightning exercises. Table WI3.1-19 shows the CDNL highest levels calculated for the Proposed Action Alternative within each of the respective MOAs/ATCAAs/Restricted Area. The highest concentration of sonic boom activity (and resulting in maximum CDNL) is in the same area as found under the No Action Alternative—where the borders of Volk East and West MOAs and the R-6904C meet—and would experience a CDNL of 49 dB, an increase of up to 2 dB. Under the Proposed Action Alternative, increases would range from 1 to 2 dBC in the SUA. These levels would not exceed the normal land use restriction recommendations, which start when CDNL is at 62 and greater dBC, nor change dramatically from the affected environment.

**Table WI3.1-19. Comparison of the Proposed Action Alternative  $L_{dnmr}$  Beneath SUA to the Affected Environment**

| <i>Description</i>            | <i>Current CDNL (dBC)</i> | <i>Proposed Action Alternative CDNL (dBC)</i> | <i>Change in CDNL (dBC)</i> |
|-------------------------------|---------------------------|---|-----------------------------|
| Volk Falls MOA                | 43                        | 44  | 1                           |
| Volk West MOA/Volk West ATCAA | 47                        | 49  | 2                           |
| Volk South MOA                | 45                        | 47  | 2                           |
| Volk East MOA/Volk East ATCAA | 48                        | 49  | 1                           |
| Black River ATCAA             | 43                        | 44  | 1                           |
| R-6904A/B                     | 47                        | 49  | 2                           |
| Oshkosh ATCAA                 | 36                        | 37  | 1                           |
| Sheboygan W ATCAA             | <35                       | <35   | N/A                         |
| Sheboygan E ATCAA             | <35                       | <35   | N/A                         |

*Legend:* ATCAA = Air Traffic Control Assigned Airspace; CDNL = C-weighted Day-Night Average Sound Level; dBC = C-weighted decibel; MOA = Military Operations Area; R- = Restricted Area.

*Source:* 115 FW 2019a.

### *No Action Alternative*

Under the No Action Alternative, the acoustic environment in the airspace would not differ from the conditions presented under the affected environment (refer to Section WI3.1.2.1 for noise exposure). Therefore, impacts under the No Action Alternative would not be significant.

### **WI3.1.3 Summary of Impacts**

Under the Proposed Action at the 115 FW installation, F-35A aircraft operations at the airfield would increase off-base acreage contained within the 65 dB DNL and greater noise contours by 1,320 acres. There would be an estimated addition of 1,019 households and 2,215 people would reside within the 65 dB DNL contour, where residential land use is considered conditionally compatible. Predicted changes in the DNL at POIs range from -1 to +9 dB with levels at three representative POIs exceeding 65 dB. Two of the POI schools located within the Region of Influence (ROI) would experience an increase in the number of events causing speech interference with levels reaching up to seven per hour at the Richardson School with windows open. The predicted increase in  $L_{dnmr}$  in SUA would range from <1 to 4 dB with the highest  $L_{dnmr}$  remaining below 60 dB. Increases in the CDNL resulting from the addition of supersonic activity would be 3 or 4 dB with levels remaining at or below 50 dBC. Additional discussion regarding noise impacts on factors such as health effects and noise-induced vibration effects can be found in Appendix B, *Noise Modeling, Methodology, and Effects*. Based on context and intensity, the change in the noise environment associated with the Proposed Action would be considered significant in the area surrounding the airfield but would not be significant in the SUA.

The USAF does not have authority to expend appropriated funds on facilities that are not under the direct control of the USAF. However, the FAA has a program that addresses noise and compatible land use near airports. Title 14, CFR, Part 150 - *Airport Noise Compatibility Planning*,

the implementing regulations of the *Aviation Safety and Noise Abatement Act of 1979*, as amended, provides a voluntary process an airport sponsor can use to mitigate significant noise impacts from airport users. It is important to note that the Part 150 program is not a guarantee that sound mitigation or abatement will take place. Eligibility for sound insulation in noise-sensitive land uses through the FAA's Airport Improvement Program requires that the impacted property is located within a DNL 65 dB or higher noise contour and meet various other criteria in FAA guide documents used for sound mitigation.

A Mitigation and Monitoring Plan will be developed for those installations chosen, and will include metrics to track and monitor those activities that are identified to minimize the impacts. These could include afterburner usage, flight tracks, number of operations, etc. The Mitigation and Monitoring Plan will identify who is responsible for implementing specific mitigation procedures, who is responsible for funding them, and who is responsible for tracking these measures to ensure compliance.

Dane County Regional Airport has proactively engaged in development of aviation easements within the vicinity of the airport. Numerous aviation easements have been purchased by Dane County Regional Airport in residential areas affected by airport operations.

## **WI3.2 AIRSPACE**

### **WI3.2.1 Installation**

#### **WI3.2.1.1 Affected Environment**

The 115 FW installation is located within the boundaries of Dane County Regional Airport, a joint-use airport, located approximately 5 miles northeast of the Madison, Wisconsin central business district. It is publicly owned and operated by Dane County with the FAA providing air traffic control (ATC) services for pilots operating in the local airspace. Chicago Air Route Traffic Control Center (ARTCC) provides approach/departure service when Madison Approach Control is closed. Dane County Regional Airport has three bi-directional runways: Runway 18/36, Runway 03/21, and Runway 14/32. The majority of military fixed-wing aircraft operations are on Runway 18/36 with a north/south traffic flow, while the civilian traffic use all runways. The Dane County Regional Airport lies within Class C airspace. There are three public airports that lie within the airports Class C airspace: Waunakee, Blackhawk, and Middleton-Morey. Verona Airport lies to the southwest just outside of Class C airspace.

The 115 FW currently flies and maintains 18 F-16C aircraft in support of its mission for the WIANG. In 2016, there were 89,885 annual operations conducted at Dane County Regional Airport, including 8,552 military operations and 81,333 civilian operations. The F-16Cs have

flown in this airspace environment since 1992 and accounted for 4,900 of the annual military operations.

### WI3.2.1.2 Environmental Consequences

#### *Proposed Action*

The one-for-one replacement of F-16 aircraft assigned to the 115 FW installation would not require changes in local airspace or airfield management. Eventual replacement of F-16 aircraft by the F-35A would result in a 47 percent increase in military operations (this would drop to 27 percent once the F-35A adopts the alert mission) and an approximate 3 percent increase in total airfield operations when compared to the affected environment (Table WI3.2-1). This increase in airfield operations would have no effect on the local air traffic environment. No changes to the Dane County Regional Airport terminal airspace arrival or departure procedures would be required to accommodate the F-35A aircraft performance or airfield operations. Therefore, impacts on airspace use in the local air traffic environment would not be significant.

**Table WI3.2-1. Comparison of Current and Proposed Annual Airfield Operations**

| <i>Aircraft</i>                    | <i>Current</i> | <i>Proposed Airfield Operations</i> |
|------------------------------------|----------------|-------------------------------------|
| Based F-16C <sup>1</sup>           | 4,900          | 968                                 |
| Based RC-26                        | 240            | 240                                 |
| Based C-26                         | 500            | 500                                 |
| UH-60                              | 2,700          | 2,700                               |
| Military Transient <sup>2</sup>    | 212            | 212                                 |
| Proposed F-35A                     | 0              | 6,222                               |
| Civilian/Commercial                | 81,333         | 81,333                              |
| <b>Total</b>                       | <b>89,885</b>  | <b>92,175</b>                       |
| <b>Percent Change from Current</b> | <b>-</b>       | <b>3%</b>                           |

*Note:* <sup>1</sup>Alert mission would continue to be supported by F-16 aircraft at Dane County Regional Airport until the USAF determines the F-35A can take over the mission.

<sup>2</sup>Transients include F-16C, C-17, C-130 and KC-135R.

*Source:* 115 FW 2019a.

#### *No Action Alternative*

Under the No Action Alternative, the F-16s would continue to fly from Dane County Regional Airport. Negligible changes to the frequency of operations, or use of arrival or departure routes, would occur. Operations would remain as described in Section WI3.2.1.1. There would be no change in use of local airspace; therefore, no significant impacts would occur.

### WI3.2.2 Airspace

As noted in Chapter 2, Section 2.1.2, F-35A aircraft would not use Military Training Routes, either to access the training airspace or conduct training. Therefore, this aspect of airspace use is not addressed in this EIS.

WI3.2.2.1 Affected Environment

The 115 FW uses several airspace units that consist of MOAs, Restricted Areas, and ATCAAs (see Table WI2.2-1 and Figure WI2.2-1). These same airspace units would continue to be used by the F-35A. The 115 FW F-16 aircraft currently conduct up to 2,400 annual sorties (or 200 monthly sorties) lasting 30-60 minutes in the airspace. In addition to local sorties generated by the 115 FW, the Volk Airspace Complex has transient users (A-10, B-1, B-2, B-52, C-130, F-15, 1 F-16, F-18, and F-35) that make up about 35 percent of the total activity. The complex also hosts up to two Northern Lightning exercises per year for 2 weeks each.

The scheduling agency for the Volk Falls, Volk West, Volk South, and Volk East MOAs is the Volk Field Combat Readiness Training Center; the primary using agency for R-6904 is Volk Field. The controlling agency for the entire Volk Airspace Complex is the FAA, Minneapolis ARTCC. The public is notified of designated use of the Volk Falls, Volk East, and Volk West MOAs by a Notice to Airmen (NOTAM) at least 4 hours in advance. R-6904A/B use is designated from 8 a.m. to 4 p.m. Tuesday through Saturday, with use at other times designated by NOTAM.

There are eight Air Traffic Service Routes within the affected environment (Table WI3.2-2). Victor (V) route V-345 transits the Volk Falls, Volk West, and Volk South MOAs; V-24 and V-246 transit the Volk Falls MOA; and V-9341 transits the southeast corner of the Volk East MOA. There are no V routes within R-6904A/B and no published Tango (T) routes occur within the Volk Airspace Complex. There are four high altitude Jet (J) routes, J-538, J-70, J-68, and J-89 that traverse the area located above the MOAs. J-70 has a Minimum Enroute Altitude (MEA) of 25,000 feet MSL; no minimum altitude is associated with the other routes. There are no published Q routes above the MOAs although Q-440 lies just to the north of the Volk Airspace Complex.

**Table WI3.2-2. Air Traffic Service Routes in the Vicinity of the Training Airspace**

| <i>Route Name</i> | <i>MEA<sup>1</sup></i> | <i>Associated Airspace</i>           |
|-------------------|------------------------|--------------------------------------|
| V-345             | None                   | Volk Falls, Volk West/Volk South MOA |
| V-24              | None                   | Volk Falls MOA                       |
| V-246             | None                   | Volk Falls MOA                       |
| V-9341            | None                   | Volk East MOA                        |
| J-538             | None                   | Volk ATCAA Complex                   |
| J-70              | 25,000 MSL             | Volk ATCAA Complex                   |
| J-68              | None                   | Volk ATCAA Complex                   |
| J-89              | None                   | Volk ATCAA Complex                   |

*Note:* MEA as published in the vicinity of the training airspace.

*Legend:* ATCAA = Air Traffic Control Assigned Airspace; MEA = Minimum Enroute Altitude; MOA = Military Operations Area; MSL = mean sea level.

As depicted in Table WI3.2-3, there are 35 airports located beneath the Volk Airspace Complex: 11 public and 24 private. The Volk Airspace Complex excludes the airspace at and below 1,500

feet AGL within a 3-nautical mile (NM) radius of the Black River Falls, Neillsville Municipal, Mauston-New Lisbon Union, Bloyer Field, Necedah, and Neillsville municipal airports. In addition, several private airports lie beneath the Volk Airspace Complex.

**Table WI3.2-3. Public and Private Airports in the Vicinity of the Training Airspace  
(Page 1 of 2)**

| <i>Airport Name</i>                       | <i>Airport Ownership</i> | <i>Associated MOA</i> | <i>Based Aircraft</i>  | <i>Annual Operations</i> |
|---|--------------------------|-----------------------|--|--------------------------|
| Black River Falls Area Airport            | Public                   | Volk Falls MOA        | 17 – Single Engine<br>2 – Multi-Engine<br>3 - Ultralights                              | 12,320                   |
| Neillsville Municipal Airport             | Public                   | Volk West MOA         | 31 – Single Engine   | 7,520                    |
| Marshfield Municipal Airport              | Public                   | Volk East MOA         | 12 – Single Engine<br>3 – Multi-Engine<br>1 – Jet                                      | 22,950                   |
| Alexander Field South Wood County Airport | Public                   | Volk East MOA         | 42 – Single Engine<br>4 – Multi-Engine<br>8 – Ultralights                              | 9,050                    |
| Stevens Point Municipal Airport (STE)     | Public                   | Volk East MOA         | 37 – Single Engine<br>2 – Multi-Engine<br>3 – Jet<br>1 – Helicopter<br>2 – Ultralights | 23,250                   |
| Waupaca Municipal Airport                 | Public                   | Volk East MOA         | 33 – Single Engine<br>2 – Multi-Engine<br>2 – Jet<br>1 – Helicopter<br>4 – Ultralight  | 20,160                   |
| Wautoma Municipal Airport                 | Public                   | Volk East MOA         | 37 – Single Engine<br>10 – Ultralights   | 12,400                   |
| Adams County Legion Field Airport         | Public                   | Volk East MOA         | 17 – Single Engine<br>1 – Helicopter<br>1 – Ultralight                                 | 7,070                    |
| Necedah Airport                           | Public                   | Pike West MOA         | 9 – Single Engine  | 8,950                    |
| Mauston-New Lisbon Union Airport          | Public                   | Pike West MOA         | 21 – Single Engine<br>1 – Ultralight   | 10,110                   |
| Wild Rose Idlewild (W23)                  | Public                   | Volk East MOA         | 6 – Single Engine<br>6 – Ultralights   | 7,000                    |
| Stoiber Airport                           | Private                  | Steelhead MOA         | None Reported  | Not Reported             |
| Cunningham                                | Private                  | Pike West MOA         | None Reported  | Not Reported             |
| Lewis Airport (7WI4)                      | Private                  | Volk Falls            | 1 – Single Engine  | 150                      |
| Blair Airport (WI49)                      | Private                  | Volk Falls            | 2 – Single Engine  | 900                      |
| Whittlesey Cranberry Co Airport           | Private                  | Volk West MOA         | None Reported  | Not Reported             |
| Winch Airfield Airport                    | Private                  | Volk East MOA         | None Reported  | Not Reported             |
| Gottschalk Field Airport                  | Private                  | Volk West MOA         | None Reported  | Not Reported             |
| Jennie’s Field Airport (NR-2)             | Private                  | Volk East MOA         | None Reported  | Not Reported             |
| Swan Field Airport (WS36)                 | Private                  | Volk East MOA         | None Reported  | Not Reported             |
| Plainfield International Airport          | Private                  | Volk East MOA         | None Reported  | Not Reported             |
| Lake Ell Field Airport                    | Private                  | Volk East MOA         | None Reported  | Not Reported             |
| Timberline Airport                        | Private                  | Volk East MOA         | None Reported  | Not Reported             |
| Plantation Pine Airport                   | Private                  | Volk East MOA         | None Reported  | Not Reported             |
| Buzzards Roost Airport (1WI7)             | Private                  | Volk East MOA         | None Reported  | Not Reported             |
| Bennett Field Airport                     | Private                  | Volk East MOA         | None Reported  | Not Reported             |

**Table WI3.2-3. Public and Private Airports in the Vicinity of the Training Airspace  
(Page 2 of 2)**

| <i>Airport Name</i>             | <i>Airport Ownership</i> | <i>Associated MOA</i> | <i>Based Aircraft</i> | <i>Annual Operations</i> |
|---------------------------------|--------------------------|-----------------------|-----------------------|--------------------------|
| Snow Crest Ranch Airport        | Private                  | Volk East MOA         | None Reported         | Not Reported             |
| Cacic Airport                   | Private                  | Volk East             | 2 – Single Engine     | 300                      |
| Clearwater Aero Estates Airport | Private                  | Volk East MOA         | 2 – Single Engine     | Not Reported             |
| Wood Tick Strip Airport (WI12)  | Private                  | Volk East MOA         | None Reported         | Not Reported             |
| Bulldog Ranch Airport           | Private                  | Volk East MOA         | None Reported         | Not Reported             |
| Nowatzski Field Airport         | Private                  | Volk East MOA         | None Reported         | Not Reported             |
| Broken Prop Airport             | Private                  | Volk East MOA         | None Reported         | Not Reported             |
| Bucky’s Airpark Airport         | Private                  | Volk East MOA         | None Reported         | Not Reported             |
| Gaffney Airport                 | Private                  | Volk East MOA         | None Reported         | Not Reported             |

*Legend:* MOA = Military Operations Area.

*Source:* Skyvector 2018.

### WI3.2.2.2 Environmental Consequences

#### *Proposed Action*

Selection of the 115 FW installation for beddown of 18 operational F-35As would not result in adverse impacts on airspace use and management throughout the region. This alternative would not require any changes to the current lateral or vertical configuration of the MOAs, Restricted Areas, or ATCAAs, nor would it alter their normally scheduled times of use. The existing agreements in place between the FAA, scheduling agencies, and 115 FW would be sufficient to support F-35A flight operations. Under the Proposed Action, the F-35A aircraft would conduct up to 3,061 annual sorties (approximately 250 monthly sorties) lasting 30-60 minutes each. There would be an increase of approximately 28 percent in the amount of time spent in the airspace under the Proposed Action.

Impacts to civil and commercial aviation traffic in the training airspace used by the 115 FW could result in increases of F-35A operations, but effects would be minimal. The existing procedures and altitude structure would continue to support use of the Air Traffic Service Routes traversing the training airspace and airports located beneath the airspace. Additionally, although the F-35A would operate more frequently at higher altitudes, the traffic on the high altitude routes J-538, J-70, J-68, and J-89 are within Class A airspace (over 18,000 feet MSL) where flight operations would continue to be controlled by Minneapolis ARTCC. Airspace at and above 18,000 feet MSL for use in military training would continue to be released by the FAA only when not needed for other air traffic purposes and can be recalled when needed for commercial operations.

Use of existing procedures and continued close coordination for scheduling use of the MOAs, Restricted Areas, and ATCAAs would continue to ensure safe air traffic operations throughout this region. Radio-equipped aircraft can monitor Very High Frequency (VHF) Channel 134.35 for MOA activity advisories. Air traffic traveling near these airspace units would not conflict with

military flight activities. In addition, this 115 FW Proposed Action represents a continuation of current activities with minimal increases in operations, and no comments were received during the public scoping period identifying conflicts with civil or commercial aviation. Therefore, no significant impacts to airspace use and management would be expected.

#### *No Action Alternative*

Under the No Action Alternative, the F-16s would continue to fly from Dane County Regional Airport and use the same training airspace as they do today. No changes to the number of operations or frequency of use of the training airspace would occur. Operations would remain as described in Section WI3.2.1.1. There would be no change in use of training airspace and therefore, no significant impacts would occur.

### **WI3.2.3 Summary of Impacts**

The one-for-one replacement of F-16 military aircraft with F-35A aircraft assigned to the 115 FW would not require changes in local airspace or airfield management. Eventual replacement of F-16 aircraft at the installation with F-35As would result in an approximate 47 percent increase in military airfield operations (this would drop to 27 percent once the F-35A adopts the alert mission) and an approximately 3 percent increase in total operations when compared to the affected environment. This minor increase in airfield operations would have a minimal effect on the local air traffic environment. Time spent in the SUA would be expected to increase approximately 28 percent. The existing procedures and altitude structure would continue to support use of the Air Traffic Service Routes traversing the training airspace and airports located beneath the airspace. Additionally, although the F-35A would operate more frequently at higher altitudes, the traffic on the high altitude routes J-538, J-70, J-68, and J-89 are within Class A airspace (over 18,000 feet MSL) where flight operations would continue to be controlled by Minneapolis ARTCC. Close coordination of scheduling and use of the SUA by the 115 FW with the scheduling agencies would continue to ensure safe air traffic operations throughout the region. Therefore, impacts to airspace around Dane County Regional Airport and the SUA associated with the 115 FW would not be significant as a result of the F-35A beddown.

## **WI3.3 AIR QUALITY**

### **WI3.3.1 Installation**

The following section describes the affected environment and examines the extent to which the beddown of the F-35A at the 115 FW installation would be consistent with federal, state, and local air quality regulations.

### WI3.3.1.1 Affected Environment

The affected environment for the air quality analysis is Dane County, Wisconsin, which is part of the Southern Wisconsin Intrastate Air Quality Control Region (AQCR) (40 CFR 81.158). Dane County is in attainment for all criteria pollutants and has no designated maintenance areas, so the General Conformity Rule does not apply to the air quality analysis performed for this location.

Table WI3.3-1 presents the 2014 emission inventory for Dane County, which includes the city of Madison and Dane County Regional Airport.

**Table WI3.3-1. 2014 Criteria Pollutant Emissions for Dane County, Wisconsin (tons/year)**

| <i>Location</i>        | <i>VOCs</i> | <i>NO<sub>x</sub></i> | <i>CO</i> | <i>SO<sub>2</sub></i> | <i>PM<sub>2.5</sub></i> | <i>PM<sub>10</sub></i> |
|------------------------|-------------|-----------------------|-----------|-----------------------|-------------------------|------------------------|
| Dane County, Wisconsin | 19,941      | 16,444                | 98,671    | 295                   | 2,651                   | 5,354                  |

*Legend:* CO = carbon monoxide; NO<sub>x</sub> = nitrogen oxides; SO<sub>2</sub> = sulfur dioxide; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter; PM<sub>10</sub> = particulate matter less than or equal to 10 microns in diameter; VOC = Volatile Organic Compound.

*Source:* USEPA 2018a.

In the Dane County, Wisconsin region, the summers are warm and wet; the winters are cold, dry, and windy; and it is partly cloudy much of the year. Over the course of the year, the temperature typically varies from 13 degrees Fahrenheit (°F) to 82°F and is rarely below -7°F or above 90°F. Rain falls throughout the year in Dane County. The rainy period of the year lasts for 11 months, from February 8 to January 3, with a sliding 31-day rainfall of at least 0.5 inch. The most rain falls during the 31 days centered around June 15, with an average total accumulation of 4.2 inches during this period. The snowy period of the year lasts for 5 months, from November 9 to April 8. The most snow falls during the 31 days centered around December 21, with an average accumulation of 5 inches during this period (Weather Spark 2018).

Over the last half century, average annual precipitation in most of the Midwest has increased by 5 to 10 percent. Rainfall during the four wettest days of the year has increased about 35 percent. Most of the state of Wisconsin has warmed 2 to 3°F in the last century (USEPA 2016).

Airfield operations are performed by the 115 FW, which currently flies 18 F-16C aircraft that are scheduled to be replaced by the F-35A. For the air quality analysis, only the aircraft to be replaced have been analyzed, as all other aircraft and their activities would remain the same. The annual operations for the F-16C aircraft include 2,400 landings and take-offs and 100 closed pattern operations. Other sources of air emissions associated with aircraft operations include airfield equipment such as tow tractors, and aircraft engine testing. Table WI3.3-2 presents the annual F-16C emissions for the 115 FW at Dane County Regional Airport. Emission estimates were developed for 18 F-16C aircraft, using the F110-GE-100 engine. Emission estimates were derived manually using installation-specific data and include landings and take-offs, closed patterns, and annual engine testing. F-16 aircraft emissions are based on operations data provided by the installation, and represent the most recent data available on flight operations. Aerospace ground

equipment (AGE) operations emissions estimates were derived from the USAF's Air Conformity Applicability Model (ACAM), where a number of default values were used.

**Table WI3.3-2. Annual F-16C Emissions Estimates for the 115 FW  
at Dane County Regional Airport (tons/year)**

| <i>Emission Source</i> | <i>VOCs</i> | <i>NO<sub>x</sub></i> | <i>CO</i> | <i>SO<sub>2</sub></i> | <i>PM<sub>10</sub></i> | <i>PM<sub>2.5</sub></i> | <i>CO<sub>2e</sub></i> |
|------------------------|-------------|-----------------------|-----------|-----------------------|------------------------|-------------------------|------------------------|
| F-16C Operations       | 5.84        | 34.12                 | 64.92     | 3.72                  | 6.29                   | 4.23                    | 9,263                  |

*Legend:* CO = carbon monoxide; CO<sub>2e</sub> = carbon dioxide equivalent; NO<sub>x</sub> = nitrogen oxides; SO<sub>2</sub> = sulfur dioxide; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter; PM<sub>10</sub> = particulate matter less than or equal to 10 microns in diameter; VOC = Volatile Organic Compound.

### WI3.3.1.2 Environmental Consequences

#### *Proposed Action*

Air quality impacts within the affected environment were reviewed relative to federal, state, and local air pollution standards and regulations. Refer to Section 3.4 for a detailed discussion of air quality resource definitions and the analytical methodology for evaluating impacts. Since Dane County is in attainment for all criteria pollutants and has no designated maintenance areas, the General Conformity Rule does not apply.

Potential impacts to air quality are evaluated with respect to the extent, context, and intensity of the impact in relation to relevant regulations, guidelines, and scientific documentation. The Council on Environmental Quality (CEQ) defines significance in terms of context and intensity in 40 CFR 1508.27. This requires that the significance of an action be analyzed in respect to the setting of the action and based relative to the severity of the impact. For attainment area criteria pollutants, the project air quality analysis uses the USEPA's Prevention of Significant Deterioration (PSD) permitting threshold of 250 tons per year as an initial indicator of the local significance of potential impacts to air quality. It is important to note that these indicators only provide a clue to the potential impacts to air quality. In the context of criteria pollutants for which the proposed project region is in attainment of a National Ambient Air Quality Standards (NAAQS), the analysis compares the annual net increase in emissions estimated for each project alternative to the 250 tons per year PSD permitting threshold. The PSD permitting threshold represents the level of potential new emissions below which a new or existing minor non-listed stationary source may acceptably emit without triggering the requirement to obtain a permit. Thus, if the intensity of any net emissions increase for a project alternative is below 250 tons per year in the context of an attainment criteria pollutant, the indication is the air quality impacts will be insignificant for that pollutant. In the case of criteria pollutants for which the proposed project region does not attain a NAAQS, the analysis compares the net increase in annual direct and indirect emissions to the applicable pollutant *de minimis* threshold(s). If the net direct and indirect emissions from the project alternative equal or exceed an applicable *de minimis* threshold, then a positive general conformity determination is required before any emissions from the actions may occur.

### Construction

As a result of the proposed construction, there would be up to 212,883 SF (4.9 acres) of temporary soil disturbance, including up to 71,883 SF (1.7 acres) of new impervious surface at the 115 FW installation. All proposed construction is within the footprint of the developed installation and would occur beginning in 2020. The following assumptions were used for construction projects at the 115 FW installation:

- New building foundations require excavation of at least 1 foot of grade soil.
- All buildings are single story.
- All new buildings require at least 100 feet of utility trenching.
- All new impervious surfaces are assumed to be concrete unless clearly asphalt (roadways).
- All construction activities were assumed to occur in 1 year to provide a worst-case scenario for emissions. This means all construction was calculated to occur in 2020, even though some projects may last longer than 1 year.
- Where two options are under consideration, the option that would generate the greatest emissions was selected for analysis.

Construction emission estimates were prepared using the USAF air model ACAM. Emissions would primarily be generated by:

- diesel-powered construction equipment operating on-site,
- trucks removing or delivering materials from the construction areas,
- construction worker vehicles,
- application of architectural coatings, and
- dust created by grading and other bare earth construction activities.

Results of the modeling are presented in Table WI3.3-3. The 250-ton per year value serves as a comparative indicator for all criteria pollutants and precursors. Detailed information on the modeling can be found in Appendix C.

**Table WI3.3-3. Annual Construction Emissions Estimates for the 115 FW Installation at Dane County Regional Airport – 2019 (tons/year)**

| <i>Year</i>           | <i>VOC</i> | <i>NO<sub>x</sub></i> | <i>CO</i> | <i>SO<sub>x</sub></i> | <i>PM<sub>10</sub></i> | <i>PM<sub>2.5</sub></i> | <i>CO<sub>2e</sub></i> |
|-----------------------|------------|-----------------------|-----------|-----------------------|------------------------|-------------------------|------------------------|
| 2019                  | 0.66       | 3.54                  | 3.20      | 0.01                  | 1.46                   | 0.17                    | 731                    |
| Comparative Indicator | 250        | 250                   | 250       | 250                   | 250                    | 250                     | NA                     |
| Exceedance (Yes/No)   | No         | No                    | No        | No                    | No                     | No                      | NA                     |

*Legend:* CO = carbon monoxide; CO<sub>2e</sub> = carbon dioxide equivalent; NO<sub>x</sub> = nitrogen oxides; SO<sub>x</sub> = sulfur oxides; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter; PM<sub>10</sub> = particulate matter less than or equal to 10 microns in diameter; VOC = Volatile Organic Compound.

Based on the ACAM calculations, the emissions associated with construction of the 115 FW installation for the basing of the F-35A would not be significant. All of the criteria pollutant

emissions are well below the comparative indicator values. A Record of Air Analysis (ROAA) has been prepared to document that the impacts would not be significant, and can be found in Appendix C.

### Airfield Operations

Airfield operations for the 18 F-35A aircraft would be similar to those currently occurring with the F-16C aircraft. The primary difference would be that the annual number of landings and take-offs is projected to increase by 661, resulting in an overall increase in operations. Additionally, it is anticipated that the alert mission would continue to be flown by up to four F-16C aircraft associated with another unit until such a time as when the F-35A aircraft are determined fully operational. The net change in operation emissions at the 115 FW installation are presented in Table WI3.3-4 for 2025, when all 18 F-35A aircraft would be on-site and operational and the four F-16C aircraft are flying the alert mission. This would represent the new emission profile moving forward. The emissions account for the difference in the engine operations between the F-16C and F-35A aircraft, the increase in annual operations, and the small increase in personnel who would be assigned to the 115 FW installation as a result of basing the F-35A at the 115 FW installation.

**Table WI3.3-4. Annual Airfield Emissions Estimates for the 115 FW  
at Dane County Regional Airport – 2025 (tons/year)**

| <i>Emissions Source</i> | <i>VOC</i> | <i>NO<sub>x</sub></i> | <i>CO</i> | <i>SO<sub>x</sub></i> | <i>PM<sub>10</sub></i> | <i>PM<sub>2.5</sub></i> | <i>CO<sub>2e</sub></i> |
|-------------------------|------------|-----------------------|-----------|-----------------------|------------------------|-------------------------|------------------------|
| F-35A Operations        | 6.00       | 71.07                 | 22.03     | 14.85                 | 2.43                   | 2.33                    | 21,741                 |
| F-16 Operations         | 5.84       | 34.12                 | 64.92     | 3.72                  | 6.29                   | 4.23                    | 9,263                  |
| Net Change              | 0.16       | 36.95                 | -42.89    | 11.12                 | -3.85                  | -1.90                   | 12,478                 |
| Comparative Indicator   | 250        | 250                   | 250       | 250                   | 250                    | 250                     | NA                     |
| Exceedance (Yes/No)     | No         | No                    | No        | No                    | No                     | No                      | NA                     |

*Legend:* CO = carbon monoxide; CO<sub>2e</sub> = carbon dioxide equivalent; NO<sub>x</sub> = nitrogen oxides; SO<sub>x</sub> = sulfur oxides; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter; PM<sub>10</sub> = particulate matter less than or equal to 10 microns in diameter; VOC = Volatile Organic Compound.

The net change is the difference in emissions resulting from instituting the Proposed Action to base the F-35A as compared to not introducing the action. Under this alternative, volatile organic compounds (VOCs) and sulfur oxides (SO<sub>x</sub>) would increase slightly and nitrogen oxides (NO<sub>x</sub>) would increase moderately. Carbon monoxide (CO), particulate matter less than or equal to 10 microns in diameter (PM<sub>10</sub>), and particulate matter less than or equal to 2.5 microns in diameter (PM<sub>2.5</sub>) would decrease. All of the criteria pollutant emissions would remain well below the comparative indicator value. The increase in criteria pollutant emissions would not have a significant impact on area air quality. A ROAA has been prepared to document that the airfield operation impacts would be minimal, and can be found in Appendix C.

### Greenhouse Gas Emissions

The proposed construction activities would contribute directly to greenhouse gas (GHG) emissions from fossil fuels. Demolition and construction activities would generate 731 tons of carbon

dioxide equivalent (CO<sub>2e</sub>) emissions in 2020. To put these emissions in perspective, 731 tons of GHGs is the equivalent of 143 cars driving the national average of 11,500 miles per year (USEPA 2018b). These GHG emissions would only be generated during the construction period. The operation of new facilities may result in a small increase in installation-related GHG emissions, primarily through the consumption of electricity and possibly through the combustion of fossil fuel on-site if any oil or natural gas boilers or other heating units are installed in the new facilities.

GHG emissions from airfield operations are based on the same mobile sources as the criteria pollutants: aircraft flight operations at the airfield, AGE, and jet engine testing. For the proposed F-35A basing, additional commuter emissions are included because of an increase in personnel resulting from the basing of the F-35A. The annual airfield CO<sub>2e</sub> emissions would increase by approximately 12,478 tons or 135 percent. This is equivalent to adding an additional 2,438 passenger vehicles onto roads, driving 11,500 miles per year on average.

While the GHG emissions generated from the construction and F-35A airfield operations alone would not be enough to cause global warming, in combination with past and future emissions from all other sources they would contribute incrementally to the global warming that produces the adverse effects of climate change.

#### *No Action Alternative*

Under the No Action Alternative, the transition of F-16C aircraft to F-35A aircraft would not occur. There would be no construction nor alterations to the 115 FW installation in support of the F-35A beddown. Air emissions would not be notably different from those that occur today and as such, would not be significant.

### **WI3.3.2     Airspace**

#### WI3.3.2.1   Affected Environment

The affected environment is the Volk Airspace Complex used by the 115 FW that consist of MOAs and ATCAAs (see Table WI2.2-1 and Figure WI2.2-1). The F-16Cs currently fly approximately 16 percent of the time below 3,000 feet AGL, which is below the mixing height and where emissions from the flying aircraft can influence ground-level air quality. None of the areas are designated by USEPA as nonattainment or maintenance areas for criteria pollutants.

#### WI3.3.2.2   Environmental Consequences

#### *Proposed Action*

Generally, the F-35A would fly at higher altitudes, operating at 3,000 feet AGL or higher about 99 percent of the flight time. This would be a 15 percent decrease in flight below the mixing height compared to the legacy F-16C aircraft. No new airspace or airspace reconfigurations are proposed,

or would be required to support the F-35A beddown at the 115 FW installation. The overall impact on air quality as a result of F-35A flight in the airspace would be beneficial, with fewer air pollutant emissions below the mixing height. As a result, there would be no significant impacts to air quality in the airspace as a result of the Proposed Action.

GHG emissions that occur both below and above the mixing height contribute to climate change. Aircraft training activities in the airspaces are highly variable, and it is not possible to quantitatively analyze the affected environment or Proposed Action GHG emissions in airspace. Any increases resulting from F-35A flight would be based on the number of increased operations.

#### *No Action Alternative*

Under the No Action Alternative, the transition of F-16C aircraft to F-35A aircraft would not occur and the F-16C would continue to operate from the 115 FW installation. Airspace activities would not be notably different from those that occur today, and as such would not be significant.

### **WI3.3.3 Summary of Impacts**

Dane County is in attainment for all criteria pollutants and has no designated maintenance areas. Based on the ACAM calculations, the emissions associated with construction of the 115 FW installation for the basing of the F-35A would not be significant. Under this alternative, VOCs and SO<sub>x</sub> would increase slightly and NO<sub>x</sub> would increase moderately. CO, PM<sub>10</sub>, and PM<sub>2.5</sub> would decrease. All of the criteria pollutant emissions would remain well below the comparative indicator value. There would be an anticipated decrease of 15 percent for operations below the mixing height in the SUA, which would be a minor positive impact. Impacts to air quality associated with the proposed beddown of the F-35A at the 115 FW installation would not be significant.

### **WI3.4 SAFETY**

#### **WI3.4.1 Installation**

##### WI3.4.1.1 Affected Environment

#### *Fire/Crash Response*

Day-to-day operations and maintenance activities conducted by the 115 FW are performed in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by Air Force Occupational Safety and Health (AFOSH) requirements. The 115 FW Fire Department has a response agreement as part of the Airfield Joint Use Agreement with Dane County Regional Airport to provide fire protection and first responder services for the installation and its aircraft. The 115 FW has a cooperative response agreement with the local Dane County Regional Airport fire department for mutual aid in fire protection, first responder

and lifesaving services, and hazardous materials incident response. The 115 FW adheres to specific emergency response procedures contained in the Technical Order 00-105E-9, *Aerospace Emergency Rescue and Mishap Response Information*, for aircraft mishaps involving composite materials (USAF 2018). Specifically, Technical Order 00-105E-9 contains a section (Chapter 3) on Mishap Composite Awareness that provides guidance on fire response to aircraft containing composite materials.

#### *Accident Potential Zone/Runway Protection Zone*

Runway Protection Zones (RPZs) are trapezoidal zones extending outward from the ends of active runways at commercial airports and delineate those areas recognized as having the greatest risk of aircraft mishaps, most of which occur during take-off or landing (Figure WI3.4-1). Development restrictions associated with RPZs are intended to preclude incompatible land use activities from being established in these areas (see Section 3.5.1 for specific RPZ discussion and Section 3.6.1 for land use compatibilities). The RPZs lie completely within airport property and are free of development that would be incompatible with airport operations.

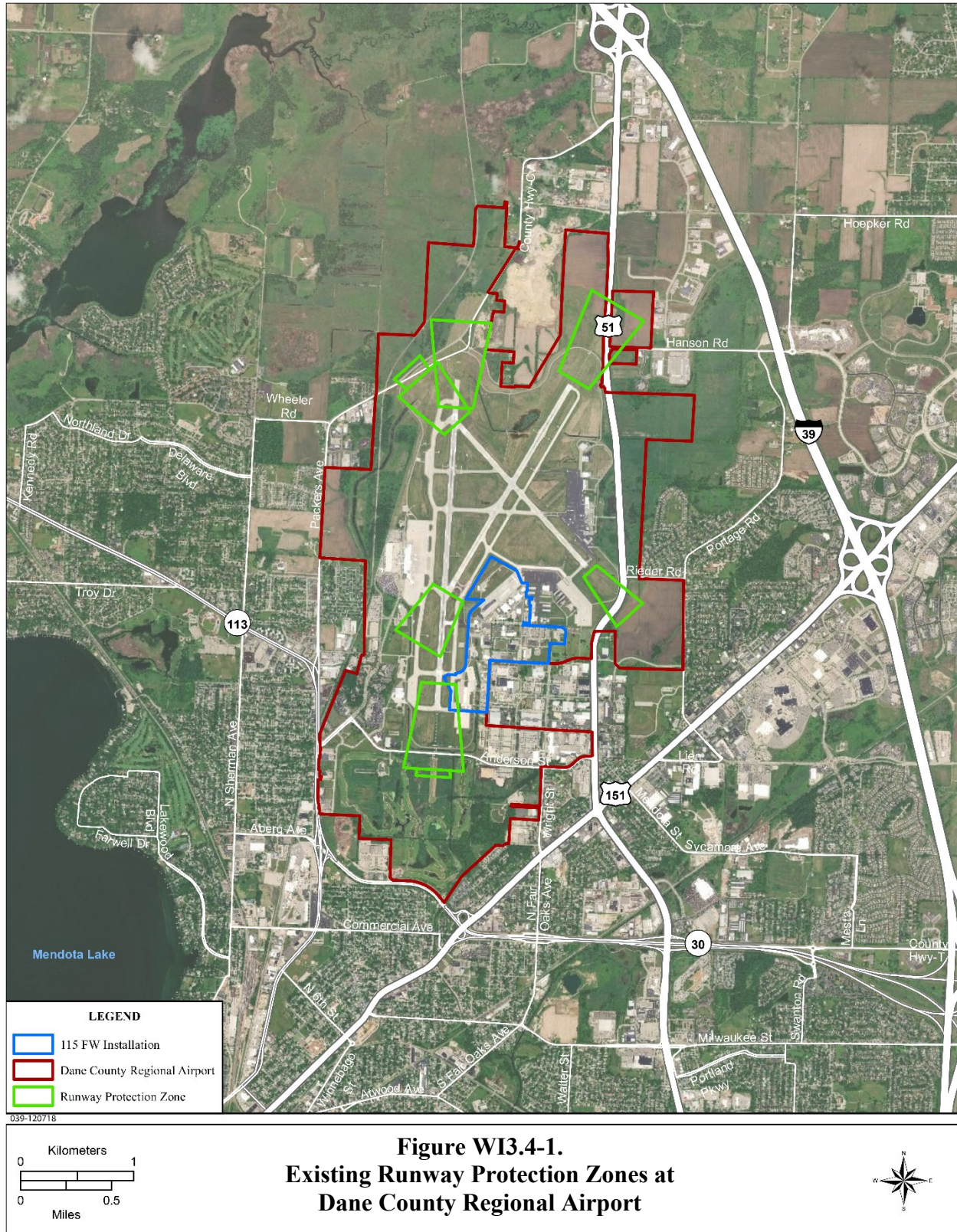
Facilities within the 115 FW installation are sited in Department of Defense (DoD) Clear Zones (CZs), contrary to UFC 3-260-01 guidelines, but comply with the less stringent FAA Approach Obstacle Free Zone. As such, the 115 FW operates with an airfield waiver.

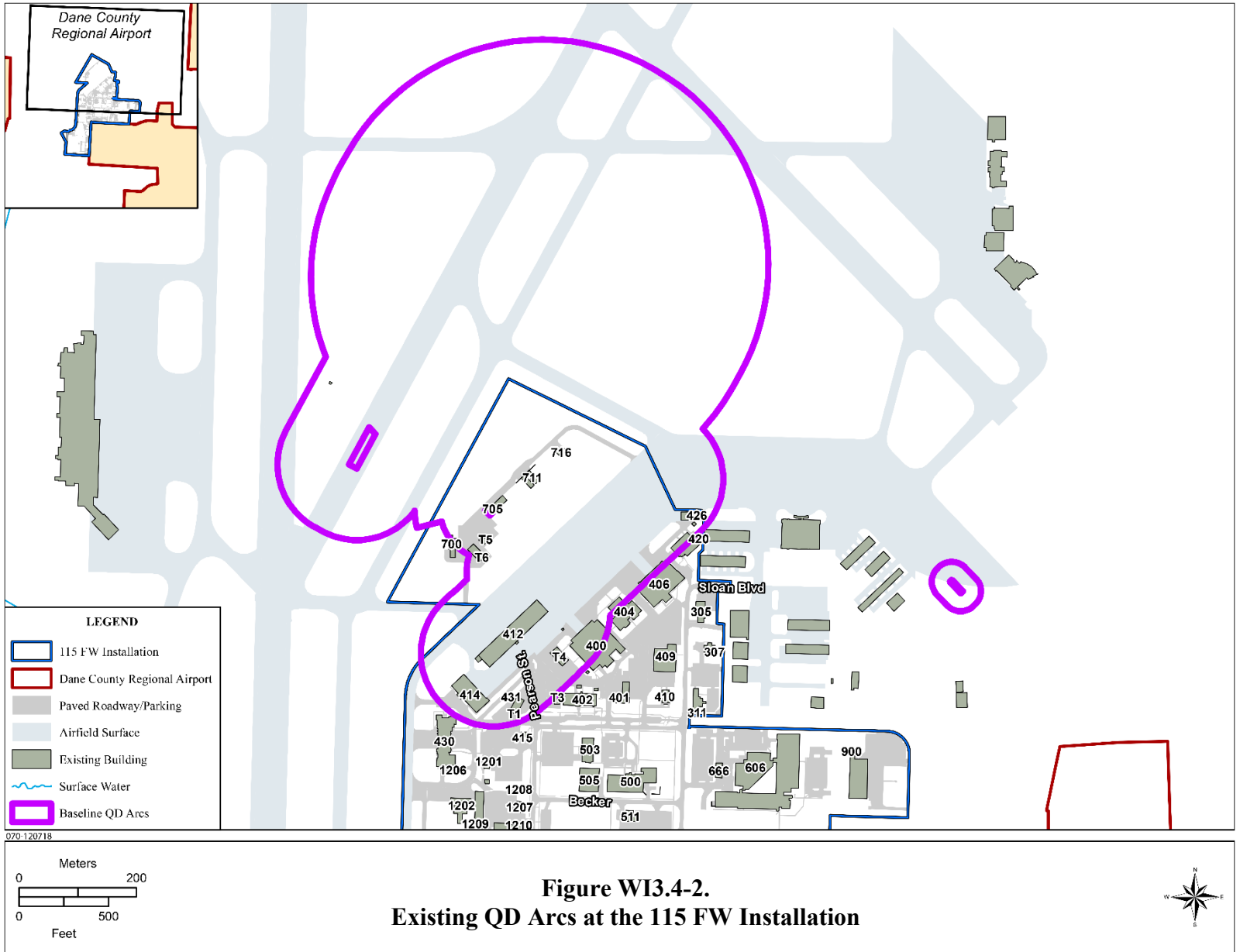
#### *Explosive Safety*

The 115 FW stores, maintains, and uses a small range of munitions required for performance of their mission. The Munitions Storage Area (MSA) at the 115 FW installation currently has five facilities, including an Administration and Trailer Maintenance facility, a Maintenance and Inspection facility, two earth-covered magazines, and an above ground magazine with an open inert training pad and a 50-foot by 100-foot tent for inert storage. In addition, there is an Explosive Ordnance Disposal storage site between B1210 and 1213. Figure WI3.4-2 shows the quantity-distance (QD) arcs associated with these facilities.

#### *Anti-terrorism/Force Protection*

Many of the military facilities at the 115 FW installation were constructed before Anti-terrorism/Force Protection (AT/FP) considerations became a critical concern. Thus, many facilities do not currently comply with all current AT/FP standards. However, as new construction occurs and as facilities are modified, the 115 FW would incorporate these standards to the maximum extent practicable.





#### WI3.4.1.2 Environmental Consequences

##### *Proposed Action*

Existing facilities at the 115 FW installation for fire response and crash recovery meet F-35A beddown requirements (ANG n.d.).

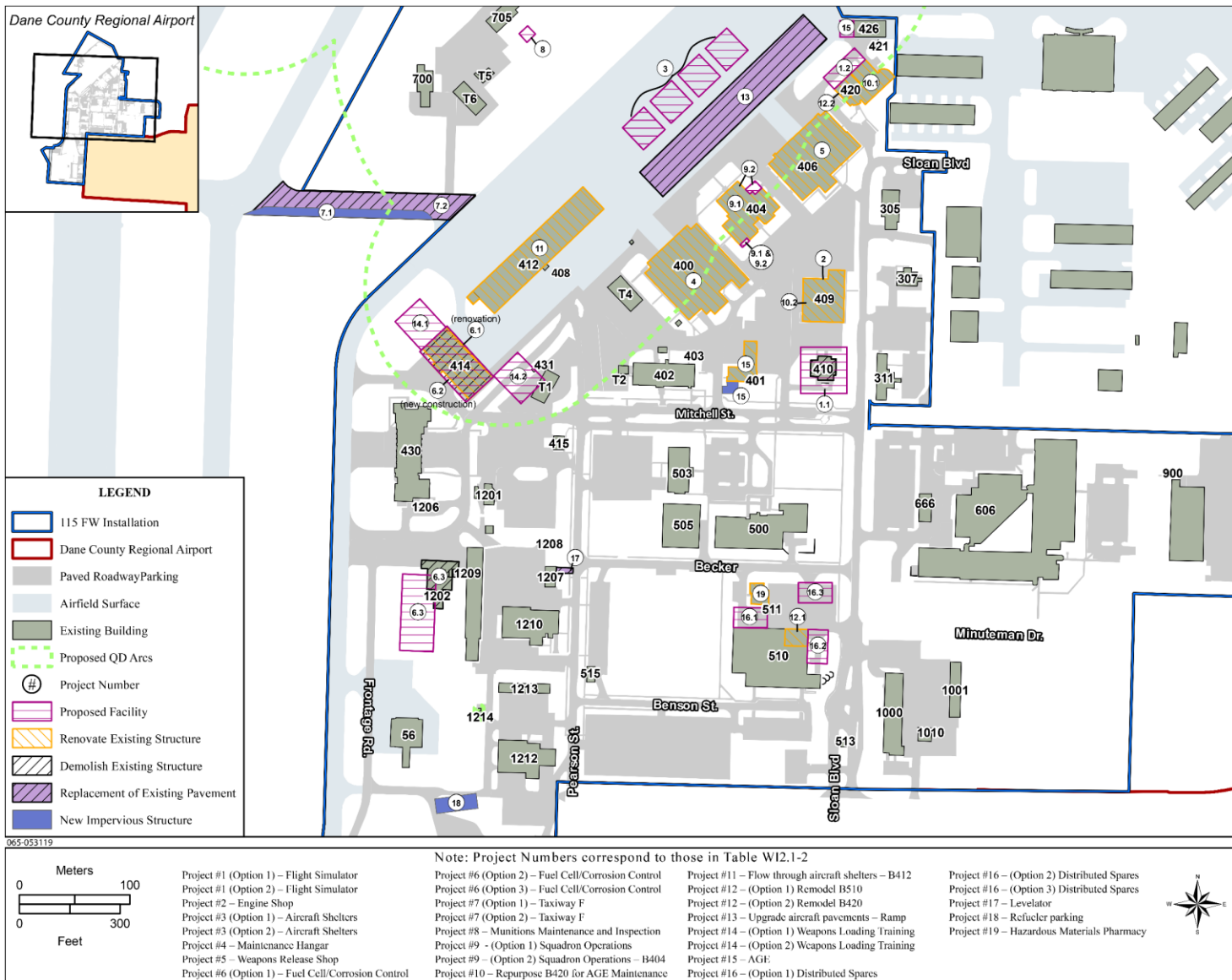
Providing new and renovated facilities for the 115 FW installation that support operational requirements of the F-35A, and are properly sited with adequate space and a modernized supporting infrastructure, would generally enhance ground and flight safety during required operations, training, maintenance and support procedures, security functions, and other activities conducted by the 115 FW.

Proposed renovation and infrastructure improvement projects related to this alternative would not impact aircraft take-off and landings or penetrate any RPZs. New building construction is not proposed within RPZs; therefore, construction activity would not result in any greater safety risk or obstructions to navigation. Operations would fall within the same general types as those that have historically occurred at the 115 FW installation. For example, the F-35A would follow established local approach and departure patterns used. Therefore, flight activity and subsequent operations would not require changes to RPZs.

While there are a few planned construction projects within the proposed QD arcs, per Air Force Manual 91-201, *Explosive Safety Standards*, all public traffic route distances (PTRDs) and inhabited building distances (IBDs) meet specified net explosive weight quantity-distance (NEWQD) criteria (Figure WI3.4-3). No explosives would be handled during construction or demolition activities. Therefore, no additional risk would be expected as a result of implementation of this alternative.

The proposed construction projects meet all criteria specified in the ANG Handbook 32-1084, *Facility Space Standards*. AT/FP requirements have also been addressed to the extent practicable in all projects. Projects would use AT/FP site design standards for siting of facilities, parking, walkways, and other features. Renovations would bring the facilities into compliance with UFC 4-022-01, *Security Engineering: Entry Control Facilities/Access Control Points* and UFC 4-010-01, *DoD Minimum Anti-terrorism Standards for Buildings*, providing additional protection for the personnel based there.

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**Figure WI3.4-3.**  
**Proposed QD Arcs and Proposed Construction at the 115 FW Installation**

Chapter 3, Section 3.5.1.1 details F-35A composite material characteristics and potential exposure risks. Under the Proposed Action, firefighters would continue to be fully trained and appropriately equipped for crash and rescue response involving advanced aerospace composite materials and the proposed 115 FW F-35A beddown would not change these abilities. Additionally, 115 FW would keep local firefighting departments informed about any new information or firefighting techniques associated with composite materials should an accident occur. Based on current information on the characteristics of burning composite materials, standard firefighting equipment, including self-contained breathing apparatus, should be adequate to protect firefighters (Air Force Research Laboratory 2015; Naval Air Warfare Center 2003). No special extinguishing agents are needed for composite materials and typical aircraft firefighting agents, such as water or aqueous film forming foam, are adequate to control burning composite materials during an aircraft mishap. In the event of a crash of an aircraft containing composite materials, the USAF would follow the guidance contained in the *Mishap Response Checklist for Advanced Aerospace Materials/Composites* (USAF Advanced Composites Program Office 1993).

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. All aspects of ground and flight safety would be expected to remain as described under affected environment in Section WI3.4.1.1. Therefore, there would be no significant impacts to safety under the No Action Alternative.

### **WI3.4.2     Airspace**

#### WI3.4.2.1   Affected Environment

The airspace directly associated with the Proposed Action as it relates to the 115 FW includes Restricted Areas, MOAs, and ATCAAs (see Figure WI2.2-1). The volume of airspace encompassed by the combination of airspace elements constitutes the affected environment for airspace management. These training areas allow military flight operations to occur and minimize exposure to civil aviation users, military aircrews, or the general public to hazards associated with military training and operations. This section describes the existing operations within the training airspace units and the following section evaluates changes that would occur with the introduction of the F-35A.

### *Flight Safety Procedures*

Aircraft flight operations from Dane County Regional Airport are governed by standard flight rules. Specific safety requirements are contained in standard operating procedures that must be followed by all aircrews operating from the airfield (ACC 2016) to ensure flight safety.

### *Aircraft Mishaps*

F-16 aircraft (all models) have flown more than 11,278,471 hours since the aircraft entered the USAF inventory in 1975. Over that period, 378 Class A mishaps have occurred and 338 aircraft have been destroyed. This results in a Class A mishap rate of 3.35 per 100,000 flight hours, and an aircraft destroyed rate of 3.00 per 100,000 flight hours (Air Force Safety Center [AFSEC] 2019a). The 115 FW has not experienced a Class A mishap in the past 5 years (115 FW 2017a).

### *Bird/Wildlife Aircraft Strike Hazard*

The USAF Bird/Wildlife Aircraft Strike Hazard (BASH) Team maintains a database that documents all reported bird/wildlife aircraft strikes. Historic information for the past 43 years indicates that for the entire USAF, 16 USAF aircraft have been destroyed and 29 fatalities have occurred from bird/wildlife aircraft strikes (AFSEC 2017a).

The 115 FW of the WIANG has an ongoing BASH program through which information and assistance is freely shared between airfield users, the Dane County Regional Airport staff, and the local air traffic controllers. Serious BASH-related accidents within the immediate Dane County Regional Airport area are unusual and have never resulted in a Class A mishap (115 FW 2017a). The 115 FW has recorded nine minor BASH incidents from 2012 to 2017 (115 FW 2017a).

### *Fuel Jettison*

For use in emergency situations, certain aircraft have the capability to jettison fuel and reduce aircraft gross weight for flight safety. When circumstances require, fuel jettisoning is permitted above 5,000 feet AGL, over unpopulated areas, and is generally over water for applicable bases. Air Force Instructions (AFIs) cover the fuel jettison procedures, and local operating policies define specific fuel ejection areas for each base. The F-16 can only jettison fuel by jettisoning the external mounted fuel tanks.

## WI3.4.2.2 Environmental Consequences

### *Proposed Action*

The F-35A is a new aircraft and historical trends show that mishaps of all types decrease the longer an aircraft is operational as flight crews and maintenance personnel learn more about the aircraft's capabilities and limitations. As the F-35A becomes more operationally mature, the aircraft mishap

rate is expected to become comparable with a similarly sized aircraft with a similar mission. F-35A has improved electronics and maintenance; thus, they are expected to result in long-term Class A accident rate comparable to that of the similarly sized F-16 aircraft (3.35 lifetime) (AFSEC 2019a).

Through Fiscal Year (FY) 2019, the F-35A has amassed 96,313 flying hours with three Class A mishaps resulting in no injuries and a Class A mishap rate of 3.11 lifetime, and for the last 5 years of 2.17 (AFSEC 2019b). These statistics are updated annually. Because the F-35A has not yet reached 100,000 hours by the end of FY 2019, this rate is not directly comparable to other aircraft with more flying hours. However, this rate does provide some indication of the overall safety of the F-35A aircraft. For example, this rate is much lower than the 18.65 rate that the F-16 had in the past after a comparable amount of hours.

In order to provide a broader perspective on the potential mishap rate for a new technology like the F-35A, the following discussion refers to the mishap rates for the introduction of the F-22A (Raptor), the latest jet fighter in the DoD inventory. The F-22A was introduced in 2002, and provided the USAF with the most current engine and stealth capabilities. This new technology is akin to the F-35A in that it is a new airframe with similar flight capabilities. With that in mind, it is possible that projected mishap rates for the F-35A may be comparable to the historical rates of the F-22A. The Class A mishap rates for the F-22A from squadron operational status to September 2019 are provided in Table WI3.4-1.

**Table WI.3.4-1. F-22A Class A Flight Mishap History**

| <i>Year</i>     | <i>Class A Number of Mishaps</i> | <i>Class A Rate<sup>1</sup></i> | <i>Destroyed A/C</i> | <i>Destroyed Rate</i> | <i>Fatal Pilot</i> | <i>Fatal All</i> | <i>Hours Flown per Year</i> | <i>Cumulative Flight Hours</i> |
|-----------------|----------------------------------|---------------------------------|----------------------|-----------------------|--------------------|------------------|-----------------------------|--------------------------------|
| FY02            | 1                                | 0.00                            | 0                    | 0.00                  | 0                  | 0                | 0                           | 0                              |
| FY03            | 0                                | 0.00                            | 0                    | 0.00                  | 0                  | 0                | 133                         | 133                            |
| FY04            | 1                                | 32.12                           | 0                    | 0.00                  | 0                  | 0                | 3,113                       | 3,246                          |
| FY05            | 1                                | 24.90                           | 1                    | 24.90                 | 0                  | 0                | 4,016                       | 7,262                          |
| FY06            | 1                                | 11.10                           | 0                    | 0.00                  | 0                  | 0                | 9,012                       | 16,274                         |
| FY07            | 0                                | 0.00                            | 0                    | 0.00                  | 0                  | 0                | 14,487                      | 30,761                         |
| FY08            | 1                                | 5.56                            | 0                    | 0.00                  | 0                  | 0                | 17,977                      | 48,738                         |
| FY09            | 1                                | 4.76                            | 1                    | 4.76                  | 0                  | 1                | 20,988                      | 69,726                         |
| FY10            | 0                                | 0.00                            | 0                    | 0.00                  | 0                  | 0                | 24,675                      | 94,401                         |
| FY11            | 1                                | 6.54                            | 1                    | 6.54                  | 1                  | 1                | 15,289                      | 109,690                        |
| FY12            | 3                                | 11.32                           | 0                    | 0.00                  | 0                  | 0                | 26,506                      | 136,196                        |
| FY13            | 1                                | 3.82                            | 1                    | 3.82                  | 0                  | 0                | 26,184                      | 162,380                        |
| FY14            | 1                                | 3.34                            | 0                    | 0.00                  | 0                  | 0                | 29,939                      | 192,319                        |
| FY15            | 1                                | 3.13                            | 0                    | 0.00                  | 0                  | 0                | 31,993                      | 224,312                        |
| FY16            | 1                                | 3.24                            | 0                    | 0.00                  | 0                  | 0                | 30,889                      | 255,201                        |
| FY17            | 1                                | 2.96                            | 0                    | 0.00                  | 0                  | 0                | 33,834                      | 289,035                        |
| FY18            | 5                                | 13.01                           | 0                    | 0.00                  | 0                  | 0                | 38,424                      | 327,458                        |
| FY19            | 6                                | 21.48                           | 0                    | 0.00                  | 0                  | 0                | 27,932                      | 355,390                        |
| <b>Lifetime</b> | <b>26</b>                        | <b>7.32</b>                     | <b>4</b>             | <b>1.13</b>           | <b>1</b>           | <b>2</b>         | <b>-</b>                    | <b>355,390</b>                 |

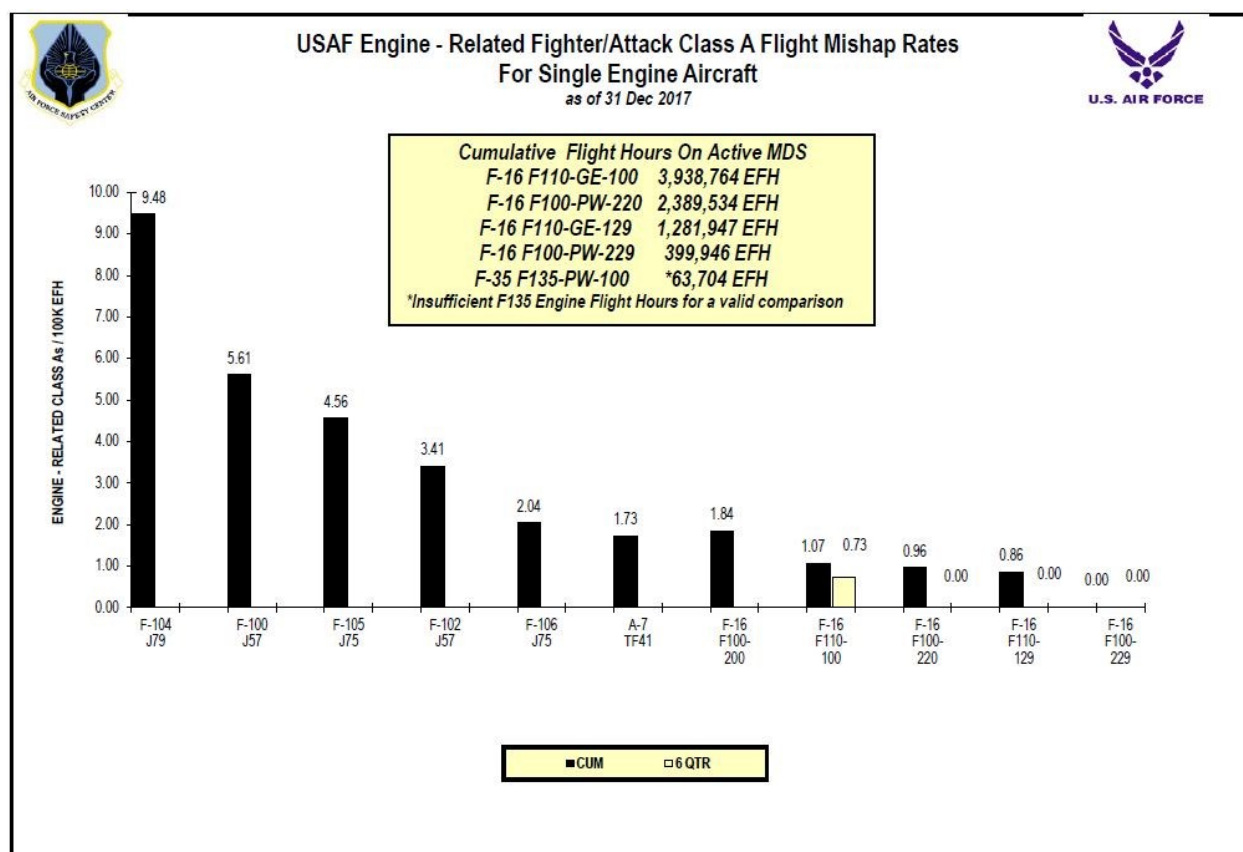
Notes: <sup>1</sup>Mishap rate is based on 100,000 hours of flight.

Legend: A/C = aircraft; FY = Fiscal Year.

Source: AFSEC 2019c.

Since introduction of the single jet engine fighter or attack aircraft in the 1950s, technological advances have continually driven down the engine failure rate and associated aircraft mishaps (Figure WI3.4-4) (AFSEC 2017b).

Although the F-35A is a new aircraft, the single engine that powers it is a composite product of 30 years of engineering, lessons learned from previous single aircraft engines with a similar core, and tens of thousands of hours during operational use of legacy aircraft. The propulsion system design for the F-35A includes a dedicated system safety program with an acceptable risk level that was more stringent than legacy engines. The engine safety program focused on the major contributors of what previously caused the loss of an aircraft and provided redundancies in case of control system failures; additionally, the program allowed for safe recovery of the aircraft even with system failures. Throughout the design and testing process, safety initiatives took previous best practices for single engine safety and built upon them to promote flight safety progress. Examples of design characteristics that are damage tolerant and enhance safety include a dual wall engine liner, a fan blade containment shell, and a shaft monitor for vibration, torque, and alignment.



**Figure WI3.4-4. United States Air Force Engine-Related Mishap Rates**

*Note:* “Engine-related” excludes mishaps caused by foreign object damage, BASH, or failure of support systems external to the engine (e.g., fuel starvation).

*Source:* AFSEC 2017b.

Additionally, pilots flying the F-35A would use simulators extensively. Simulator training includes all facets of flight operations and comprehensive emergency procedures. The sophistication and fidelity of current simulators and related computer programs are commensurate with the advancements made in aircraft technology. These factors should minimize risk associated with mishaps due to pilot error.

Due to the addition of the F-35A aircraft under the Proposed Action at the 115 FW installation, there would be an increase of approximately 3 percent in total Dane County Regional Airport airfield operations compared to the affected environment. The increase in take-offs, landings, proficiency training, and other flights would result in a commensurate increase in the safety risk to aircrews and personnel. However, current airfield safety procedures discussed previously would continue to be implemented and additional airfield flight operations would adhere to established safety procedures.

The F-35A would operate in the same airspace environment as the 115 FW F-16 aircraft. As such, the overall potential for bird-aircraft strikes is not anticipated to be statistically different following the beddown of the F-35A. However, the F-35A is considered to be more vulnerable to a catastrophic wildlife strike due to the Electro-Optical Targeting System (EOTS) Window Assembly than the legacy aircraft. Damage to the EOTS due to a wildlife strike could damage the engine, which could result in the catastrophic loss of the aircraft. It is anticipated that BASH potential would be somewhat lessened because the F-35A attains altitude more rapidly and would spend less time than F-16 aircraft at lower altitudes where species generally fly. In addition, F-35A aircrews operating in the 115 FW associated training airspace would be required to follow applicable procedures outlined in the 115 FW BASH Plan; adherence to this program has minimized bird-aircraft strikes. When risk increases, limits are placed on low-altitude flights and some types of training (e.g., multiple approaches, closed pattern work). Furthermore, special briefings are provided to pilots whenever the potential exists for greater bird strike risks within the airspace; F-35A pilots would also be subject to these procedures.

Chapter 3, Section 3.5.1.1 details F-35A composite material characteristics and potential exposure risks. Under the Proposed Action, firefighters would continue to be fully trained and appropriately equipped for crash and rescue response involving advanced aerospace composite materials and the proposed 115 FW F-35A beddown would not change these abilities. Additionally, 115 FW would keep local firefighting departments informed about any new information or firefighting techniques associated with composite materials should an accident occur. Based on current information on the characteristics of burning composite materials, standard firefighting equipment, including self-contained breathing apparatus, should be adequate to protect firefighters (Air Force Research Laboratory 2015; Naval Air Warfare Center 2003). No special extinguishing agents are needed for composite materials and typical aircraft firefighting agents, such as water or aqueous film

forming foam, are adequate to control burning composite materials during an aircraft mishap. In the event of a crash of an aircraft containing composite materials, the USAF would follow the guidance contained in the *Mishap Response Checklist for Advanced Aerospace Materials/Composites* (USAF Advanced Composites Program Office 1993).

The only maintenance of the stealth coating (e.g., low observable material) that would be accomplished at the base would be done using a brush or roller to apply coatings, bonding materials, or applying tape. Depot-level maintenance of the low observable material (including spray capability) would be conducted off-site, and therefore the composite material for major repairs to the low observable material would not be stored on base.

The F-35A does have the capability to jettison fuel for emergency situations. When circumstances require, fuel jettisoning is permitted above 5,000 feet AGL, over unpopulated areas, and is generally over water for applicable bases. AFIs cover the fuel jettison procedures, and local operating policies define specific fuel ejection areas for each base. In 2001, the USEPA National Vehicle and Fuel Emissions Laboratory concluded, "Since fuel dumping is a rare event, and the fuel would likely be dispersed over a very large area, we believe its impact to the environment would not be serious" (USEPA 2001). The F-35A's ability to dump fuel as an alternative to the jettison of external fuel tanks, as with the F-16, would be less impactful to the environment.

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation and no training activities by F-35A operational aircraft would be conducted in the airspace. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. All aspects of safety would remain as described in the affected environment in Section WI3.4.2.1. Therefore, there would be no significant impacts to safety as a result of the No Action Alternative.

### **WI3.4.3 Summary of Impacts**

Construction activities would not pose any unusual concerns, and standard construction safety procedures would be implemented. All new construction would implement AT/FP requirements. While there are a few planned construction projects within the proposed QD arcs, per Air Force Manual 91-201, *Explosive Safety Standards*, all PTRDs and IBDs meet specified NEWQD criteria. Though the F-35A is a relatively new fighter aircraft with fewer years in service, the expected mishap rate is not expected to be different than other fighter aircraft. The 115 FW has a robust BASH program, and BASH incidents could be expected to decline with the F-35A as described. The 115 FW would continue to use the same SUA that they currently use. Under the Proposed Action at the 115 FW installation, impacts to safety would not be significant.

**WI3.5 LAND USE**

**WI3.5.1 Installation**

The following section describes the affected environment and examines the extent to which the beddown of the F-35A at the 115 FW installation would be consistent with state, regional, and local conservation and development plans and zoning regulations. In order to provide a comparable data set between proposed siting alternatives at the five locations considered for the Proposed Action, local zoning categories were consolidated and/or renamed. Table WI3.5-1 provides a cross-reference between the City of Madison classifications and those used in this analysis.

**Table WI3.5-1. Zoning Categories**

| <i>City of Madison Zoning Classification</i>   | <i>EIS Land Use Classification</i> |
|--|------------------------------------|
| Suburban Residential, Traditional Residential, Downtown Residential                                    | Residential                        |
| Agricultural   | Agriculture                        |
| Commercial Corridor-Transitional, Commercial Center, Traditional Shopping Street,                      | Commercial                         |
| Industrial-Limited, Industrial-General, Suburban Employment, Traditional Employment, Employment Campus | Industrial                         |
| Urban Mixed Use, Neighborhood Mixed Use, Limited Mixed Use, Urban Office Residential                   | Mixed Use                          |
| Parks and Recreation   | Parks/Open Space                   |
| Planned Development  | Planned Development                |
| Campus Institutional   | School                             |

*Legend:* EIS = Environmental Impact Statement.

**WI3.5.1.1 Affected Environment**

The 115 FW of the WIANG is located within the boundaries of Dane County Regional Airport, Wisconsin (see Figure WI1.0-1). The installation is approximately 5 miles northeast of the Madison central business district. The 115 FW installation is approximately 155 acres in size (comprising fee-owned U.S. government land and land leased from Dane County) and has over 40 buildings/structures (WIANG 2017).

The Planning Division within the City of Madison Department of Planning, Community and Economic Development is responsible for the implementation of land use development plans. The City’s Zoning Ordinance establishes the permitted land uses, as well as design and development standards such as height and density. Wisconsin state law requires that zoning must be consistent with adopted plans. The City of Madison also has various boards that inform and advise the Common Council (Madison’s City Council). New developments or proposals such as subdivisions, rezonings, changes in land use, or conditional uses require approvals by the City

boards (i.e., Plan Commission, Urban Design Commission, Landmarks Commission) and later the Common Council.

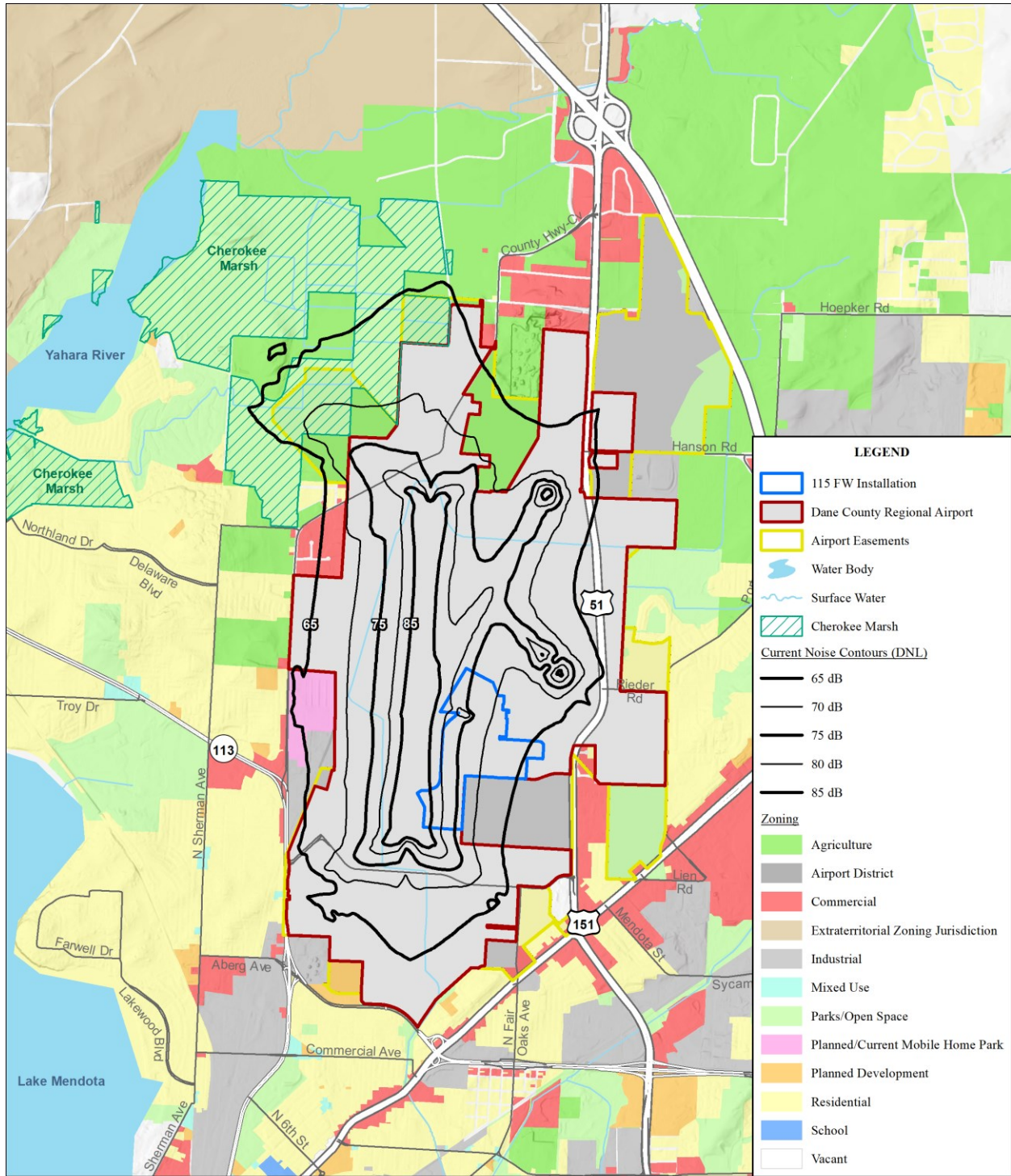
The City of Madison has zoned the areas encompassing the 115 FW installation and the Dane County Regional Airport as AP: Airport District, which the city has identified as one of its “special [zoning] districts” (City of Madison 2018a). Land directly north of the airport is zoned for agriculture with sections of land zoned commercial and industrial to the northeast, and commercial to the northwest. The land south of the airport includes areas zoned for parks/open space, residential, commercial, and another special district zoned for educational use, Campus Institutional (CI) (shown as “School” on Figure WI3.5-1). The land directly to the west of Dane County Regional Airport is zoned for agricultural, commercial, industrial, as well as a planned/current mobile home park. Land further west is zoned for residential purposes.

Land use activities most sensitive to noise typically include residential and commercial use, public services, and areas associated with cultural and recreational uses, such as parks/open space. Noise measurements related to aircraft operations that define the area of noise impact are expressed in terms of DNL. DNL represents the AAD noise exposure from aircraft operations during a 24-hour period over a year. The DoD has established noise compatibility criteria for various land uses. According to these criteria, sound levels up to 65 dB DNL are compatible with land uses such as residences, transient lodging, and medical facilities. Currently, aircraft noise from Dane County Regional Airport exposes approximately 600 acres of off-airport areas of land zoned as industrial, commercial, agricultural, planned/current mobile home, residential, and other to noise levels between 65 and 75 dB DNL. The airport owns aviation easements on 337 of the 600 off-airport acres. Section WI3.1, *Noise*, discusses existing noise levels at POIs such as schools and churches located within the 65 dB DNL off-airport noise contour areas. Figure WI3.5-1 shows existing noise contours and the land use in the vicinity of Dane County Regional Airport. The current noise contours extend off-airport north and west of the installation where it overlaps with commercial, agricultural, and planned/current mobile home.

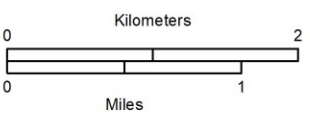
#### WI3.5.1.2 Environmental Consequences

##### *Proposed Action*

With the exception of Project #7 – Taxiway F, all new construction would totally be within the leased property of the 115 FW installation. While Project #7 is just outside the boundary, it is still within Dane County Regional Airport. The project encompasses modifications to an existing taxiway and no changes in land use would occur. All projects would occur on previously disturbed land. Additionally, there would be no change to the existing airfield-related RPZs and CZs. Therefore, the focus of this analysis is on changes in off-airport noise conditions.



**Figure WI3.5-1**  
**Current DNL Noise Contours and Land Use**  
**within the Vicinity of Dane County Regional Airport**



The land use analysis compares the proposed noise contours to current noise contours, which show the existing noise environment. The comparison of the proposed contours to the current contours shows potential change in noise conditions and land use compatibility (Table WI3.5-2 and Figure WI3.5-2). The Proposed Action at the 115 FW installation would result in an overall increase in the off-airport area affected by noise levels greater than 65 dB DNL by approximately 1,320 acres. An addition of approximately 199 acres of residential land use would be included in the 65-75 dB DNL contours, rendering this acreage potentially incompatible for residential use (see Table WI3.6-1). However, incompatibility does not constitute a federal determination that any land use is acceptable or unacceptable under federal, state, or local law, nor are they used to determine if a structure is habitable or uninhabitable. No residential land use would be within noise contours greater than 75 dB DNL; although, an additional 15 acres of Mobile Home Park would be newly exposed to 65 to 70 dB DNL and 1 new acre exposed to 70 to 75 dB DNL. This would be considered a significant impact.

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Land use would be expected to remain as described under affected environment in Section WI3.5.1.1. Therefore, there would be no significant impacts to land use under the No Action Alternative.

### **WI3.5.2     Airspace**

#### WI3.5.2.1   Affected Environment

The 115 FW uses several airspace units (see Table WI2.2-1 and Figure WI2.2-1), including over land MOAs, overlying ATCAA, and Restricted Areas. Airspace associated with the 115 FW includes Volk Falls, Volk East, Volk West, and Volk South MOAs; the Black River, Volk West, Volk East, and Oshkosh ATCAAs; and the R-6904 A and B restricted airspace. The Volk MOA Complex and R-6904 support 99 percent of training operations by the F-16s from WIANG. Within these airspace units, the 115 FW accounts for about 71 percent of the activity.

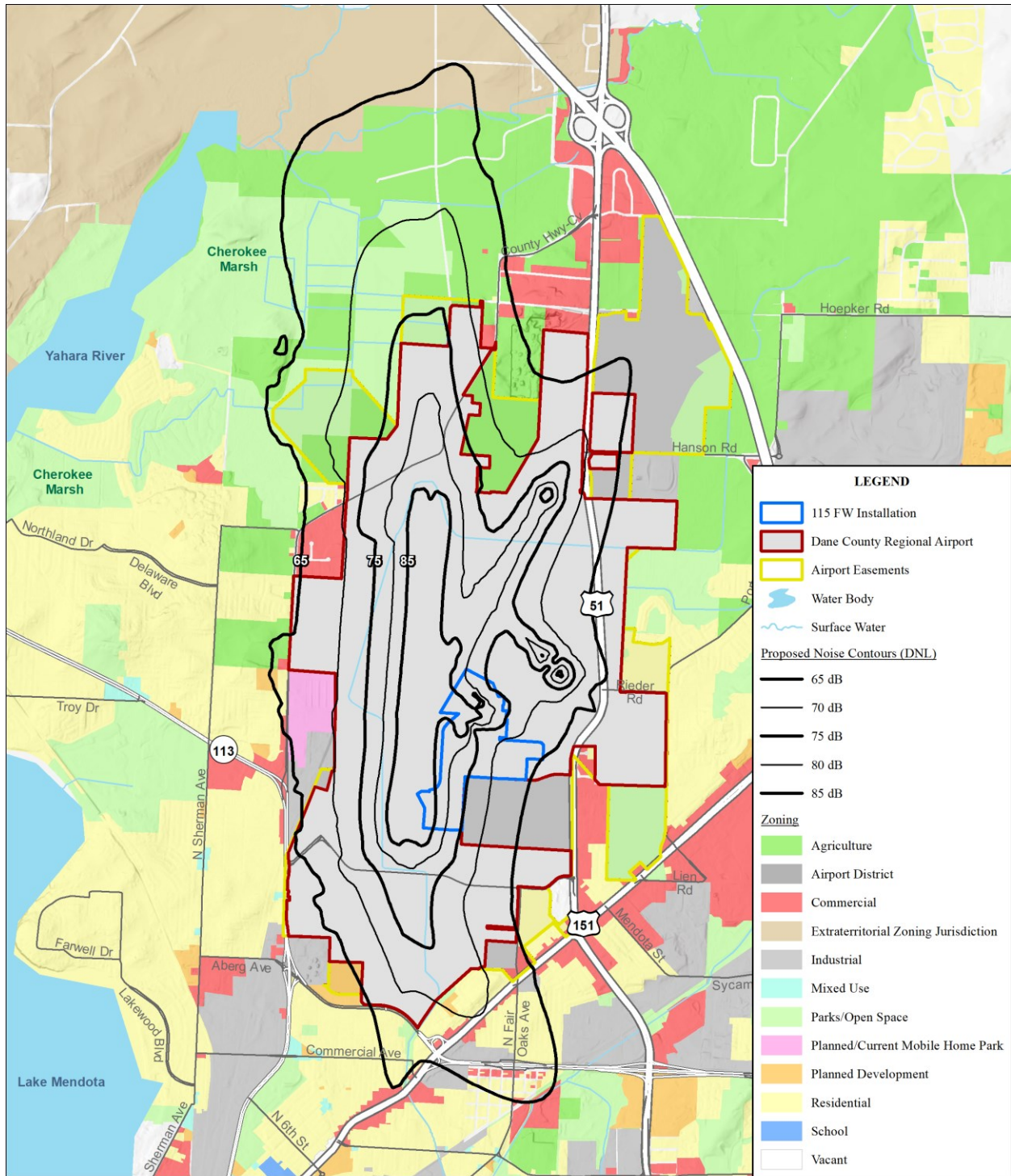
**Table WI3.5-2. Off-Airport Acreage by Land Uses Affected by Noise Levels 65 dB DNL  
 and Greater under Proposed Action**

| <i>Land Use Category</i>             | <i>65-70 (C)</i> | <i>65-70 (P)</i> | <i>65-70 (AC)</i> | <i>70-75 (C)</i> | <i>70-75 (P)</i> | <i>70-75 (AC)</i> | <i>75-80 (C)</i> | <i>75-80 (P)</i> | <i>75-80 (AC)</i> | <i>80-85 (C)</i> | <i>80-85 (P)</i> | <i>80-85 (AC)</i> | <i>85+ (C)</i> | <i>85+ (P)</i> | <i>85+ (AC)</i> | <i>Total (C)</i> | <i>Total (P)</i> | <i>Total (AC)</i> |
|--------------------------------------|------------------|------------------|-------------------|------------------|------------------|-------------------|------------------|------------------|-------------------|------------------|------------------|-------------------|----------------|----------------|-----------------|------------------|------------------|-------------------|
| Residential                          | 6                | 180              | 174               | 0                | 25               | 25                | 0                | 0                | 0                 | 0                | 0                | 0                 | 0              | 0              | 0               | 6                | 205              | 199               |
| Commercial                           | 29               | 97               | 67                | 0                | 2                | 2                 | 0                | 0                | 0                 | 0                | 0                | 0                 | 0              | 0              | 0               | 29               | 98               | 69                |
| Industrial                           | 80               | 177              | 96                | 14               | 29               | 15                | 0                | <1               | <1                | 0                | 0                | 0                 | 0              | 0              | 0               | 94               | 206              | 112               |
| Planned Development                  | 0                | 7                | 7                 | 0                | 3                | 3                 | 0                | 0                | 0                 | 0                | 0                | 0                 | 0              | 0              | 0               | 0                | 10               | 10                |
| Parks/Open Space                     | 200              | 254              | 15                | 26               | 194              | 3                 | 0                | 42               | 0                 | 0                | 0                | 0                 | 0              | 0              | 0               | 0                | 17               | 17                |
| Agriculture                          | 139              | 552              | 452               | 50               | 151              | 266               | <1               | 8                | 50                | 0                | 0                | 0                 | 0              | 0              | 0               | 415              | 1,183            | 768               |
| Planned/ Current Mobile Home Park    | 44               | 59               | 15                | 0                | 1                | 1                 | 0                | 0                | 0                 | 0                | 0                | 0                 | 0              | 0              | 0               | 44               | 60               | 16                |
| Airport District                     | 3                | 3                | 0                 | 2                | 2                | <1                | 0                | 1                | <1                | 0                | 0                | 0                 | 0              | 0              | 0               | 5                | 5                | <1                |
| Extraterritorial Zoning Jurisdiction | 0                | 84               | 84                | 0                | 0                | 0                 | 0                | 0                | 0                 | 0                | 0                | 0                 | 0              | 0              | 0               | 0                | 84               | 84                |
| Other*                               | 5                | 44               | 39                | 1                | 7                | 6                 | 0                | <1               | <1                | 0                | 0                | 0                 | 0              | 0              | 0               | 6                | 51               | 45                |
| <b>Total</b>                         | <b>507</b>       | <b>1,456</b>     | <b>949</b>        | <b>93</b>        | <b>413</b>       | <b>320</b>        | <b>&lt;1</b>     | <b>51</b>        | <b>51</b>         | <b>0</b>         | <b>0</b>         | <b>0</b>          | <b>0</b>       | <b>0</b>       | <b>0</b>        | <b>600</b>       | <b>1,920</b>     | <b>1,320</b>      |

Note: Numbers may not add up due to rounding errors.

\* = includes areas such as roads, water, etc.

Legend: (C) = Current; (P) = Proposed; (AC) = Acres Change; dB = decibel; DNL = Day-Night Average Sound Level.



**Figure WI3.5-2**  
**Proposed DNL Noise Contours and Land Use**  
**within the Vicinity of Dane County Regional Airport**

Kilometers 0 2  
Miles 0 1

North arrow

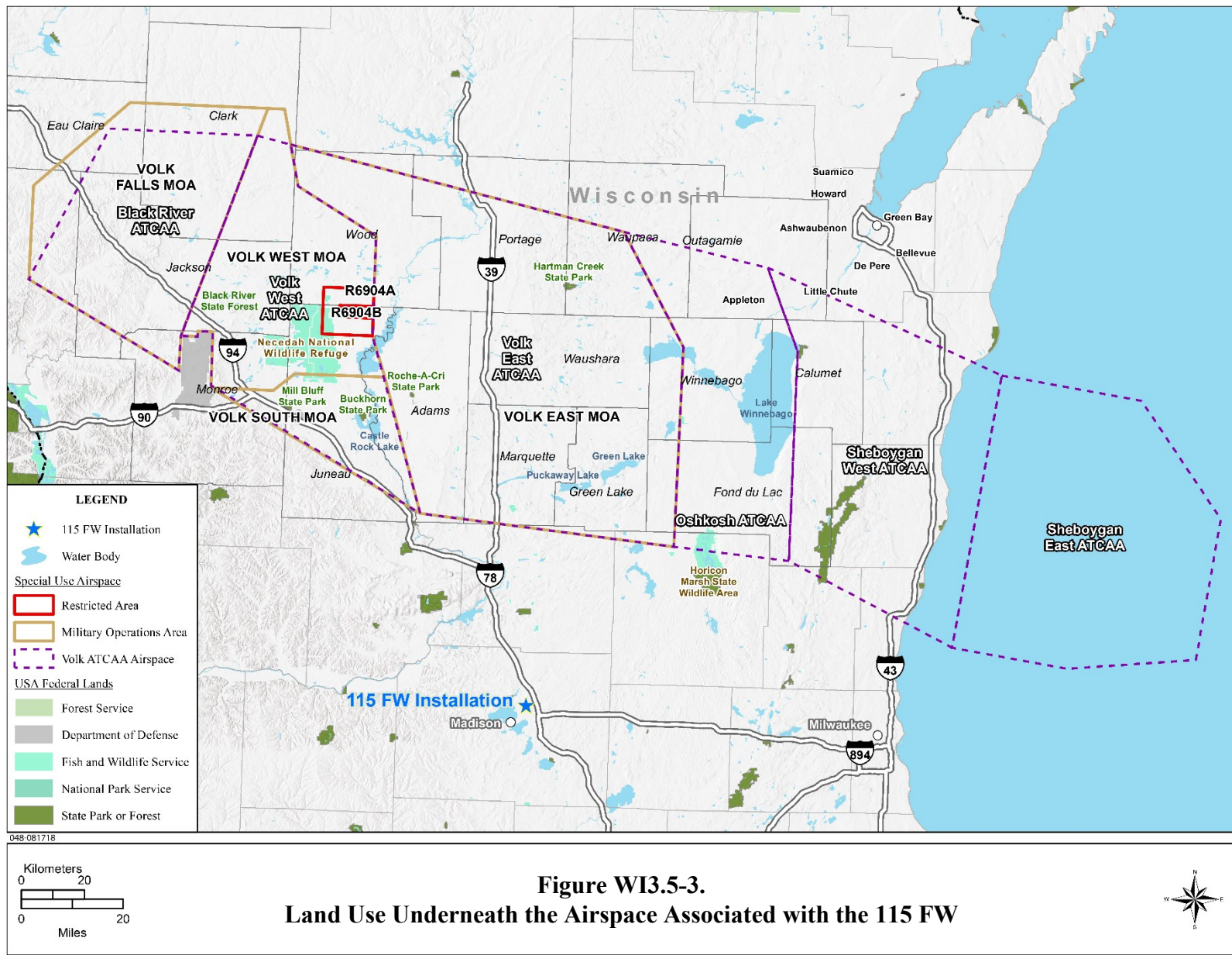
The Volk Falls MOA and Black River ATCAA overlie the Black River Wisconsin State Forest, with various small cities and towns dispersed throughout the counties of Clark, Jackson, and Eau Claire under its boundary (Figure WI3.5-3). Necedah National Wildlife Refuge (NWR), managed by the U.S. Fish and Wildlife Service (USFWS), and Black River State Forest are located under the Volk West MOA and ATCAA. Counties underlying Volk West MOA include Wood, Clark, Jackson, and Monroe. To the south, the Volk South MOA overlies Mill Bluff and Buckhorn State Parks, as well as Castle Rock Lake. Additionally, the Volk Field is located under Volk South MOA along I-90. Counties underlying Volk South MOA include Monroe, Juneau, and Adams. Land under the Volk East MOA is bisected by Interstate 39, with Puckaway Lake, Green Lake, and a portion of Lake Winnebago east of the interstate. State parks underlying Volk East MOA include Roche-A-Cri State Park and Hartman Creek State Park. A small portion of federal land managed by USFWS underlies the southern boundary of the MOA. Counties within Volk East MOA include Adams, Waushara, Winnebago, Waupaca, Marquette, Green Lake, Portage, and Wood. The Oshkosh ATCAA overlies the remainder of Lake Winnebago, the northern half of the Horicon NWR, and the small cities and town within the counties of Outagamie, Winnebago, Waupaca, Calumet, and Fond Du Lac.

#### WI3.5.2.2 Environmental Consequences

##### *Proposed Action*

The Proposed Action would not require changes in SUA attributes, volume, or proximity; and it is expected that the type and number of ordnance employed at the range would remain the same or decrease. Although the F-35As would perform a similar mission as the F-16s, they represent a different aircraft with different capabilities, and would fly somewhat differently. Pilots would adapt training activities, where necessary, to ensure their accomplishment within available airspace. No changes to airspace structure are anticipated; however, there would be an increase in operations within the airspace. The differences in utilization of the existing airspace include use of higher altitudes overall, combined use of existing airspace, and generally higher altitudes for supersonic flights that occur. The F-35A would be expected to fly more of the time at higher altitudes than the F-16 (see Table WI2.2-2), operating more than 90 percent of the time above 10,000 feet MSL. This would result in the F-35A aircraft conducting most of their operations in the ATCAAs and higher altitude regimes of the airspace.

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F-35A aircraft (as do existing military aircraft) would adhere to all established floors and ceilings of airspace units. All airspace associated with the 115 FW lies within the typical flight distance available during a standard daily training flight for the F-35A. The F-35A would fly approximately 90-minute long missions, including take-off, transit to and from the training airspace, training activities, and landing. Depending upon the distance, speed, and type of training activity, the F-35A would spend approximately 30-60 minutes in the training airspace. On occasion during an exercise, the F-35A may spend up to 90 minutes in one or more airspace units. Changes in noise levels from the 115 FW Proposed Action would not affect general land use patterns, land ownership, or management of lands or special use land areas, such as Necedah NWR or the state parks, beneath the airspace. Impacts to land use under the SUA would not be significant.

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation and no training activities by F-35A operational aircraft would be conducted in the airspace. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Land use would remain as described in the affected environment in Section WI3.5.2.1. Therefore, there would be no significant impacts to land use as a result of the No Action Alternative.

### **WI3.5.3 Summary of Impacts**

Under the Proposed Action at the 115 FW installation, approximately 199 acres of additional residential land use would be included in the 65-75 dB DNL noise contour, rendering this acreage potentially incompatible for residential land use, which would be considered a significant impact. There would be no anticipated changes to the status or use of lands under the SUA as a result of the Proposed Action; therefore, impacts to land use under the SUA would not be significant.

### **WI3.6 SOCIOECONOMICS**

#### **WI3.6.1 Installation**

##### **WI3.6.1.1 Affected Environment**

The 115 FW installation is located at Dane County Regional Airport in the city of Madison, Wisconsin.

#### *Population*

Population information for the state of Wisconsin, Dane County, and the city of Madison is presented in Table WI3.6-1. The population of Madison increased by 25,155 people between 2000 and 2010 and then increased by an additional 12,825 between 2010 and 2016. This represents an

18.3 percent increase in the population since 2000. Dane County showed a slightly higher growth rate with a 21.2 percent increase and Wisconsin as a whole showed a slower growth rate and increased by about 7.3 percent.

**Table WI3.6-1. Population, 2000, 2010, and 2016**

| <i>Area</i>     | <i>2000</i> | <i>2010</i> | <i>2016</i> | <i>Percent Change 2000-2016</i> | <i>Percent Change 2010-2016</i> |
|-----------------|-------------|-------------|-------------|---------------------------------|---------------------------------|
| Wisconsin       | 5,363,675   | 5,686,986   | 5,754,798   | 7.3%                            | 1.2%                            |
| Dane County     | 426,526     | 488,073     | 516,818     | 21.2%                           | 5.9%                            |
| City of Madison | 208,054     | 233,209     | 246,034     | 18.3%                           | 5.5%                            |

Source: U.S. Census Bureau 2000, 2010, and 2016a.

### *Employment and Income*

Table WI3.6-2 provides employment and income data for the state of Wisconsin, Dane County, and the city of Madison. Median household income and per capita income in Madison in 2016 were slightly lower than in Dane County and are slightly higher than the state of Wisconsin overall. The unemployment rate as of early 2018 at the state and county level were both low, and Dane County's rate of 2.3 percent was lower than the rate for the state as a whole, which was 3.3 percent.

**Table WI3.6-2. Employment and Income Statistics**

| <i>Area</i>     | <i>Median Household Income (2016)</i> | <i>Per Capita Income (2016)</i> | <i>Labor Force (2016)</i> | <i>Employed (2018)</i> | <i>Unemployed (2018)</i> | <i>Unemployment Rate (2018)</i> |
|-----------------|---------------------------------------|---------------------------------|---------------------------|------------------------|--------------------------|---------------------------------|
| Wisconsin       | \$54,610                              | \$29,253                        | 3,165,903                 | 3,060,156              | 105,747                  | 3.3%                            |
| Dane County     | \$64,773                              | \$35,687                        | 326,139                   | 318,681                | 7,458                    | 2.3%                            |
| City of Madison | \$56,464                              | \$33,215                        | N/A                       | N/A                    | N/A                      | N/A                             |

Note: Employment data for the city of Madison is not available from the Bureau of Labor Statistics.

Legend: N/A = not applicable.

Source: U.S. Census Bureau 2016b; Bureau of Labor Statistics 2018a, 2018b.

### *Housing*

As shown in Table WI3.6-3, in 2016 there were an estimated 4,751 vacant housing units in the city of Madison and an estimated 9,289 vacant housing units in Dane County. The overall vacancy rate for housing was 4.3 percent in Madison and 4.2 percent in Dane County. Both rates were lower than the vacancy rate for Wisconsin, which was 12.8 percent.

**Table WI3.6-3. Housing Characteristics, 2016**

| <i>Area</i>     | <i>Housing Units</i> | <i>Vacant Housing Units</i> | <i>Housing Vacancy Rate</i> |
|-----------------|----------------------|-----------------------------|-----------------------------|
| Wisconsin       | 2,649,597            | 339,351                     | 12.8%                       |
| Dane County     | 222,808              | 9,289                       | 4.2%                        |
| City of Madison | 110,540              | 4,751                       | 4.3%                        |

Source: U.S. Census Bureau 2016c.

### WI3.6.1.2 Environmental Consequences

#### *Proposed Action*

Preliminary estimates of the construction required under this alternative place the cost of construction between \$90 and \$120 million. Additionally, there would be an anticipated increase in the number of operational personnel. As such, both construction and operational activities would impact socioeconomic conditions.

#### Population and Housing

Based on estimated construction spending and data from the 2012 Survey of Business Owners, which indicate an average of one construction worker for every \$285,520 in construction sales, construction for the Proposed Action would require a total of between 315 and 420 construction workers over the 2020 to 2023 period (U.S. Census Bureau 2012). No permanent population increase would be anticipated as the construction would not be permanent, and the local construction workforce and journeymen could meet the labor demand.

During operations, the current Active Duty Associate Unit would increase by up to 29. In addition, 35 new personnel would be added to provide security and contract oversight for FMS and the ALIS. In total, up to 64 additional personnel would be required. While it is likely that many of the additional personnel would already reside in the area, some population increase may occur. Under a maximum impact scenario, if all of the 64 additional personnel relocated from outside the area and brought dependents, assuming an average household size of 2.6, the total population increase would be up to 166 people. This would be an increase of less than 0.1 percent of the population of the city of Madison. Assuming the 64 additional personnel (and their dependents) required one housing unit each, 64 additional housing units would be demanded, which could easily be absorbed by the area's vacant units, requiring 1.3 percent or 0.7 percent of the vacant housing units in the city of Madison or Dane County, respectively.

For both construction and operations, impacts related to population and housing would be negligible.

#### Employment and Income

Construction activities associated with the Proposed Action are estimated to sustain between 315 and 420 construction jobs. Based on 2017 construction industry salaries for Dane County (Bureau of Labor Statistics 2018a), those jobs would generate a total of between \$20.9 and \$27.8 million in income over the 2020 to 2023 period.

An additional 64 permanent personnel would be added for the operational phase of the Proposed Action. Based on 2017 transportation industry salaries (Bureau of Labor Statistics 2018a), those jobs would generate approximately \$1.8 million in income per year, for the life of the project.

The increases in employment and income would be beneficial but negligible.

#### Property Values and Property Taxes

Property values are a function of many different variables, including noise levels. The issue of the negative effect of airport noise on property values has been widely researched. A more full discussion of the impacts of noise levels on property values and resultant real estate taxes is contained in Appendix B, *Noise Modeling, Methodology, and Effects*. The property value to noise effects relationship is presented in the form of the Noise Depreciation Index (NDI), which reflects the estimated percent loss of property value per dB DNL (see Section 3.2.2). A review of several relevant studies (see Appendix B) concludes that noise may affect property values and related taxes in a NDI range of 0.2 to 2.0 percent per dB of noise increase, which correlates to an average loss of 0.5 percent of the property value per dB. The value of the property is determined based on many individual variables which, when taken together, form the total price and requires detailed information on local housing markets and actual sales prices. Furthermore, price property value studies model relationships between city level income and population data, and the overall willingness to pay for noise abatement, which enables an estimate of noise impacts in locations where detailed housing data is not available. The cost of noise mitigation is less of a factor in regions that experience extreme temperatures. Many structural elements designed to improve energy conservation also improve the acoustic performance of homes. The way properties are used in hot or cold environs (such as not opening windows for ventilation) can add as much as 15 dB of noise mitigation. The anticipation of noise level increase may also influence property values before the noise increases actually occur.

The range of impacts provided in Appendix B of 0.2 to 2.0 percent per dB serve as a rough estimate of potential impacts. These impacts will vary from location to location depending on the many other factors that influence property value including local market conditions.

If an area does in fact suffer from lower property values associated with increased noise levels, this will result in lower property taxes collected. Over time, lower sales prices in these areas will result in lower appraised values.

Table WI3.6-4 shows estimates of total property values and taxes in the census block groups within the 65 dB DNL contour line. Conservative estimates are shown giving a range of potential property value loss due to increased noise levels and the resulting range of potential property tax losses. These estimates assume that houses in the block groups within the 65 dB DNL contour line are exposed to 5 dB DNL increase in noise. As shown in Table WI3.1-10, POIs surrounding Dane County Regional Airport would experience marginal noise increases ranging from 0 to 9 dB DNL. As a result, an average of 5 dB is used.

**Table WI3.6-4. Property Values and Property Tax Loss, 2017**  
 (Page 1 of 2)

| <i>Area*</i>             | <i>Housing Units</i> | <i>Estimated Total Value**</i> | <i>Potential Property Value Loss with an average of 5 dB DNL of Noise Increase Low (0.2%)</i> | <i>Potential Property Value Loss with an average of 5 dB DNL of Noise Increase High (2.0%)</i> | <i>Potential Annual Property Tax Loss (1.8% Property Tax Rate) Low</i> | <i>Potential Annual Property Tax Loss (1.8% Property Tax Rate) High</i> |
|--------------------------|----------------------|--------------------------------|---|--|--|---|
| Census Tract 20          |                      |                                |   |  |  |   |
| Block Group 1            | 552                  | \$84,345,600                   | \$843,456   | \$8,434,560  | \$15,182   | \$151,822   |
| Block Group 2            | 725                  | \$117,812,500                  | \$1,178,125   | \$11,781,250   | \$21,206   | \$212,063   |
| Census Tract 21          |                      |                                |   |  |  |   |
| Block Group 1            | 816                  | \$120,523,200                  | \$1,205,232   | \$12,052,320   | \$21,694   | \$216,942   |
| Block Group 2            | 718                  | \$119,331,600                  | \$1,193,316   | \$11,933,160   | \$21,480   | \$214,797   |
| Census Tract 22          |                      |                                |   |  |  |   |
| Block Group 2            | 783                  | \$119,407,500                  | \$1,194,075   | \$11,940,750   | \$21,493   | \$214,934   |
| Census Tract 24.02       |                      |                                |   |  |  |   |
| Block Group 1            | 977                  | \$178,107,100                  | \$1,781,071   | \$17,810,710   | \$32,059   | \$320,593   |
| Census Tract 25          |                      |                                |   |  |  |   |
| Block Group 1            | 487                  | \$7,061,500                    | \$70,615  | \$706,150  | \$1,271  | \$12,711  |
| Block Group 2            | 493                  | \$80,211,100                   | \$802,111   | \$8,021,110  | \$14,438   | \$144,380   |
| Census Tract 26.01       |                      |                                |   |  |  |   |
| Block Group 1            | 510                  | \$76,041,000                   | \$760,410   | \$7,604,100  | \$13,687   | \$136,874   |
| Block Group 2            | 365                  | \$59,714,000                   | \$597,140   | \$5,971,400  | \$10,749   | \$107,485   |
| Census Tract 26.02       |                      |                                |   |  |  |   |
| Block Group 2            | 778                  | \$153,354,553                  | \$1,533,546   | \$15,335,455   | \$27,604   | \$276,038   |
| Census Tract 27          |                      |                                |   |  |  |   |
| Block Group 3            | 564                  | \$80,511,720                   | \$805,117   | \$8,051,172  | \$14,492   | \$144,921   |
| Census Tract 112         |                      |                                |   |  |  |   |
| Block Group 3            | 799                  | \$324,394,000                  | \$3,243,940   | \$32,439,400   | \$58,391   | \$583,909   |
| Block Group 4            | 875                  | \$189,350,000                  | \$1,893,500   | \$18,935,000   | \$34,083   | \$340,830   |
| <b>Dane County Total</b> | <b>226,189</b>       | <b>\$62,968,795,383</b>        | <b>\$17,101,654</b>   | <b>\$171,016,537</b>   | <b>\$307,830</b>   | <b>\$3,078,298</b>  |

Note: \*See Figure WI3.7-2 for block group locations.

\*\*Total value of housing units was estimated using Census data for aggregate housing value and median house value from the American Community Survey.

Legend: dB = decibel; DNL = Day-Night Average Sound Level

Source: U.S. Census Bureau 2017; Tax-rates.org 2019.

Overall, the potential lost property value would represent between 0.03 and 0.27 percent of the tax base of Dane County.

*No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Socioeconomics would be expected to remain as described under affected environment in Section

WI3.6.1.1. Therefore, there would be no significant impacts to socioeconomics under the No Action Alternative.

### **WI3.6.2     Airspace**

Impacts to airspace are not considered for this resource because the ROI for socioeconomics was considered to consist only of the installations themselves. The socioeconomic aspect of potential impacts to lands underlying SUA was not evaluated because no construction or other ground disturbance would occur to generate economic activity.

### **WI3.6.3     Summary of Impacts**

Under the Proposed Action at the 115 FW installation, the population of Dane County could increase by less than 0.1 percent from the additional personnel associated with the day-to-day operations at the base. There would be slight permanent increases in employment (up to an estimated 64 jobs) and income (approximately \$1.8 million per year). There is sufficient housing in the county for the slight increase in permanent personnel at the base. While property values are a function of many local variables, studies have shown that noise increases have the potential to impact property values near airports from a low of approximately 0.2 percent to a high of approximately 2.0 percent. Noise increases, as the sole variable, have the potential to negatively impact individual homeowners' property values near Dane County Regional Airport from between a 0.2 to a 2.0 percent decrease, while other variables could drive a different result overall. Any potential parallel decline in property tax revenues would result in a minor impact. Impacts to socioeconomics associated with the F-35A beddown at the 115 FW installation would not be significant overall.

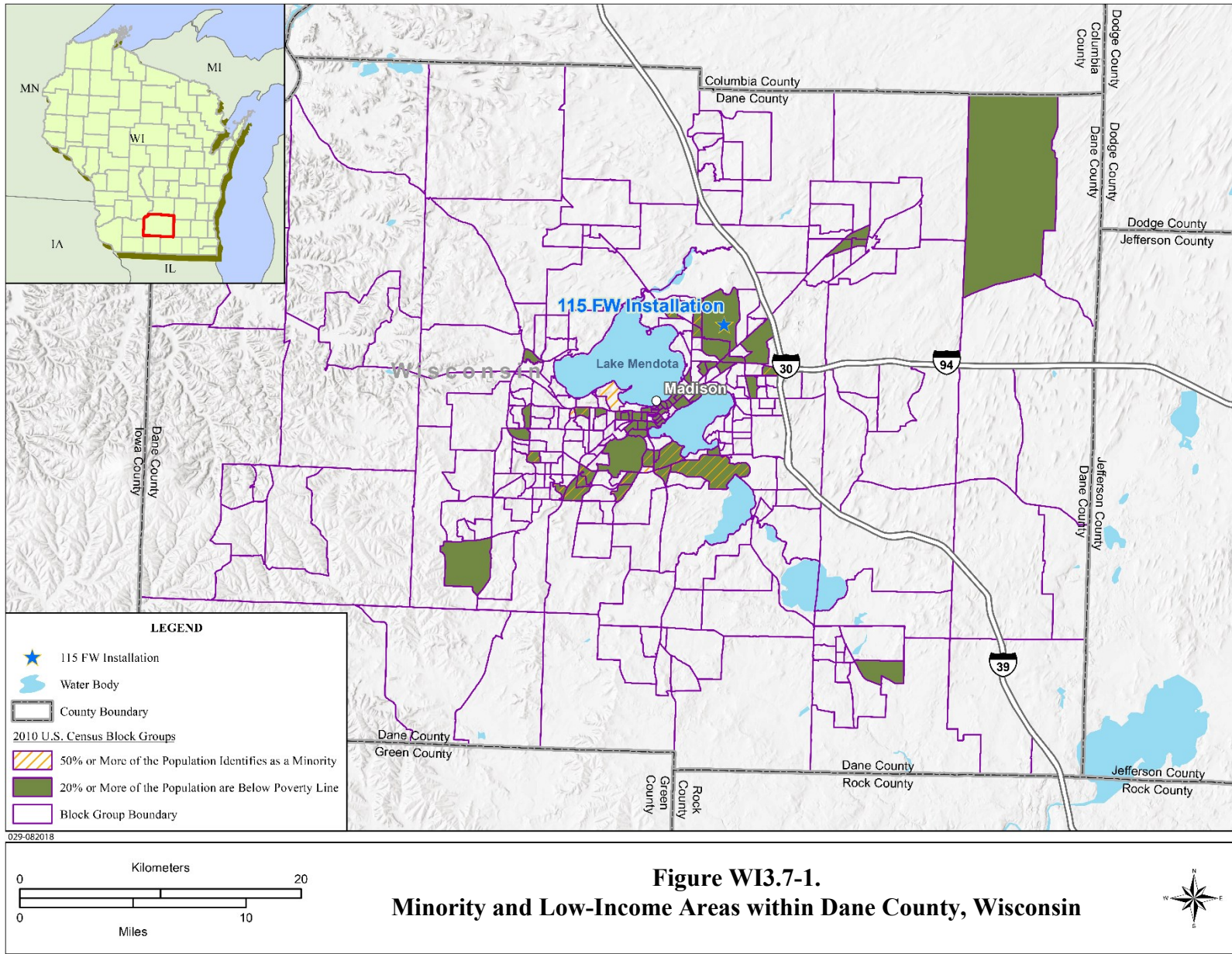
## **WI3.7       ENVIRONMENTAL JUSTICE AND THE PROTECTION OF CHILDREN**

### **WI3.7.1     Installation**

#### WI3.7.1.1   Affected Environment

##### *Minority and Low-Income Populations*

Figure WI3.7-1 highlights the census block groups in Dane County that are considered environmental justice low-income or minority areas. Out of a total of 310 census block groups in Dane County, 21 are classified as having minority populations, 65 are classified as having low-income populations, and 18 of those are classified as both minority and low-income (U.S. Census Bureau 2016d, 2016e).



### *Protection of Children*

The city of Madison has an estimated 42,163 children under the age of 18, which is approximately 17.1 percent of the population (U.S. Census Bureau 2016a). This rate is lower than the rate for both Dane County (21.1 percent) and the state of Wisconsin (22.6 percent), which have 109,208 and 1,301,498 children under the age of 18, respectively. According to the National Center for Education Statistics (2016), there are a total of 155 schools in Dane County with a total of 76,275 students.

### *Elderly Populations*

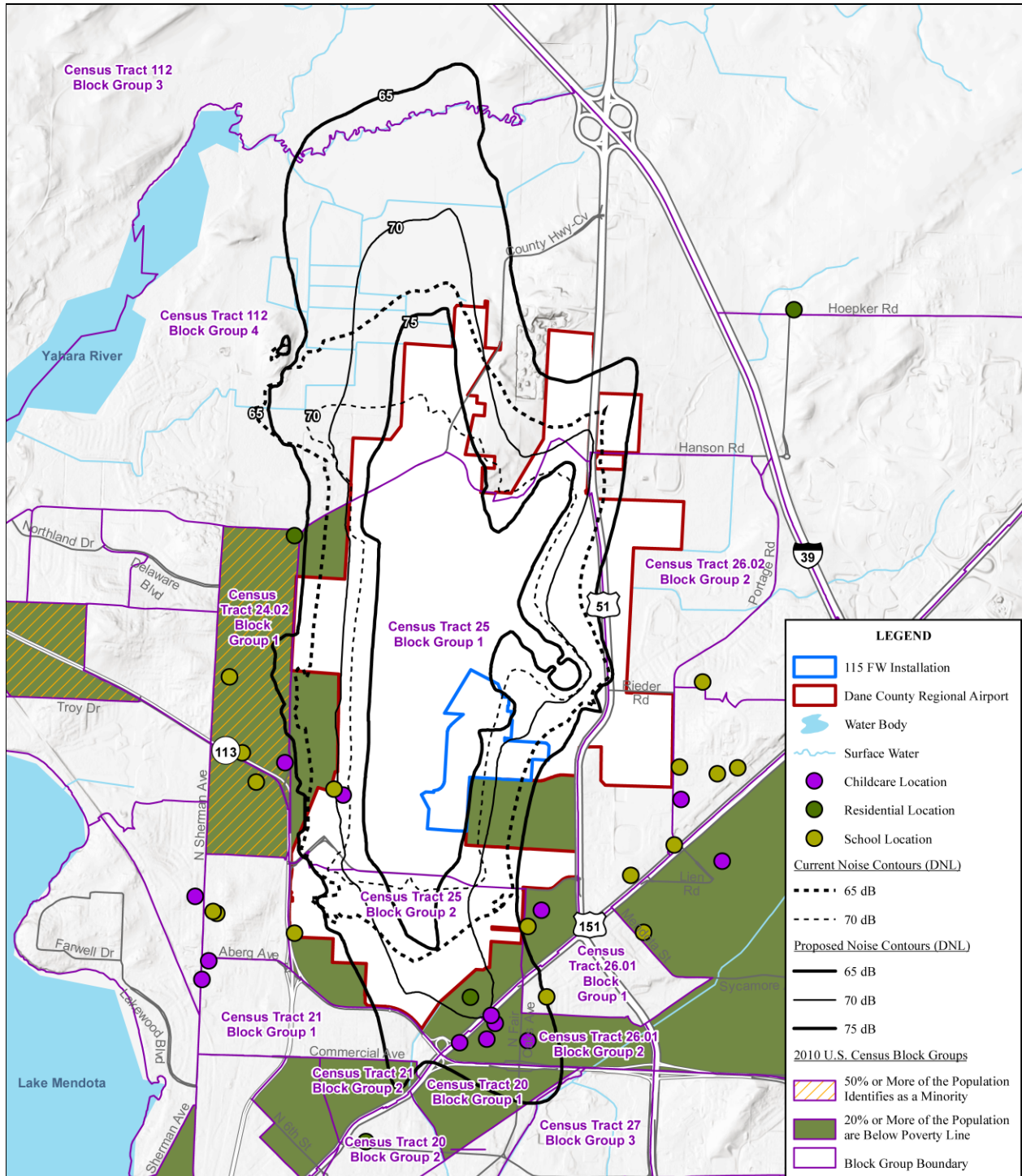
An estimated 27,564 people in Madison, or 11.1 percent of the population, are 65 years of age or older and considered elderly (U.S. Census Bureau 2017). In Dane County, 12.3 percent of the population is elderly (64,411 people) and in the state of Wisconsin it is 15.6 percent (896,724 people).

## WI3.7.1.2 Environmental Consequences

### *Proposed Action*

#### Minority and Low-Income Populations

The primary concern for impacts on minority and low-income populations is the potential for increased noise exposure. Figure WI3.7-2 shows the census block groups around the Dane County Regional Airport that are exposed to current and proposed noise levels of at least 65 dB DNL. Table WI3.7-1 lists the 13 census block groups that are exposed to these noise levels under the current and proposed scenarios at Dane County Regional Airport and indicates the block groups that would be newly exposed to these noise levels under the Proposed Action. Portions of nine block groups that were not exposed to noise levels of 65 dB DNL or higher outside the airport boundaries under the affected environment would be exposed to noise levels between 65 and 70 dB DNL under the Proposed Action. Large areas to the north of the airport would be newly exposed to the increased noise levels; however, these areas are largely unpopulated and are not low-income or minority communities. Four block groups, located south of the airport, are considered low-income population areas and would be newly exposed to noise levels of 65 dB DNL or higher. One block group located west of the airport is both a minority and low-income community and would be newly exposed. The increase in noise exposure to the south and west of the airport would disproportionately impact low-income areas and the increase in noise exposure to the east of the airport would disproportionately impact a low-income minority population. Noise impacts are further discussed in Section WI3.1 and as discussed in that section the change in the noise environment associated with the Proposed Action would be considered significant in the area surrounding the airfield.



**Figure W13.7-2.**  
 Current and Proposed DNL Noise Contours and Minority and Low-Income Areas near Dane County Regional Airport

**Table WI3.7-1. Census Block Groups Exposed to 65 to 75 dB DNL Noise Levels Under Current and Proposed Action Conditions**

| <i>Area</i>                | <i>Minority Population</i> | <i>Poverty Rate</i> | <i>Population under the age of 18</i> | <i>Elderly Population (Aged 65 years or older)</i> | <i>Newly Exposed to Proposed Contours</i> |
|----------------------------|----------------------------|---------------------|---------------------------------------|--|---|
| Wisconsin                  | 17.9%                      | 11.8%               | 22.6%                                 | 15.6%  | N/A                                       |
| Dane County                | 19.4%                      | 10.9%               | 21.1%                                 | 12.3%  | N/A                                       |
| City of Madison            | 25.2%                      | 18.6%               | 17.1%                                 | 11.1%  | N/A                                       |
| <b>Census Block Groups</b> |                            |                     |                                       |  |   |
| Census Tract 20            |                            |                     |                                       |  |   |
| Block Group 1              | 33.1%                      | 25.5%               | 18.0%                                 | 8.3%   | Yes                                       |
| Block Group 2              | 12.1%                      | 14.5%               | 12.0%                                 | 13.0%  | Yes                                       |
| Census Tract 21            |                            |                     |                                       |  |   |
| Block Group 1              | 22.0%                      | 6.7%                | 23.9%                                 | 8.1%   | Yes                                       |
| Block Group 2              | 23.4%                      | 34.4%               | 12.0%                                 | 7.8%   | Yes                                       |
| Census Tract 24.02         |                            |                     |                                       |  |   |
| Block Group 1              | 56.6%                      | 49.9%               | 33.8%                                 | 5.8%   | Yes                                       |
| Census Tract 25            |                            |                     |                                       |  |   |
| Block Group 1              | 35.8%                      | 28.6%               | 18.2%                                 | 14.9%  | No  |
| Block Group 2              | 38.4%                      | 25.0%               | 21.1%                                 | 6.0%   | Yes                                       |
| Census Tract 26.01         |                            |                     |                                       |  |   |
| Block Group 1              | 32.7%                      | 16.7%               | 29.0%                                 | 7.7%   | Yes                                       |
| Block Group 2              | 29.4%                      | 20.6%               | 28.0%                                 | 7.8%   | Yes                                       |
| Census Tract 26.02         |                            |                     |                                       |  |   |
| Block Group 2              | 37.6%                      | 6.6%                | 19.9%                                 | 9.5%   | No  |
| Census Tract 27            |                            |                     |                                       |  |   |
| Block Group 3              | 9.6%                       | 8.8%                | 13.1%                                 | 13.4%  | Yes                                       |
| Census Tract 112           |                            |                     |                                       |  |   |
| Block Group 3              | 15.6%                      | 0.8%                | 41.3%                                 | 7.2%   | Yes                                       |
| Block Group 4              | 13.7%                      | 3.4%                | 11.9%                                 | 39.0%  | No  |

*Note:* \*See Figure WI3.7-2 for block group locations.

*Source:* U.S. Census Bureau 2016a, 2016b, 2017.

### Protection of Children

As discussed in Section WI3.1, under the Proposed Action Alternative, the increase in the NA50 number of speech-interrupting events per school day hour would remain similar to the affected environment except Lake View Elementary and the Richardson School would experience one additional event per average hour. Play Haven, Northside Kinder Care, Lake View Elementary, Madison Baptist Academy, and Richardson School would all experience more than two interfering events per hour. All of the POIs would experience a range of 1 to 4 minutes of time above 50 dB per school day. The causation of speech interference at schools with increased noise levels may hinder the ability of students (including low-income and minority students) to learn, which would constitute an adverse impact to children to include low-income and minority children.

Table WI3.7-1 shows the percent of the populations of the block groups that are under 18. Five block groups that would be exposed to noise levels between 65 and 70 dB DNL under the Proposed Action at the 115 FW installation have populations with a higher proportion of children than Dane

County. In Figure WI3.7-2, schools and childcare centers are shown with green and purple dots, respectively. Under the Proposed Action at the 115 FW installation, one school and five childcare centers would be exposed to noise levels between 65 and 70 dB DNL. The Richardson School is located within both the current and proposed 65 dB DNL contour lines. Sunny Ridge Kids Childcare, Bethesda Childcare, Boelter's Day Care, Baby Chick's Family Day Care, and Claudi's Kids Daycare are all located south of the airport and would be newly exposed to noise levels between 65 and 70 dB DNL under the Proposed Action.

There would be nine impacted block groups with higher proportions of children than Madison overall and there would be a school and five childcare centers within the proposed 65 dB DNL contour. The impacted school already experiences noise levels over 65 dB DNL and would not be newly exposed to the 65 dB DNL threshold, but the childcare centers would be newly exposed to these noise levels. Therefore, children would be disproportionately impacted by the Proposed Action; however, the USAF does not anticipate it would be necessary to close any schools as a result of a basing decision. Interference with classroom speech is discussed in detail in Chapter 4, Section WI3.1.1.2. It is important to note also that most permanent structures, including school buildings, can be effectively insulated from any distracting, exterior noise. Such mitigation is available from the FAA's noise mitigation programs and other sources. Further information on impacts associated with noise can be found in Section WI3.1.

#### Elderly Populations

Older adults have been identified as sensitive receptors to potential adverse impacts due to physiological and behavioral changes that come with age (Air Force Civil Engineer Center [AFCEC] 2014). Table WI3.7-1 shows the percent of the populations of the block groups that are elderly. Most of the 13 block groups that would be exposed to noise levels of 65 dB DNL or higher have a lower percentage of elderly people than the city of Madison and Dane County as a whole, however, 4 of the block groups have a higher percentage of elderly people.

A review of nursing homes and assisted care facilities found that one location would fall within the 65 dB DNL contour (Homeland Infrastructure Foundation-Level Data 2019). The one location identified is Women in Transition, which is a mental health center and does not contain a concentration of elderly residents. Because most of the impacted block groups do not contain a higher proportion of elderly residents than the surrounding region and there are no nursing homes or assisted living facilities for the elderly in the impacted areas, impacts to the elderly would not be disproportionate and would be minor.

### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Environmental justice and the protection of children would be expected to remain as described under affected environment in Section WI3.7.1.1. Therefore, there would be no significant disproportionate impacts to low-income populations, minorities, or children under the No Action Alternative.

### **WI3.7.2     Airspace**

Impacts to airspace are not considered for this resource because the ROI for environmental justice was considered to consist only of the installations themselves. Environmental justice and potential effects to children in communities under the SUA were not evaluated because the only anticipated impacts would be due to aircraft noise, but any changes in noise levels in these areas would not be significant and would not impact human populations.

### **WI3.7.3     Summary of Impacts**

Several census block groups associated with the expected changes in off-base noise contours associated with the proposed F-35A beddown at the 115 FW installation are considered to be disproportionately low-income or minority areas. Therefore, impacts to environmental justice associated with the Proposed Action would be considered significant. Additionally, several census blocks with the expected changes in off-base noise contours have higher proportions of children and include five newly exposed childcare centers. Therefore, impacts to children associated with the Proposed Action would be considered disproportionate and significant. Impacts to the elderly would not be disproportionate and would be minor.

## **WI3.8       INFRASTRUCTURE**

### **WI3.8.1     Installation**

#### WI3.8.1.1   Affected Environment

#### *Potable Water*

Potable water for the 115 FW installation is provided by the City of Madison. Potable water in the area is supplied primarily from 22 groundwater wells and 30 reservoirs (City of Madison 2018b). The City of Madison Water Utility Division pumps an average of approximately 27

million gallons of water per year to its customers (City of Madison 2018c). In calendar year (CY) 2017, 1,830,187 gallons of potable water were supplied to the 115 FW installation (115 FW 2017b).

#### *Wastewater*

The 115 FW installation generates wastewater from sanitary, and industrial processes. This includes OWS discharge, wash rack discharge, floor wash-down, latrines, sinks, and showers. Wastewater generated within the 115 FW installation is conveyed into the municipal sewage system to the Madison Metropolitan Sewerage District Nine Springs Wastewater Treatment Plant, which has an average flow capacity of 57 million gallons (Madison Metropolitan Sewerage District n.d.).

#### *Stormwater*

A high percentage of the active administrative and industrial areas of the installation are paved or roofed, resulting in high runoff rates during precipitation events. As described in the 115 FW SWPPP (115 FW 2016), the 115 FW installation has a stormwater drainage conveyance system typified by over land flow to catch basins, inlets, surface drains, underground pipes, culverts, ditches, and swales that discharge to receiving waters (see Section WI3.10, *Water Resources*) or other municipal separate storm sewer systems. The stormwater drainage system has been designed to safely collect and transport surface water runoff from storm events to prevent flooding within the installation and is a separate system from the wastewater (sewage) system.

#### *Electrical and Natural Gas Systems*

Electricity and gas is supplied to the 115 FW installation by Madison Gas and Electric. Electricity consumption for CY 2017 at the 115 FW installation was 3,595,503 kilowatt-hours. Natural gas consumption for CY 2017 at the 115 FW installation was 193,368 hundred cubic feet (115 FW 2017b).

#### *Solid Waste Management*

Municipal solid waste at the 115 FW installation is managed in accordance with the 115 FW Integrated Solid Waste Management Plan (115 FW 2015) and guidelines specified in AFI 32-7042, *Waste Management* (2017). In general, AFI 32-7042 establishes the requirement for installations to have a solid waste management program that incorporates the following: a solid waste management plan; procedures for recycling, diversion, handling, storage, collection, and disposal of solid waste; recordkeeping and reporting; and pollution prevention.

The 115 FW installation generates solid waste in the form of office trash, nonhazardous industrial wastes, normal municipal waste, and construction debris. These nonhazardous solid wastes are

collected in dumpsters located throughout the 115 FW installation and transported by contractor to the Dane County Landfill.

### *Transportation*

Regional access to the 115 FW installation is provided by several highways to the east, including Interstate 94 which runs north to south, Highway 151 which runs northeast to southwest, and Highway 51/Stoughton Road which runs north to south. The installation's main gate is accessed from Pierstorff Street and Hoffman Street.

### WI3.8.1.2 Environmental Consequences

#### *Proposed Action*

##### Potable Water

Water consumption would be expected to increase slightly under the Proposed Action as a result of the small increase in personnel; however, an increase of up to approximately 64 personnel on the installation would not be expected to impact regional water supply. Additionally, the demand for water (e.g., if used to control dust) could also increase during demolition and construction phases. However, this increase would be temporary and intermittent and would not be expected to impact regional water supply.

##### Wastewater

Wastewater generation would be expected to increase slightly as a result of the increase of up to approximately 64 personnel on the installation. However, there have been no deficiencies identified with the existing system, and it is expected that the existing sanitary sewer system is generally adequate to serve the facilities proposed under this alternative.

##### Stormwater

Under the Proposed Action, there would be up to 212,883 SF (4.9 acres) of temporary soil disturbance, including up to 71,883 SF (1.7 acres) of new impervious surface as a result of proposed construction. In accordance with the EISA Section 438, any temporary increase in surface water runoff as a result of the proposed construction would be attenuated through the use of temporary and/or permanent drainage management features. The proposed construction activities could temporarily impact the quality of stormwater runoff (see Section WI3.10, *Water Resources*). However, implementation of appropriate standard construction practices (as described previously), preventative maintenance, and periodic inspections and sampling to detect risk to stormwater, especially during active construction activity, would minimize these potential

impacts. Therefore, impacts to the existing stormwater drainage system as a result of the proposed construction would be minimal.

#### Electrical and Natural Gas Systems

Demand for electricity and natural gas would be expected to increase slightly as a result of the increase in personnel, and the building space and facilities to be constructed would require additional electricity. However, any new facilities and additions associated with the Proposed Action would be implemented with more energy-efficient design standards and utility systems than are currently in place. In addition, construction projects would incorporate Leadership in Energy and Environmental Design and sustainable development concepts to achieve optimum resource efficiency, sustainability, and energy conservation. Therefore, average energy consumption would be expected to stay the same or decrease compared to energy consumption associated with existing facilities.

Construction activity associated with the Proposed Action could result in some temporary interruption of utility services during construction. These impacts would be temporary, occurring briefly during active construction periods. In addition, the demand for energy (primarily electricity) could increase slightly during demolition and construction phases. The energy supply at the installation and in the region is adequate and would not be affected by this temporary increase in demand.

#### Solid Waste Management

The building space and facilities to be constructed would generate construction and demolition debris requiring landfill disposal. Proposed increases in personnel and equipment use would also contribute to an increase in solid waste generation. However, impacts to local landfills would not be expected to exceed the permitted throughput or contribute significantly to the remaining capacity.

Off-installation contractors completing construction and demolition projects at the 115 FW installation would be responsible for disposing of waste generated from these activities. Contractors would be required to comply with federal, state, and local regulations for the collection and disposal of municipal solid waste from the installation. Much of this material can be recycled or reused, or otherwise diverted from landfills. All non-recyclable construction and demolition waste would be collected in a dumpster until removal. Construction and demolition waste contaminated with hazardous waste, ACM, LBP, or other undesirable components would be managed in accordance with AFI 32-7042, *Waste Management* (2017).

### Transportation

Construction equipment would be driven to proposed construction areas and would be kept on-site for the duration of the respective activity. Construction workers would drive daily in their personal vehicles to and from the construction site. In general, construction traffic would result in increases in the use of on-installation roadways during construction activities; however, increases would be temporary and intermittent, occurring only during active construction periods.

The number of authorized personnel on the installation would increase by up to approximately 64 under the Proposed Action (see Section WI2.1.4). The increase in personnel would create a potential of 64 additional one-way vehicle trips to and from the installation during morning and evening peak periods for these additional personnel. Assuming that each person makes two, one-way trips per day, the implementation of the Proposed Action would add an additional 128 trips onto the existing roadway network after the construction phase is complete. However, regional roads used to access the installation, as well as those located on the installation, have sufficient capacity to manage this increase in traffic without substantial impacts to circulation. Therefore, impacts to transportation infrastructure would not be significant under the Proposed Action.

### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Infrastructure would be expected to remain as described under affected environment in Section WI3.8.1.1. Therefore, there would be no significant impacts to infrastructure under the No Action Alternative.

### **WI3.8.2     Airspace**

Impacts to airspace are not considered for this resource because the ROI for infrastructure was considered to consist only of the installations themselves. The ROI does not include land beneath the SUA since no ground disturbance, construction, or changes in infrastructure would occur.

### **WI3.8.3     Summary of Impacts**

Under the Proposed Action there would be no substantial changes expected to potable water, wastewater systems, stormwater management, energy supply systems, solid waste management, or transportation routes. Impacts to infrastructure at the 115 FW installation as a result of the proposed F-35A beddown would not be significant.

**WI3.9 EARTH RESOURCES**

**WI3.9.1 Installation**

WI3.9.1.1 Affected Environment

*Geology*

The 115 FW installation is located in the Central Lowlands Physiographic Province characterized by Paleozoic bedrock with some Cretaceous rocks underlying the western boundary. Much of the area exhibits widespread topographic effects of glaciation, including flat to gently inclined rock strata and regional dips controlled by domes and uplifts (PEER Consultants, P.C. 1988).

The 115 FW installation is located approximately 15 miles east and northeast of the terminal moraines marking the southwestern limits of the Wisconsin stage glacial advance. The installation is located in the pre-glacial Yahara River Valley on a thick deposit of Quaternary-age glacial drift and lacustrine deposits overlying Ordovician-age dolomites. In the vicinity of the installation, the glacial drift may be up to 300 feet thick. The Cambrian-age Mount Simon Sandstone underlies the glacial drift deposits in the vicinity of the 115 FW installation. The Mount Simon Sandstone unit is approximately 500 feet thick and is a regionally significant aquifer. Precambrian crystalline rocks underlie the Mount Simon Sandstone (ANG 2013).

*Topography*

The topography at the 115 FW installation is flat and has an elevation of approximately 855 to 860 feet MSL (ANG 2013) and is located near the western margin of the Great Lakes Section of the Central Lowlands Physiographic Province. In the areas around the 115 FW installation, the topography is characterized by numerous lakes with associated lacustrine plains, prominent end moraines, and poorly integrated drainage (PEER Consultants, P.C. 1988). The 115 FW installation lies on the flat lacustrine plain of a former glacial lake (ANG 2013).

*Soils*

The 115 FW installation is located on an approximately 300-foot deposit of glacial drift that is predominantly composed of sand and silt with some clay and gravel. The uppermost glacial deposits underlying the 115 FW installation are mostly lacustrine silt and clay deposits. During recent ERP investigations, soil borings were advanced to 20 to 40 feet below ground surface. These soil borings indicated that surficial soil is comprised of a thin layer of fill material underlain by several feet of silt and clay beneath which is predominantly fine to coarse sand 40 feet below ground surface (ANG 2013).

The Natural Resources Conservation Service (NRCS) Soil Survey for Dane County, Wisconsin identifies the following five soil types at the 115 FW installation:

- Batavia silt loam, gravelly substratum, 2-6 percent grade,
- Virgil silt loam, gravelly substratum, 1-3 percent slopes,
- Wacousta silty clay loam,
- Hayfield silt loam, 0-3 percent slopes, and
- Sable silty clay loam, 0-3 percent slopes (U.S. Department of Agriculture 1978).

#### WI3.9.1.2 Environmental Consequences

##### *Proposed Action*

Under this alternative, new construction would consist of 19 separate projects resulting in up to 212,883 SF (4.9 acres) of new construction footprint, including up to 71,883 SF (1.7 acres) of new impervious surface. The total construction footprint analyzed represents the largest possible footprint of each of the options (see Table WI2.1-2). These proposed construction projects would meet all criteria specified in ANG Handbook 32-1084, *Facility Space Standards*.

##### Geology and Topography

Proposed construction under this alternative would occur within the footprint of the developed 115 FW installation and surrounding lands would not be impacted by any construction-related clearing and grading. As such, impacts to geology and topography would be negligible under the Proposed Action at the 115 FW.

##### Soils

Proposed construction under this alternative would occur on five soil types, including Batavia silt loam (2-6 percent slope), Virgil silt loam (1-3 percent slope), Wacousta silty clay loam, Hayfield silt loam (0-3 percent slope), and Sable silty clay loam (0-3 percent slope). The majority of the proposed construction is on the Batavia silt loam, Virgil silt loam, Wacousta silty clay loam, and the Hayfield silt loam. The Batavia silt loam is rated by the NRCS Web Soil Survey as somewhat limited for roads and small commercial building development due to high shrink-swell potential and slope. The Wacousta silty clay loam is rated as very limited due to ponding and a shallow depth to the saturated zone. The Virgil silt loam is also rated as very limited due to ponding, a shallow depth to the saturated zone, a high shrink-swell potential, and flooding. The Hayfield silt loam is rated as not limited for roads and small commercial building development. The ANG will implement appropriate engineering practices necessary in order to construct on these types of soils. In addition, under the Farmland Protection Policy Act (FPPA), the Batavia silt loam, Virgil silt loam, and Hayfield silt loam are designated as prime farmland. The Wacousta silty clay loam is

designated as prime farmland if drained. However, the proposed construction is for national defense purposes and the surrounding land is already in urban development. Pursuant to the FPPA, the USAF determined that the land is not subject to the FPPA; therefore, the FPPA does not apply to this alternative.

To minimize potential impacts to soil associated with erosion, runoff, and sedimentation during construction activity, standard construction practices as described in the WIANG 115 FW installation SWPPP (115 FW 2016) would be implemented during and following the construction period. Such practices could include the use of well-maintained silt fences or straw wattles, minimizing surficial areas disturbed, stabilization of cut/fill slopes, minimization of earth-moving activities during wet weather, and covering of soil stockpiles, as appropriate. A site-specific and detailed SWPPP that coordinates the timing of soil disturbing activities with the installation of soil erosion and runoff controls is an effective way of controlling erosion while soil is exposed and subject to construction activity. A Notice of Intent (NOI) would be filed with the state of Wisconsin to obtain coverage under the General Permit for Stormwater Runoff from Construction Activities prior to implementation of individual projects. Construction activities subject to this permit include clearing, grading, and disturbances to the ground such as stockpiling or excavation. Implementation of these measures, as necessary and appropriate, would ensure that impacts to earth resources under the Proposed Action at the 115 FW installation would not be significant.

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Earth resources would be expected to remain as described under affected environment in Section WI3.9.1.1. Therefore, there would be no significant impacts to earth resources under the No Action Alternative.

### **WI3.9.2     Airspace**

Impacts to airspace are not considered for this resource because the ROI for earth resources was considered to consist only of the installations themselves. The ROI does not include land beneath the SUA since no ground disturbance would occur.

### **WI3.9.3     Summary of Impacts**

Under the Proposed Action at the 115 FW installation, proposed construction would result in up to 212,883 SF (4.9 acres) of temporary soil disturbance, including up to 71,883 SF (1.7 acres) of new impervious surface. Site-specific SWPPPs would be prepared for each construction project

to ensure that runoff would be contained on-site. There are no special status soils associated with any of the proposed construction projects. Impacts to earth resources as a result of the proposed beddown of the F-35A at the 115 FW installation would not be significant.

### **WI3.10 WATER RESOURCES**

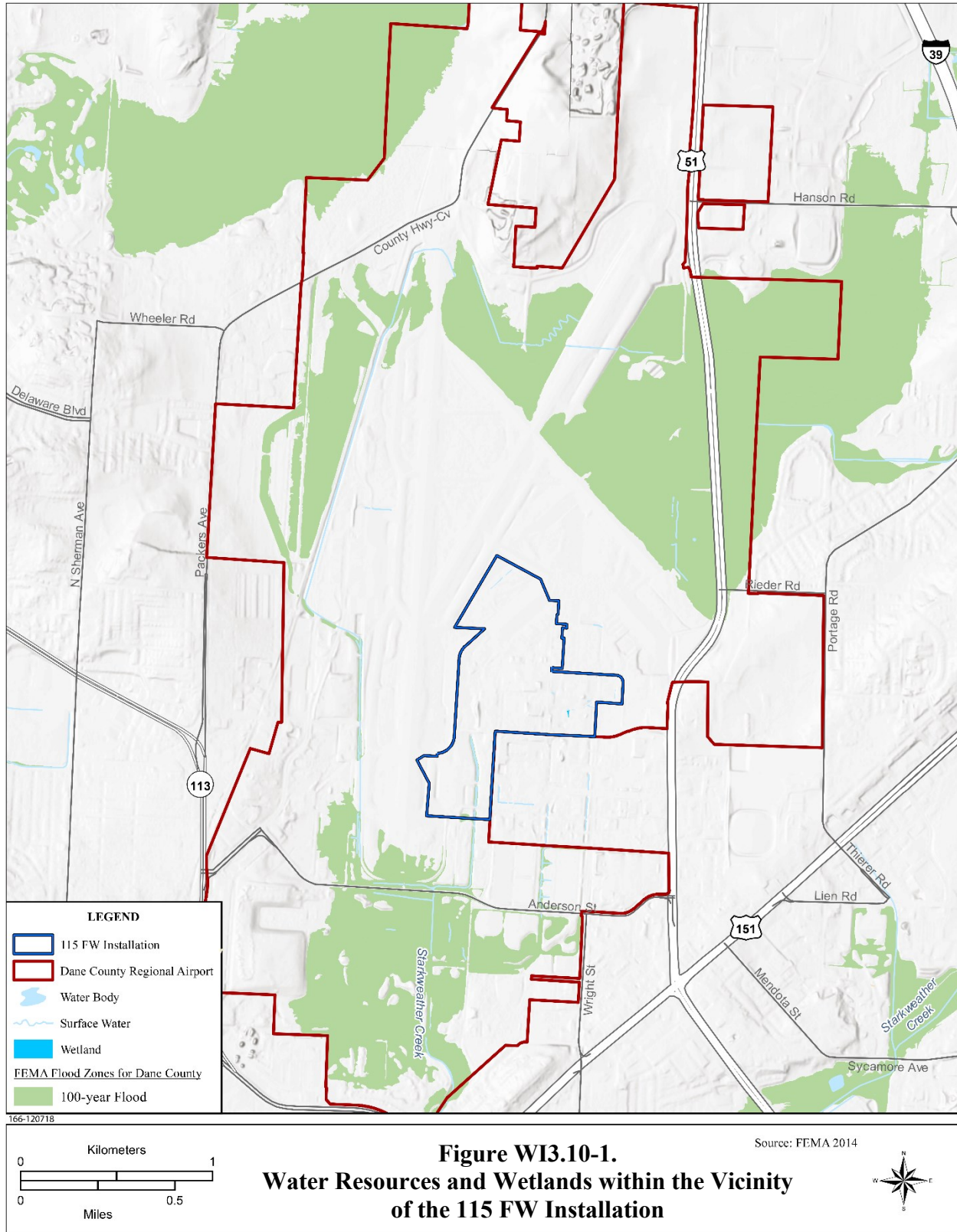
#### **WI3.10.1 Installation**

##### WI3.10.1.1 Affected Environment

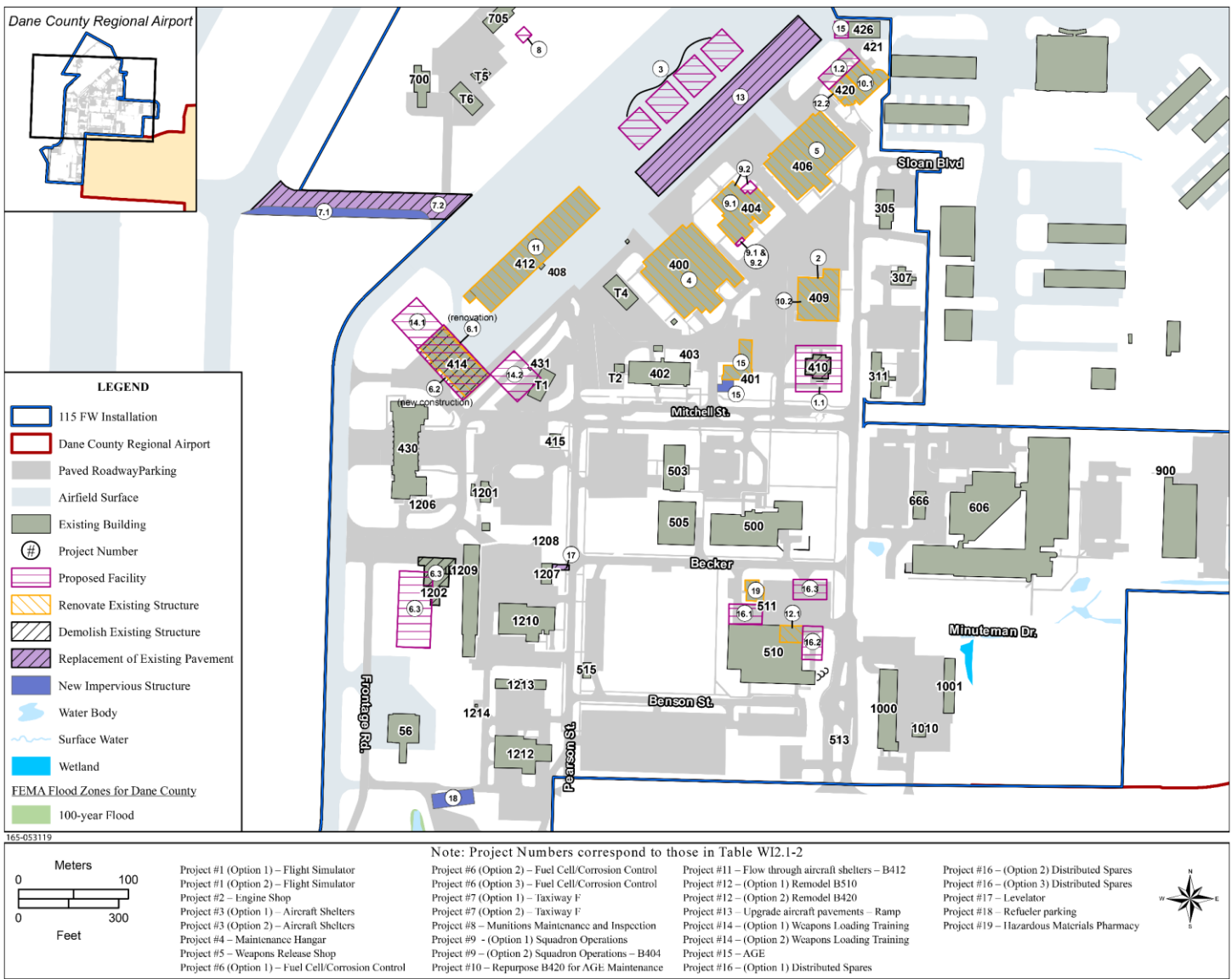
###### *Surface Water*

The 115 FW installation is located within Dane County Regional Airport and is approximately 3 miles north of Lake Monona and 2 miles northeast of Lake Mendota. A Waters of the U.S. (WOTUS) survey completed on the installation in 2018 identified seven WOTUS (surface waters and ditches) and five non-WOTUS (ditches) (Figures WI3.10-1 and WI3.10-2) (115 FW 2018a). A man-made drainage network was constructed at the periphery of the installation's property boundary to divert the west branch of Starkweather Creek at the time of airport development. Surface water runoff at the 115 FW installation is generally absorbed by the soil. Water not absorbed by the soil (in paved administrative and industrial areas) flows to stormwater inlets and drainage basins which are connected by underground pipes. All stormwater drainage from 115 FW installation enters Starkweather Creek from this system and eventually discharges to Lake Monona to the south. The drainage is under jurisdiction of the U.S. Army Corps of Engineers (USACE) and serves to collect and transport surface water runoff from the airfield.

The west branch of Starkweather Creek drains the area around the Dane County Regional Airport and other urbanized portions of Madison. This area of Starkweather Creek received intensive point source discharges of many different toxic substances up to the 1960s and early 1970s. Some of these discharges remain in the sediment of the creek and continue to pose problems for fish and aquatic life (WDNR 2018). These point source discharges have been managed through various programs. Both Starkweather Creek and Lake Monona are listed on the 2018 Wisconsin Impaired Waters List for multiple pollutants (WDNR 2018).



WI-95



**Figure WI3.10-2.**  
**Water Resources and Wetlands within the Vicinity**  
**of the Proposed Construction at the 115 FW**

The NPDES program provides a framework for regulating municipal and industrial discharges to ensure compliance with the CWA. Because the 115 FW installation has industrial activities as defined in 40 CFR 122, a WPDES stormwater permit has been issued. The 115 FW is a tenant of the Dane County Regional Airport and is therefore included as a co-permittee under their WPDES permit (WPDES Permit No. WI-0048747-04-0) (WIANG 2016). The conditions of the permit are intended to comply with existing water quality standards contained in Chapters NR 102 and NR 105 of the Wisconsin Administrative Code. The permit also regulates stormwater point discharges and wastewater discharges to the airport's separate storm sewer system and requires periodic reporting by the Dane County Regional Airport. The installation's WPDES stormwater discharge permit specifically requires the 115 FW installation to develop and implement a SWPPP (WIANG 2016) with the purpose to provide a management and engineering strategy specific to the 115 FW installation to improve the quality of stormwater runoff and thereby improve the quality of receiving waters.

### *Groundwater*

Two aquifers supply water to Dane County. The upper aquifer is located within unconsolidated glacial material and is reached at a depth of about 8 feet. The lower aquifer is a sandstone aquifer. Impermeable shale separates the two aquifers (115 FW 2004). Flow in the upper aquifer is westward in the Starkweather Creek area toward Lake Monona. Wells reaching 800 feet below the ground surface supply water to the city of Madison, which in turn provides drinking water to the 115 FW installation (115 FW 2004). Groundwater monitoring wells within the 115 FW installation indicate that the water table is between 7 to 9 feet below the ground (115 FW 2004).

### *Floodplains*

Per the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Dane County, Wisconsin, Panel 264H (Map Number 55025C0264H, Effective on September 17, 2014), a portion of the drainage ditch connected to Starkweather Creek has been identified as being located within an area subject to inundation by 1 percent annual chance of flooding (i.e., 100-year floodplain of Starkweather Creek designated as Zone AE) (FEMA 2014). The extent of the 100-year floodplain on the 115 FW installation is shown in Figure WI3.10-1.

### *Wetlands*

A wetland delineation conducted in May 2018 found one emergent, herbaceous jurisdictional wetland within the installation east of Building 1001 (see Figure WI3.10-1) (115 FW 2018a).

### WI3.10.1.2 Environmental Consequences

#### *Proposed Action*

#### Surface Water

Under the Proposed Action at the 115 FW installation, construction and modification projects to support beddown of the F-35A would have the potential to impact surface water resources. As identified in Table WI2.1-2, new construction would consist of several separate projects resulting in up to 212,883 SF (4.9 acres) of new construction footprint, including up to 71,883 SF (1.7 acres) of new impervious surface. Several of the projects have more than one option but only one option would be selected for each project. The total construction footprint analyzed represents the largest possible footprint of each of the options (see Table WI2.1-2). These proposed construction projects would meet all criteria specified in ANG Handbook 32-1084, *Facility Space Standards*.

The collective area impacted by the proposed construction activity would exceed 1 acre in size and therefore require the application for, and compliance with, Wisconsin's general stormwater permit, "General Permit to Discharge under the WPDES - Land Disturbing Construction Activities." Specific stormwater pollution controls would be included in the permit, as required by State Regulations NR 151 and 216. Further detail and control of stormwater flow and pollution controls would be applied in accordance with Chapter 14 of the Dane County Ordinances: Erosion Control Permits and Stormwater Control Permit (Chapter 14, Subchapter II: Erosion Control and Stormwater Management). Chapter 14 regulates stormwater pollution and flow for construction activity that disturbs more than 4,000 SF of land area and/or creates more than 20,000 SF of impervious surface. In addition, a cumulative soil annual loss rate of less than or equal to 7.5 tons per acre from construction activity areas will be achieved in accordance with the Dane County Erosion Control and Stormwater Management Manual, by following procedures outlined in Chapter 2, *Erosion Control*, of the Manual.

The sources of impacts from construction would be limited to the area of ground disturbance at any one time and the duration of construction at each distinct project site, and runoff would only be likely to occur during and following a precipitation event. The site-specific SWPPP would include measures to minimize potential impacts associated with stormwater runoff during construction, including BMPs and standard erosion control measures. These measures include straw bales, sandbags, silt fencing, earthen berms, use of tarps or water spraying, soil stabilization, temporary sedimentation basins, and re-vegetation with native plant species, where possible, to decrease erosion and sedimentation. Special consideration would be made to implement these measures for any construction adjacent to Starkweather Creek, which is on the State list of waterbodies that are impaired for sediment (WDNR 2018).

In accordance with UFC 3-210-10, *Low Impact Development (LID)* (as amended, 2016) and EISA Section 438, any temporary increase in surface water runoff as a result of the proposed construction would be attenuated through the use of temporary and/or permanent drainage management features. Under these requirements, federal facility projects with over 5,000 SF of new impervious surface must maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.

In addition, the existing SWPPP (WIANG 2016) for the installation would be amended, as necessary to reflect post-construction operations and potentially new BMPs. This SWPPP provides a management and engineering strategy to improve the quality of stormwater runoff from the 115 FW installation and thereby improve the quality of the receiving waters. Although there would be a small increase in runoff volumes and rates associated with the additional impervious areas under this alternative, the stormwater management system would be designed in compliance with applicable stormwater regulations. In addition, the airport is currently in compliance with its WPDES permit and proposed facility designs would follow the WPDES permit conditions such that no adverse impacts to water quality would result.

Implementation of these measures, as necessary and appropriate, would ensure that impacts to surface water under the Proposed Action would not be significant.

#### Groundwater

Construction activities and operations under the Proposed Action at the 115 FW installation would include stormwater runoff protection measures that would also serve to protect groundwater quality. By adhering to the provisions of the Dane County Ordinances: Erosion Control Permits and Stormwater Control Permit (Chapter 14, Subchapter II: Erosion Control and Stormwater Management), implementing BMPs, and amending the existing SWPPP, there would be a reduction in stormwater pollutant loading potential and thus a reduction in pollution loading potential to the underlying groundwater basins. Site grading and construction activities would also not reach depths at which groundwater would be affected. Personnel numbers would increase by approximately 64 at the 115 FW installation under this alternative. Therefore, there would be a minor increase in demand on potable water supplies.

Implementation of stormwater runoff protection measures, as necessary and appropriate, would ensure that impacts to groundwater under the Proposed Action at the 115 FW installation would not be significant.

#### Floodplains

The proposed projects would not occur within a 100-year flood plain zone (FEMA 2014) (see Figure WI3.10-2). As discussed under surface water, predevelopment hydrology would be

maintained through compliance with LID and EISA and there would no substantial increase in stormwater runoff. Therefore, impacts to flooding which would result from construction activities or operations associated with the Proposed Action at the 115 FW installation would not be significant.

### Wetlands

One jurisdictional wetland has been observed on the 115 FW installation (115 FW 2018a). However, none of the areas designated for proposed construction projects would occur within proximity of this wetland. Therefore, construction activities would have no impact on wetlands (see Figure WI3.10-2).

### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft.

Water resources would be expected to remain as described under affected environment in Section WI3.10.1.1. Therefore, there would be no significant impacts to water resources under the No Action Alternative.

### **WI3.10.2    Airspace**

Impacts to airspace are not considered for this resource because the ROI for water resources was considered to consist only of the installations themselves. The ROI does not include land beneath the SUA since no ground disturbance or construction would occur.

### **WI3.10.3    Summary of Impacts**

Under the Proposed Action at the 115 FW installation, proposed construction would result in up to 212,883 SF (4.9 acres) of temporary soil disturbance, including up to 71,883 SF (1.7 acres) of new impervious surface. Site-specific SWPPPs would be prepared for each construction project to ensure that runoff would be contained on-site. Predevelopment hydrology would be maintained through compliance with LID and EISA. BMPs would continue to be implemented to minimize impacts to both surface water and groundwater. None of the proposed construction projects are located within the 100-year floodplain. None of the construction activities are associated with wetlands. Impacts to water resources as a result of the proposed beddown of the F-35A at 115 FW installation would not be significant.

## WI3.11 BIOLOGICAL RESOURCES

### WI3.11.1 Installation

#### WI3.11.1.1 Affected Environment

##### *Vegetation*

The majority of the 115 FW installation is comprised of landscaped areas such as lawns, ornamental trees, or maintained open fields of grass (115 FW 2018a).

##### *Wildlife*

The majority of the wildlife present at the airport and the 115 FW installation consists of species that are highly adapted to developed and disturbed areas. Examples of common bird species observed during a 2018 fauna survey conducted on the installation include the mourning dove (*Zenaida macroura*), red-tailed hawk (*Buteo jamaicensis*), killdeer (*Charadrius vociferous*) barn swallow (*Hirundo rustica*), American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), Canada goose (*Branta canadensis*), and red-winged blackbird (*Agelaius phoeniceus*) (115 FW 2018a). Common mammals observed during this survey include the gray squirrel (*Sciurus carolinensis*), groundhog (*Marmota monax*), and red fox (*Vulpes vulpes*) (115 FW 2018b, 2018c). Common reptiles and amphibians observed during this survey include the snapping turtle (*Chelydra serpentina*), and the northern leopard frog (*Lithobates pipiens*) (115 FW 2018b). Other common bird species observed on the installation in the past include the turkey vulture (*Cathartes aura*), American crow (*Corvus brachyrhynchos*), rough-legged hawk (*Buteo lagopus*), dunlin (*Calidris alpina*), rock pigeon (*Columba livia*), cliff swallow (*Petrochelidon pyrrhonota*), eastern meadowlark (*Sturnella magna*), chimney swift (*Chaetura pelagica*), and vesper sparrow (*Pooecetes gramineus*) (115 FW 2017c). During a 2018 bat survey conducted on the installation, four bat species were acoustically observed, including the big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), and the silver-haired bat (*Lasionycteris noctivagans*) (115 FW 2018c). Other common mammals observed on the installation include the white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), eastern cottontail (*Sylvilagus floridanus*), and thirteen-lined squirrel (*Ictidomys tridecemlineatus*) (115 FW 2004, 2017c).

##### *Threatened, Endangered, and Special Status Species*

Table WI3.11-1 lists federally threatened, endangered, candidate, and state-listed species observed or potentially occurring in the vicinity of the 115 FW installation. No federally-listed species have been observed at the 115 FW installation and there is little to no habitat for these species within the airport or the installation boundaries. One state-listed species, the big brown bat, was acoustically observed on the installation during 2018 surveys. A flora and fauna survey was

conducted in the spring of 2018 on the installation and no additional federally- or state-listed species were observed at the 115 FW installation (115 FW 2018b, 2018c). However, 7 federally-listed species (1 bird, 1 mammal, 1 reptile, and 4 plants) and an additional 41 state-listed species (11 birds, 2 mammals, 5 reptiles/amphibians, and 23 plants) have the potential to occur within the vicinity of the 115 FW installation. There is no critical habitat located on the 115 FW installation. In addition, 32 migratory birds that occur on the USFWS Birds of Conservation Concern list have the potential to occur on the 115 FW installation (Table WI3.11-2).

**Table WI3.11-1. Federally- and State-Listed Species Potentially Occurring within the 115 FW Installation and Under the Airspace  
(Page 1 of 2)**

| <i>Common Name</i>             | <i>Scientific Name</i>        | <i>Status</i> | <i>Potential Occurrence on the 115 FW Installation</i> | <i>Potential Occurrence Under the Airspace</i> |
|--------------------------------|-------------------------------|---------------|--|--|
| <b>Birds</b>                   |                               |               |  |  |
| Acadian flycatcher             | <i>Empidonax virescens</i>    | ST            | P  | -  |
| Bell's vireo                   | <i>Vireo bellii</i>           | ST            | P  | -  |
| Black tern                     | <i>Chlidonias niger</i>       | SE            | P  | -  |
| Cerulean warbler               | <i>Setophaga cerulea</i>      | ST            | P  | -  |
| Henslow's sparrow              | <i>Ammodramus henslowii</i>   | ST            | P  | -  |
| Hooded warbler                 | <i>Setophaga citrina</i>      | ST            | P  | -  |
| Kentucky warbler               | <i>Geothlypis formosa</i>     | ST            | P  | -  |
| Kirtland's warbler             | <i>Setophaga kirtlandii</i>   | E             | -  | P  |
| Loggerhead shrike              | <i>Lanius ludovicianus</i>    | SE            | P  | -  |
| Peregrine falcon               | <i>Falco peregrinus</i>       | SE            | P  | -  |
| Red-shouldered hawk            | <i>Buteo lineatus</i>         | ST            | P  | -  |
| Upland sandpiper               | <i>Bartramia longicauda</i>   | SE            | P  | -  |
| Whooping crane                 | <i>Grus Americana</i>         | EXPN          | P  | P  |
| <b>Mammals</b>                 |                               |               |  |  |
| Big brown bat                  | <i>Eptesicus fuscus</i>       | ST            | O  | -  |
| Eastern pipistrelle            | <i>Perimyotis subflavus</i>   | ST            | P  | -  |
| Gray wolf                      | <i>Canis lupus</i>            | E             | -  | P  |
| Little brown bat               | <i>Myotis lucifugus</i>       | ST            | P  | -  |
| Northern long-eared bat        | <i>Myotis septentrionalis</i> | T, ST         | P  | P  |
| <b>Reptiles and Amphibians</b> |                               |               |  |  |
| Blanchard's cricket frog       | <i>Acris blanchardi</i>       | SE            | P  | -  |
| Eastern massasauga             | <i>Sistrurus catenatus</i>    | T, SE         | P  | P  |
| Ornate box turtle              | <i>Terrapene ornata</i>       | SE            | P  | -  |
| Slender glass lizard           | <i>Ophisaurus attenuatus</i>  | SE            | P  | -  |
| Western ribbon snake           | <i>Thamnophis proximus</i>    | SE            | P  | -  |
| Blanchard's cricket frog       | <i>Acris blanchardi</i>       | SE            | P  | -  |
| <b>Plants</b>                  |                               |               |  |  |
| Eastern prairie fringed orchid | <i>Platanthera leucophaea</i> | T, SE         | P  | N/A  |
| False asphodel                 | <i>Triantha glutinosa</i>     | ST            | P  | N/A  |

**Table WI3.11-1. Federally- and State-Listed Species Potentially Occurring within the 115  
FW Installation and Under the Airspace  
(Page 2 of 2)**

| <i>Common Name</i>       | <i>Scientific Name</i>                         | <i>Status</i> | <i>Potential Occurrence on the 115 FW Installation</i> | <i>Potential Occurrence Under the Airspace</i> |
|--------------------------|--|---------------|--|--|
| Hairy wild petunia       | <i>Ruellia humilis</i>                         | SE            | P  | N/A  |
| Hall's bulrush           | <i>Schoenoplectus hallii</i>                   | SE            | P  | N/A  |
| Hill's thistle           | <i>Cirsium hillii</i>                          | ST            | P  | N/A  |
| Prairie bush clover      | <i>Lespedeza leptostachya</i>                  | T, SE         | P  | N/A  |
| Large water-starwort     | <i>Callitriche heterophylla</i>                | ST            | P  | N/A  |
| Kitten tails             | <i>Besseyia bullii</i>                         | ST            | P  | N/A  |
| Mead's milkweed          | <i>Asclepias meadii</i>                        | T             | P  | N/A  |
| Nodding rattlesnake-root | <i>Prenanthes crepidinea</i>                   | SE            | P  | N/A  |
| Prairie bush clover      | <i>Lespedeza leptostachya</i>                  | T             | P  | N/A  |
| Roundstem foxglove       | <i>Agalinis gattingeri</i>                     | ST            | P  | N/A  |
| Pale false foxglove      | <i>Agalinis skinneriana</i>                    | SE            | P  | N/A  |
| Pale green orchid        | <i>Platanthera flava</i> var. <i>herbiola</i>  | ST            | P  | N/A  |
| Pale purple coneflower   | <i>Echinacea pallida</i>                       | ST            | P  | N/A  |
| Pink milkwort            | <i>Polygala incarnata</i>                      | SE            | P  | N/A  |
| Prairie milkweed         | <i>Asclepias sullivantii</i>                   | SE            | P  | N/A  |
| Prairie dunewort         | <i>Botrychium campestre</i>                    | SE            | P  | N/A  |
| Prairie parsley          | <i>Polytaenia nuttallii</i>                    | ST            | P  | N/A  |
| Purple milkweed          | <i>Asclepias purpurascens</i>                  | SE            | P  | N/A  |
| Rough rattlesnake-root   | <i>Prenanthes aspera</i>                       | SE            | P  | N/A  |
| Sheathed pondweed        | <i>Stuckenia vaginata</i>                      | ST            | P  | N/A  |
| Small skullcap           | <i>Scutellaria parvula</i> var. <i>parvula</i> | SE            | P  | N/A  |
| Smooth-sheathed sedge    | <i>Carex laevivaginata</i>                     | SE            | P  | N/A  |
| Tufted bulrush           | <i>Trichophorum cespitosum</i>                 | ST            | P  | N/A  |
| Wild hyacinth            | <i>Camassia scilloides</i>                     | SE            | P  | N/A  |
| Woolly milkweed          | <i>Asclepias lanuginosa</i>                    | SE            | P  | N/A  |

Legend: 115 FW = 115<sup>th</sup> Fighter Wing; E = Federally Endangered; EXPN = Experimental Population, Non-essential; N/A = not applicable; O = Observed; P = Potential; SE = State Endangered; ST = State Threatened; T= Federally Threatened; U = Unlikely.

Source: USFWS 2017, 2018; WDNR 2017.

**Table WI3.11-2. Migratory Birds that Potentially Occur within the 115 FW Installation and Under the Airspace**

| <i>Common Name</i>     | <i>Scientific Name</i>            | <i>Season</i> | <i>Potential Occurrence on the 115 FW Installation</i> | <i>Potential Occurrence Under the Airspace</i> |
|------------------------|-----------------------------------|---------------|--|--|
| American bittern       | <i>Botaurus lentiginosus</i>      | Breeding      | P  | P  |
| American golden-plover | <i>Pluvialis dominica</i>         | Spring/Fall   | P  | P  |
| American goldfinch     | <i>Spinus tristis</i>             | Year Round    | O  | -  |
| American robin         | <i>Turdus migratorius</i>         | Year Round    | O  | -  |
| Bald eagle             | <i>Haliaeetus leucocephalus</i>   | Year Round    | P  | P  |
| Barn swallow           | <i>Hirundo rustica</i>            | Breeding      | O  | -  |
| Black tern             | <i>Chlidonias niger</i>           | Breeding      | P  | P  |
| Black-billed cuckoo    | <i>Coccyzus erythrophthalmus</i>  | Breeding      | P  | P  |
| Bobolink               | <i>Dolichonyx oryzivorus</i>      | Breeding      | P  | P  |
| Canada goose           | <i>Branta canadensis</i>          | Year Round    | O  | -  |
| Eastern meadowlark     | <i>Sturnella magna</i>            | Year Round    | O  | -  |
| Eastern whip-poor-will | <i>Antrostomus vociferous</i>     | Breeding      | P  | P  |
| Golden eagle           | <i>Aquila chrysaetos</i>          | Winter        | P  | P  |
| Golden-winged warbler  | <i>Vermivora chrysoptera</i>      | Breeding      | P  | P  |
| Henslow's sparrow      | <i>Ammodramus henslowii</i>       | Breeding      | P  | P  |
| Killdeer               | <i>Charadrius vociferus</i>       | Breeding      | O  | -  |
| King rail              | <i>Rallus elegans</i>             | Breeding      | P  | P  |
| Least Bittern          | <i>Ixobrychus exilis</i>          | Breeding      | P  | P  |
| Lesser yellowlegs      | <i>Tringa flavipes</i>            | Winter        | P  | P  |
| Long-eared owl         | <i>Asio otus</i>                  | Breeding      | P  | P  |
| Mourning dove          | <i>Zenaida macroura</i>           | Year Round    | O  | -  |
| Red-headed woodpecker  | <i>Melanerpes erythrocephalus</i> | Year Round    | P  | P  |
| Red-tailed hawk        | <i>Buteo jamaicensis</i>          | Year Round    | O  | -  |
| Red-winged blackbird   | <i>Agelaius phoeniceus</i>        | Year Round    | O  | -  |
| Rusty blackbird        | <i>Euphagus carolinus</i>         | Winter        | P  | P  |
| Semipalmated sandpiper | <i>Calidris pusilla</i>           | Winter        | P  | P  |
| Short-billed dowitcher | <i>Limnodromus griseus</i>        | Winter        | P  | P  |
| Song sparrow           | <i>Melospiza melo</i>             | Year Round    | O  | -  |
| Veery thrush           | <i>Catharus fuscescens</i>        | Breeding      | O  | -  |
| Willow flycatcher      | <i>Empidonax traillii</i>         | Breeding      | P  | P  |
| Wood thrush            | <i>Hylocichla mustelina</i>       | Breeding      | P  | P  |
| Yellow rail            | <i>Coturnicops noveboracensis</i> | Breeding      | U  | P  |

Notes: O = Observed; P = Potential; U = Unlikely.

Source: USFWS 2017, 2018.

### WI3.11.1.2 Environmental Consequences

#### *Proposed Action*

#### Vegetation

Construction of new facilities under the Proposed Action Alternative at the 115 FW installation would occur primarily on currently paved areas or actively managed (i.e., mowed and landscaped) areas, and would result in a maximum increase of 71,883 SF (1.7 acres) of impervious surfaces.

Impacts to the vegetation at the installation would not be significant due to the lack of sensitive vegetation in the project area.

### Wildlife

Noise associated with construction may cause wildlife to temporarily avoid the area, including those that are protected under the Migratory Bird Treaty Act (MBTA). Noise associated with construction activities, as well as an increase in general industrial activity and human presence, could evoke reactions in birds. Disturbed nests in the immediate vicinity of construction activity would be susceptible to abandonment and depredation. Additional analysis for noise impacts to biological resources can be found in Appendix B, *Noise Modeling, Methodology, and Effects*. However, bird and wildlife populations in the vicinity of the airport where project components would occur are accustomed to elevated noise associated with aircraft and general military industrial use. As a result, indirect impacts from construction noise are expected to be minimal because the ambient noise levels within the vicinity are high under the affected environment and would be unlikely to substantially increase by the relatively minor and temporary nature of the proposed construction and modifications. Under the Proposed Action at the 115 FW installation, impacts to wildlife due to construction would not be significant.

Operational noise levels under the Proposed Action Alternative at the 115 FW installation would be expected to increase from the affected environment with the conversion to the F-35A aircraft. Under the Proposed Action Alternative at the 115 FW installation, only the number of aircraft operations would change; there would be no change in where or when individual aircraft operate. Total annual airfield operations at the Dane County Regional Airport are proposed to increase by 2,290 operations (3 percent). In addition, an additional 1,320 acres of land off the airport property would be exposed to DNL greater than 65 dB. The majority of this area is agricultural lands. Changes in operational noise are not expected to impact terrestrial species in the area because species on and near the installation are likely accustomed to elevated noise levels associated with aircraft and military operations.

An increase in airfield operations may result in a slight increased opportunity for bird/wildlife aircraft strikes to occur, including those with migratory birds. Adherence to the existing BASH program would minimize the risk of bird/wildlife aircraft strikes (see Section WI3.4, *Safety*). The 115 FW has developed procedures designed to minimize the occurrence of bird/wildlife aircraft strikes, and has documented detailed procedures to monitor and react to heightened risk of bird/wildlife aircraft strikes. When risk increases, limits are placed on low-altitude flight and some types of training (e.g., multiple approaches, closed pattern work) in the airport environment. Special briefings are provided to pilots whenever the potential exists for increased bird/wildlife aircraft strikes within the airspace.

### Threatened, Endangered, and Special Status Species

One state-listed species, the big brown bat, was acoustically observed on the installation during 2018 surveys. No federally-listed species have been observed on the installation and there is little to no habitat for these species. Impacts to potentially occurring or occurring federally- or state-listed species on the 115 FW installation would be similar to those described under wildlife. That is, studies indicate that wildlife species, whether they are common or protected species, already occupying lands exposed to airfield noise are generally not affected by slight to moderate increases in ambient noise levels, as they have already habituated to periodic to frequent loud overflight noise. Annual airfield operations at Dane County Regional Airport are projected to increase and there would be some temporary noise associated with construction. As a result, there would be negligible impacts to federally- or state-listed species from implementation of the Proposed Action. Military readiness operations are exempt from the prohibitions of the MBTA, provided they do not result in a significant adverse effect on population of migratory bird species. Regardless, migratory birds occurring on the installation would not be expected to be impacted by the noise from the Proposed Action Alternative at the 115 FW installation since they would already be habituated to aircraft noise from existing operations. An increase in airfield operations may result in a slight increased opportunity for bird/wildlife aircraft strikes to occur, including those with migratory birds. However, adherence to the existing BASH program would minimize the risk of bird/wildlife aircraft strikes (see Section WI3.4, *Safety*).

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Biological resources would remain as described in the affected environment in Section WI3.11.1.1. Therefore, there would be no significant impacts to biological resources as a result of the No Action Alternative.

### **WI3.11.2   Airspace**

#### WI3.11.2.1   Affected Environment

Due to the nature of the actions proposed within the airspace, plant species were excluded from extensive review and analysis because the proposed activities would not result in new ground disturbance, and ordnance delivery and chaff and flare use would not exceed current levels and would occur in locations already used and authorized for those purposes. In addition, marine

species, invertebrates, and fish were excluded from review and analysis as they, too, would not likely be impacted by the Proposed Actions.

### *Wildlife*

The airspace associated with 115 FW operations covers over 12,705 square miles of land within Wisconsin. Wildlife habitat within these areas are generally found within the Eastern Broadleaf Forest (Continental) Province. A variety of habitats can be found in this region, including broadleaf deciduous oak hickory forest and maple-basswood forest (Bailey 1995). Common wildlife species found within this habitat under the training airspace include the gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), eastern chipmunk (*Tamias striatus*), blue jay (*Cyanocitta cristata*), scarlet tanager (*Piranga olivacea*), summer tanager (*Piranga rubra*), rose-breasted grosbeak (*Pheucticus ludovicianus*), ovenbird (*Seiurus aurocapilla*), wild turkey (*Meleagris gallopavo*), and cerulean warbler (*Setophaga cerulean*) (Bailey 1995).

### *Threatened, Endangered, and Special Status Species*

Table WI3.11-1 lists federally threatened, endangered, candidate, and state-listed species observed or potentially occurring under the proposed airspace. Five federally-listed species (2 birds, 2 mammals, and 1 reptile) and an additional 42 state-listed species (11 birds, 3 mammals, 5 reptiles/amphibians, and 23 plants) have the potential to occur under the proposed airspace. There is no critical habitat for these species under the airspace. In addition, 21 migratory birds that occur on the USFWS Birds of Conservation Concern list have the potential to occur under the airspace (see Table WI3.11-2).

#### WI3.11.2.2 Environmental Consequences

### *Proposed Action*

### Wildlife

No construction would occur beneath the training airspace; however, inert ordnance would be deployed in ranges authorized for their use. Existing range management procedures and vegetation removal guidelines would be adhered to and vegetation management measures currently in place would persist. Impacts to wildlife habitat would be negligible. Countermeasures that would be employed by the F-35A with the potential to affect wildlife habitat include chaff and flares. Chaff and flare deployment would not exceed current levels conducted by F-16 aircraft and would occur within the same training areas as currently used. Current restrictions on the amount or altitude of flare use would continue to apply. As a result, chaff and flare deployment associated with the Proposed Action Alternative would have no significant impact on wildlife habitat.

Impacts to migratory birds protected under the MBTA would be negligible. In general, animal responses to aircraft noise appear to be somewhat dependent on, or influenced by, the size, shape, speed, proximity (vertical and horizontal), engine noise, color, and flight profile of planes. Some studies showed that animals that had been previously exposed to jet aircraft noise exhibited greater degrees of alarm and disturbance to other objects creating noise, such as boats, people, and objects blowing across the landscape. Other factors influencing response to jet aircraft noise may include wind direction, speed, and local air turbulence; landscape structures (i.e., amount and type of vegetative cover); and in the case of bird species, whether the animals are in the incubation/nesting phase. Additional analysis for noise impacts to biological resources can be found in Appendix B, *Noise Modeling, Methodology, and Effects*. Noise modeling results suggest subsonic noise levels would increase from 1 to 4 dB within the airspace and would be up to 57 L<sub>dnmr</sub>; well below the 112 dB shown to elicit major biological responses. Impacts to migratory birds under the MBTA would not be significant.

Section WI3.4, *Safety*, established that bird-aircraft strikes are currently rare in the airspace and would not be expected to increase substantially under the Proposed Action Alternative. The F-35A would fly predominantly above 5,000 feet AGL, which is above where 95 percent of strikes occur. Adherence to the BASH Plan would further reduce the likelihood of a bird strike in training airspace.

Overall, impacts to wildlife from proposed changes in subsonic and supersonic operations would not be significant for the following reasons: 1) the probability of an animal or nest experiencing overflights more than once per day would be low due to the random nature of flight within the airspace and the large area of land overflown; 2) generally speaking, the F-35A would fly at higher altitudes than F-16 aircraft—the majority (98 percent) of the F-35A operations would occur above 5,000 feet AGL; 3) supersonic flight would only occur above 15,000 feet MSL in the airspace, with 90 percent of these supersonic events above 30,000 feet MSL; and 4) although the total number of supersonic flights and sonic booms occurring would increase from current levels under this alternative, there would only be an increase in dB CDNL ranging from 1 to 2 across airspace units, with a maximum level at 49 dBC CDNL. In addition, studies of supersonic noise on birds and mammals indicate that animals tend to habituate to sonic booms and long-term effects are not adverse.

#### Threatened, Endangered, and Special Status Species

Impacts to potentially occurring federally- or state-listed species underlying the 115 FW airspace would be similar to those described within the wildlife section. Under the Proposed Action Alternative for the 115 FW, the amount of time the 115 FW would conduct operations in the associated airspace would increase by approximately 28 percent. However, the F-35As would also fly higher than F-16s, which would reduce the potential to impact species.

Overall, impacts to the federally- and state-listed species from the proposed change in subsonic and supersonic operations would not be adverse for the following reasons: 1) the probability of an animal or nest experiencing overflights more than once per day would be low due to the random nature of flight within the airspace and the large area of land overflow; 2) generally speaking, the F-35A would fly at higher altitudes than F-16 aircraft—the majority (98 percent) of the F-35A operations would occur above 5,000 feet AGL; 3) supersonic flight would only occur above 15,000 feet MSL in the airspace, with 90 percent of these supersonic events above 30,000 feet MSL; and 4) although the total number of supersonic flights and sonic booms occurring would increase from current levels under this alternative, there would only be an increase in dB CDNL ranging from 1 to 2, with a maximum level at 49 dBC CDNL. In addition, studies of supersonic noise on birds and mammals indicate that animals tend to habituate to sonic booms and long-term effects are not adverse. Impacts to federally-listed species would not be significant.

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation and no training activities by F-35A operational aircraft would be conducted in the airspace. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Biological resources would remain as described in the affected environment in Section WI3.11.2.1. Therefore, there would be no significant impacts to biological resources as a result of the No Action Alternative.

### **WI3.11.3 Summary of Impacts**

No sensitive vegetation exists at the 115 FW installation, so construction activities would not affect the flora on the installation. Noise associated with construction activities and/or aircraft operations would not affect wildlife or threatened and endangered species, as they are likely habituated to a relatively noisy environment already. Anticipated changes to use of the SUA would not be expected to impact biological resources. Impacts to biological resources as a result of the beddown of the F-35A at the 115 FW installation would not be significant.

### **WI3.12 CULTURAL RESOURCES**

#### **WI3.12.1 Installation**

##### WI3.12.1.1 Affected Environment

#### *Archaeological Resources*

The 115 FW installation covers approximately 155 acres and approximately 37 of those acres have been previously surveyed for archaeological resources. The 37 acres were surveyed in 2004, prior

to the construction of a new Alert Complex and a new munitions maintenance storage complex (ANG 2005). Fragments of terra cotta drainage pipes, modern green glass, and a pair of modern pliers were found in disturbed areas. None of these resources met the Wisconsin State Guidelines for recording archaeological sites (ANG 2005). The remaining 118 acres that have not been surveyed are primarily part of the built environment (ANG 2005).

### *Architectural Resources*

The 115 FW installation includes over 40 buildings and structures (WIANG 2017). An architectural survey was conducted in 2007 of eight architectural resources at the 115 FW that were more than 50 years of age to evaluate their National Register of Historic Places (NRHP) eligibility. In addition, preliminary evaluations of the former Hush House structure (Building 1202, constructed ca. 1959) were made. Based on the results of this survey, all nine architectural resources were determined to be not eligible for listing in the NRHP (NGB 2007).

In 2009, the National Historic Context for the Hush Houses and Test Cells on DoD Installations (Aaron 2009) was completed for the DoD Legacy Resource Management Program. The Hush House (Building 1202) at the 115 FW installation was included as one of several case studies for evaluation within the national historic context. The case study evaluation concluded that Building 1202 does not meet the eligibility criteria for listing in the NRHP. The Wisconsin SHPO concurred with this finding on June 30, 2009 (Aaron 2009).

An architectural inventory and evaluation of six Cold War-era buildings (Buildings 305, 307, 404, 410, 412, and 500) was completed in 2014 for proposed 115 FW installation development plan projects. The NGB determined the buildings were not eligible for listing in the NRHP. The Wisconsin SHPO concurred that the development projects would have no effect on historic properties (NGB 2015a).

An inventory and evaluation of post-1990 buildings and structures at the 115 FW installation was recently undertaken (NGB 2018). Seventeen post-1990 buildings and structures at the installation were documented. Five of the surveyed resources were munitions storage and shops. The other surveyed resources include administration buildings, storage facilities, an avionics shop, a communications facility, a medical training facility, a petroleum operations building, a vehicle parking shed, and a recreation pavilion. The current inventory and evaluation recommended that the surveyed architectural resources, either individually or collectively as a historic district, are not eligible for inclusion in the NRHP (NGB 2018). The NGB is consulting with the Wisconsin SHPO on the eligibility determination.

### *Traditional Resources*

The 115 FW contains no known traditional resources; however, 11 federally-recognized Tribes that are historically, culturally, and linguistically affiliated with the area have been identified. These Tribes include 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 Indian Tribe of Wisconsin; Stockbridge-Munsee Community Band of Mohican Indians; Oneida Nation of Wisconsin; Red Cliff Band of Lake Superior Chippewa; St. Croix of Lake Superior Chippewa Community; and the Sokaogon Chippewa Community (Mole Lake Band of Lake Superior Chippewa Indians).

#### WI3.12.1.2 Environmental Consequences

### *Proposed Action*

Potential direct impacts to cultural resources examined in this analysis include effects of ground-disturbing activities during construction or modification to existing buildings. Indirect impacts from an increase in personnel from 1,203 to 1,267 would be negligible as personnel would primarily be confined to the developed areas on the installation, which lack cultural resources.

### Archaeological Resources

The open areas of the 115 FW installation have been intensively surveyed for archaeological resources, and no NRHP-eligible archaeological resources have been identified. The Truax Mound Human Burial Site is located near the 115 FW installation, but not within the proposed construction areas. In a letter dated May 2, 2018, the Wisconsin Historical Society indicated that they are confident that there will be no disturbance to this burial site from either construction or aircraft flying over (Brown 2018). It is not expected that undiscovered cultural resources would be found during implementation of the Proposed Action at the 115 FW installation; however, in the event of an inadvertent discovery during ground-disturbing operations, the following specific actions would occur. The project manager would cease work immediately and the discovery would be reported to the 115 FW environmental manager, who would secure the location with an adequate buffer and notify the Commander and the NGB cultural resources manager. The environmental manager would then continue to follow ANG Inadvertent Discovery protocol.

### Architectural Resources

Eleven buildings (Buildings 400, 404, 406, 409, 412, 414, 426, 420, 510, 511, and 1207) at the 115 FW installation are proposed for additions, infrastructure improvements, and interior renovations. Additionally, two buildings (Buildings 410 and 414) and one structure (Building 1202) are proposed to be demolished depending on which construction option is chosen. Building

426 is a newly constructed building. Buildings 400 and 406 were inventoried and evaluated in 2007 and were recommended as not eligible for listing in the NRHP (NGB 2007). The survey recommended that if the 115 FW decided to renovate these structures, they would first formally consult with the Wisconsin SHPO by letter, citing the results of the 2007 inventory (that none of the buildings inventoried meet NRHP-eligibility standards and that a National Register Historic District is not present at the 115 FW installation) and seek concurrence on a Determination of No Effect for any Proposed Action that may affect structures at the installation (NGB 2007). To date, no formal eligibility determination has been completed by the NGB with the Wisconsin SHPO.

An architectural inventory and evaluation of six Cold War-era buildings (Buildings 305, 307, 404, 410, 412, and 500) was completed in 2014 for proposed installation development plan projects. The NGB determined the buildings are not eligible for listing in the NRHP. The Wisconsin SHPO concurred that the development projects would have no effect on historic properties (NGB 2015a). Moreover, during the process of obtaining a waiver for an Integrated Cultural Resources Management Plan for the 115 FW, the Wisconsin SHPO and the NGB did not raise any concerns about the installation's Cold War-era resources (Wiang 2018). Building 1202 was evaluated within the national historic context for hush houses and test cells, and was determined to be not eligible for listing in the NRHP (Aaron 2009). During the Integrated Cultural Resources Management Plan waiver process for the 115 FW, no issues concerning the installation's Cold War-era resources, including Buildings 409, 414, and 510, were identified (Wiang 2018).

Building 420 was recently inventoried and evaluated (NGB 2018). The NGB determined it was not eligible for listing in the NRHP and is consulting with the Wisconsin SHPO on its eligibility finding. It is anticipated there would be no adverse effects to architectural resources under the Proposed Action at the 115 FW installation.

### Traditional Resources

No traditional resources have been identified at the 115 FW installation and the highly developed nature of the installation makes it unlikely to contain any such resources. Government-to-government consultation between the NGB and each federally-recognized Tribe associated with the 115 FW installation is being conducted for this action in recognition of their status as sovereign nations, to provide information regarding Tribal concerns per Section 106 of the NRHP, as well as information on traditional resources that may be present on or near the installation. An initial phone call to Tribal offices to verify contact information and current Senior-level Tribal Officials before any materials were mailed to the American Indian Tribe was completed in late October/early November 2017. An initial government-to-government consultation letter was sent to 11 federally-recognized American Indian Tribes with ancestral ties to the 115 FW installation in February 2018. These 11 American Indian Tribes included 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 Indian Tribe of Wisconsin, Stockbridge-Munsee Community Band of Mohican Indians, Oneida Nation of Wisconsin, Red Cliff Band of Lake Superior Chippewa, St. Croix of Lake Superior Chippewa Community, and Sokaogon Chippewa Community (Mole Lake Band of Lake Superior Chippewa Indians). After the initial government-to-government consultation letter was sent, NGB followed up with telephone calls and emails in an effort to increase accessibility and encourage communication in the event an American Indian Tribe would have any concerns regarding the Proposed Action or land below the affected airspace areas. Correspondence sent to the American Indian Tribes is located in Appendix A. To date, no responses have been received from the federally-recognized American Indian Tribes associated with the 115 FW.

### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Cultural resources would be expected to remain as described under affected environment in Section WI3.12.1.1. Therefore, there would be no significant impacts to cultural resources under the No Action Alternative.

## **WI3.12.2 Airspace**

### **WI3.12.2.1 Affected Environment**

There are 341 NRHP-listed cultural resources located under the airspace used by the 115 FW. They include private residences, farmsteads, businesses, hotels, courthouses, watch towers, depots, churches, cemeteries, shipwrecks, historic districts, libraries, schools, U.S. post offices, bridges, a lighthouse, a dam, and a pavilion. Three of the NRHP-listed cultural resources are also designated National Historic Landmarks. These include the Little White Schoolhouse, USS *Cobia* (submarine), and the Fountain Lake Farm (National Park Service 2014). No American Indian reservations underlie the airspace and no traditional cultural properties are known within this area.

Government-to-government consultation between the NGB and each federally-recognized Tribe associated with the 115 FW installation is being conducted for this action in recognition of their status as sovereign nations, to provide information regarding Tribal concerns per Section 106 of the NRHP, as well as information on traditional resources that may be present on or near the installation.

An initial phone call to Tribal offices to verify contact information and current Senior-level Tribal Officials before any materials were mailed to the American Indian Tribe was completed in late

October/early November 2017. An initial government-to-government consultation letter was sent to 11 federally-recognized American Indian Tribes with ancestral ties to the lands beneath the associated airspace in February 2018. These 11 American Indian Tribes included 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 Indian Tribe of Wisconsin, Stockbridge-Munsee Community Band of Mohican Indians, Oneida Nation of Wisconsin, Red Cliff Band of Lake Superior Chippewa, St. Croix of Lake Superior Chippewa Community, and Sokaogon Chippewa Community (Mole Lake Band of Lake Superior Chippewa Indians). After the initial government-to-government consultation letter was sent, NGB followed up with telephone calls and emails in an effort to increase accessibility and encourage communication in the event an American Indian Tribe would have any concerns regarding the Proposed Action or land below the affected airspace areas. Correspondence sent to the American Indian Tribes is located in Appendix A. To date, no responses have been received from the federally-recognized American Indian Tribes associated with ancestral lands beneath the associated airspace with the 115 FW.

#### WI3.12.2.2 Environmental Consequences

##### *Proposed Action*

Under the Proposed Action Alternative for the 115 FW, the amount of time the 115 FW would conduct operations in the associated airspace would increase by approximately 28 percent. However, the F-35As would also fly higher than F-16s, which would reduce the potential to impact cultural resources. These changes would be a continuation of existing operations within the area and would not result in a change in setting to any eligible or listed archaeological, architectural, or traditional cultural property.

Under the Proposed Action, noise levels in the areas under the MOAs would range from 40 to 57 dB. These include the ATCAAs directly over them. The largest change would be under the Volk East MOA, with an increase of 4 dB, which would still be near the background noise level, even with the increase. Supersonic noise would increase up to 2 dBC, although the CDNL would remain relatively low at 49 dBC. No damage to historic structures is anticipated because overpressures would not exceed current levels found with the F-16C using the airspace (2.5 pounds per square foot [psf]). Impacts to structures would not be significant at this level of psf (Battis 1988; Haber and Nakaki 1989).

Visual intrusions under the Proposed Action would be minimal and would not represent an increase sufficient to cause adverse impacts to the settings of cultural resources. Due to the high altitude of the overflights, small size of the aircraft, and the high speeds, the aircraft would not be readily visible to observers on the ground.

No additional ground disturbance would occur under the airspace due to the Proposed Action. Use of ordnance and defensive countermeasures would occur in areas already used for these activities. Flares deployed from the aircraft would not pose a visual intrusion either, as flares are small in size and burn only for a few seconds and the high relative altitude of the flights would make them virtually undetectable to people on the ground. Overall, flares are unlikely to adversely affect cultural resources. Therefore, the introduction of material to archaeological sites or standing structures from the use of flares would not have an adverse effect on these resources.

Proposed use of the airspace would be similar to ongoing training operations. Given the current use of the airspace and the nature of the proposed future use of the project area, there would be no adverse effects to NRHP-eligible or listed archaeological resources, architectural resources, or traditional cultural properties. The NGB is consulting with the Wisconsin SHPO on its finding of effect for the Proposed Action.

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation and no training activities by F-35A operational aircraft would be conducted in the airspace. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Cultural resources would remain as described in the affected environment in Section WI3.13.2.1. Therefore, there would be no significant impacts to cultural resources as a result of the No Action Alternative.

### **WI3.12.3 Summary of Impacts**

There are no archaeological sites within any of the proposed construction footprints at the 115 FW installation. In the event of an inadvertent discovery during ground-disturbing operations, work would cease and procedures would be implemented to manage the site prior to continuation of work. No buildings associated with the proposed construction have been determined to be eligible for the NRHP. No traditional cultural resources have been identified at the 115 FW installation. Government-to-government consultation with associated Tribes is ongoing and will continue throughout the EIAP. Use of the SUA under the Proposed Action would be similar to ongoing operations. Impacts to cultural resources as a result of the proposed F-35A beddown at the 115 FW installation would not be significant.

### **WI3.13 HAZARDOUS MATERIALS AND WASTES, AND OTHER CONTAMINANTS**

#### **WI3.13.1 Installation**

##### WI3.13.1.1 Affected Environment

###### *Hazardous Materials*

Hazardous materials are used at the 115 FW installation for aircraft operations support and maintenance, including AGE maintenance; ground vehicle maintenance; petroleum, oil, and lubricant (POL) management and distribution; training operations; and maintenance and cleaning of facilities. Types of hazardous substances found on the 115 FW installation include paints, oils, lubricants, hydrazine, sealants, solvents, batteries, and fuels (i.e., gasoline, diesel, and jet). Most of these materials are kept in small quantities in flammables cabinets with secondary containment (115 FW 2014).

There are currently 10 aboveground storage tanks (ASTs) on the 115 FW installation in 8 buildings, including Buildings 401, 414, 430, 1000, 1201, 1217, 1218, and 1219.

- Building 401 (AGE Maintenance) has a 1,500-gallon double-walled steel AST used for Jet A storage,
- Building 414 (Fuel Cell) has a 600-gallon single-walled AST used for Jet A storage,
- Building 430 (Fire Station) has a 500-gallon single-walled AST used for aqueous film forming foam storage,
- Building 1000 (Vehicle Maintenance Government Fuel Station) has a 6,000-gallon double-walled steel AST used for motor gasoline storage and a 6,000-gallon double-walled steel AST used for diesel storage,
- Building 1201 (Civil Engineering Storage and Deicer Tank) has a 12,000-gallon double-walled steel AST used for Potassium Acetate storage,
- Buildings 1217 and 1218 (POL) both have a 105,000-gallon double-walled steel AST used for Jet A storage with a containment basin, and
- Building 1219 (Liquid Oxygen Storage) has a 400-gallon and a 3,000-gallon steel AST used for Liquid Oxygen storage. It is unknown whether the tanks are single- or double-walled (115 FW 2019b).

There have been 32 underground storage tanks (USTs) removed from across the 115 FW installation, so there are currently no active or remaining USTs at the 115 FW installation (115 FW 2019b).

### *Toxic Substances*

Regulated toxic substances typically associated with buildings and facilities include asbestos, LBP, and polychlorinated biphenyls (PCBs). ACM is known to occur in seven buildings, including Buildings 305, 307, 311, 402, 404, 406, and 500. All known friable asbestos has been removed from the installation (115 FW 2014).

A LBP survey has not been conducted at the 115 FW installation, so any buildings on the installation constructed prior to 1978 are presumed to contain LBP and would be tested for LBP prior to demolition or renovation (115 FW 2014).

The installation is considered to be PCB-free. Madison Gas and Electric own the transformers on the installation and they have tested negative for PCB content. Other potential PCB-contaminated equipment within the installation includes ballasts for light fixtures, and small transformers and capacitors. All known PCBs and PCB-containing ballasts, capacitors, and transformers not specifically labeled as PCB-free have been removed from the installation by a licensed contractor (115 FW 2014).

### *Hazardous Waste Management*

The 115 FW Oil and Hazardous Substances Spill Prevention and Response Plan contains the governing regulations for spill prevention and describes specific protocols for preventing and responding to releases, accidents, and spills involving oils and hazardous materials (115 FW 2011). The 115 FW Hazardous Waste Management Plan outlines procedures for controlling and managing hazardous wastes from the point where they are generated until they are disposed. In addition, it includes guidance for compliance with all federal, state, and local regulations pertaining to hazardous waste. The Hazardous Waste Management Plan also has a section detailing pollution prevention at the installation with the goal of reducing or eliminating the use of toxic or hazardous substances and the generation of hazardous waste wherever possible through source reduction and environmentally sound recycling (115 FW 2017d).

The 115 FW is regulated as a Small Quantity Generator (SQG) of hazardous waste and maintains USEPA Identification Number WI3570024247. A hazardous waste generator point is where the waste is initially created or generated. A satellite accumulation point (SAP) is an area where hazardous waste is initially gathered after the point of generation that is under the control of the SAP manager. Hazardous wastes initially accumulated at a SAP are accumulated in appropriate containers before being transferred to the installation central accumulation point (CAP). A generator may accumulate as much as 55 gallons of hazardous waste or one quart of acute hazardous waste at each SAP without a permit. There are 30 SAPs (where a waste is initially accumulated) identified at the installation in Buildings 400, 401, 406, 409, 414, 500, 705, 1209,

and 1210. The installation CAP is located in Building 512 where hazardous waste can accumulate in containers for up to 180 days or 270 days if the receiving Treatment, Storage, and Disposal Facility is at a distance greater than 200 miles (115 FW 2017d).

OWSs are used to separate oils, fuels, sand, and grease from wastewater and to prevent contaminants from entering the sanitary sewer and stormwater drainage systems. Currently, there are two OWSs and nine Garage Catch Basins on the 115 FW. The OWSs are maintained by the 115 Civil Engineering Squadron and are serviced annually (115 FW 2014).

#### *Environmental Restoration Program*

Nine potentially contaminated ERP sites have been identified at the 115 FW installation. The installation has been investigated under the ERP from 1988 to the present.

All nine sites have been recommended for no further action (NFA) with site closure. The WDNR concurred with all recommendations of NFA with site closure. Six of the nine ERP sites (Site 1, 4, 5, 7, Site 8 Area 1, and Site 8 Area 2) are located in areas of planned construction to support the proposed F-35A operations discussed in Section WI2.1.3. Table WI3.13-1 provides details for the nine ERP sites and Figure WI3.13-1 shows the locations of the nine ERP sites (ANG 2013).

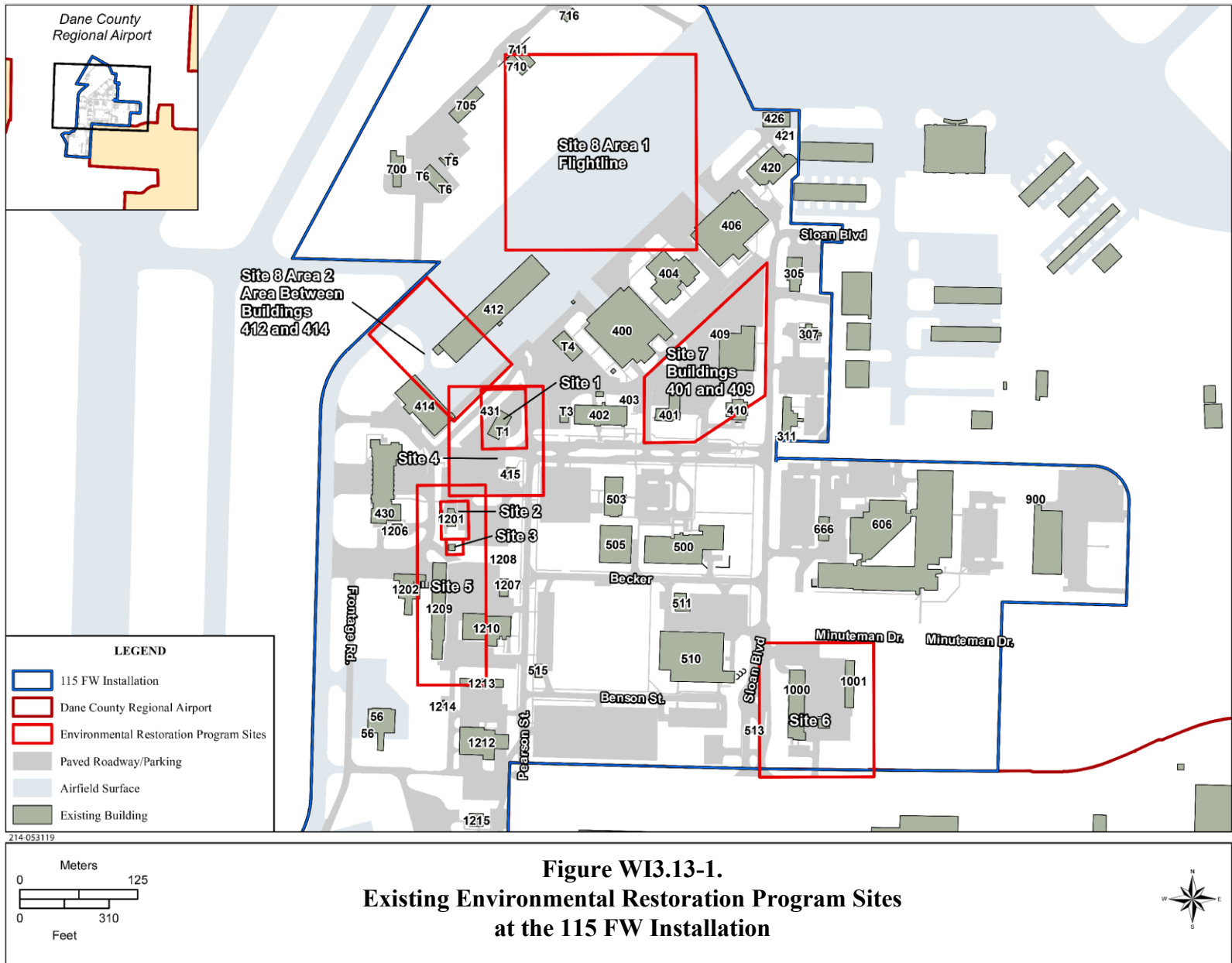
Under the Compliance Restoration Site Program, 10 Areas of Concern (AOCs) were investigated in a Preliminary Assessment/Site Investigation in 2015. No further investigation or remedial action was recommended for all 10 AOCs. Five AOCs (OW011, OW013, OW014, OW015, and OW016) are located in areas of planned construction. Figure WI3.13-2 shows the locations of the 10 AOCs. The 10 AOCs are as follows:

- Former Building 403 OWS (OW010),
- Building 400 OWS (OW011),
- Building 401 OWS (OW013),
- Building 409 OWS (OW014),
- Building 414 OWS 1 (OW015),
- Building 414 OWS 2 (OW016),
- Building 1216 OWS (OW017),
- Building 1000 OWS 1 (OW018),
- Building 1000 OWS 2 (OW019), and
- Former World War II Era Fuel Pipe (TU012) (NGB 2015b).

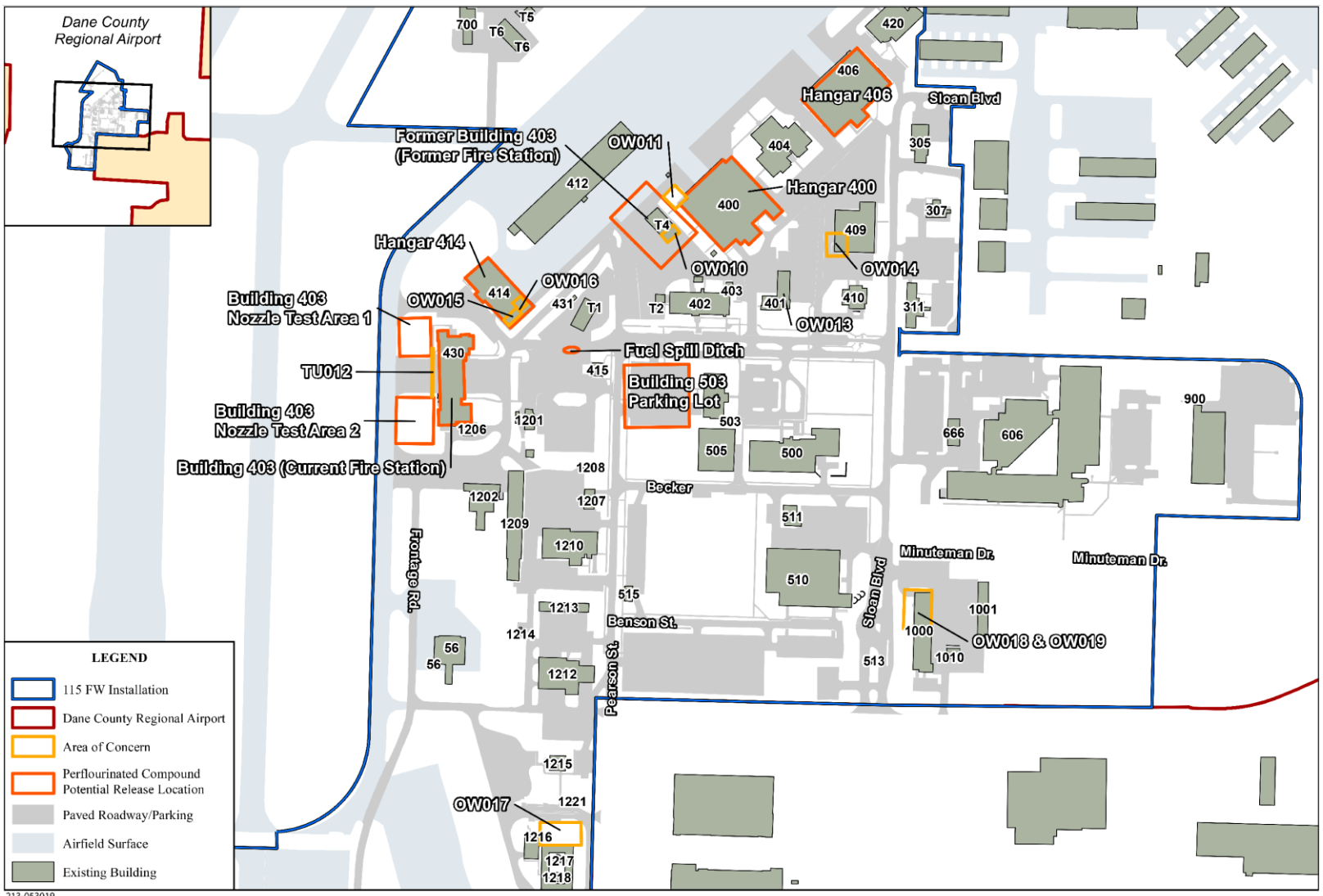
**Table WI3.13-1. ERP Sites within the 115 FW Installation**

| <i>ERP Site</i> | <i>Materials of Concern</i>   | <i>Status</i>   |
|-----------------|---|---|
| 1               | This site is a jet fuel spill near the POL Facility - Building 405 that occurred in March 1981. Spill cleanup activities occurred in 1981 and 1982 with a recommendation for NFA. WDNR concurred with closure in 2005.  | NFA   |
| 2               | This site is a jet fuel spill associated with UST 1201-1 that occurred in August 1985. Spill cleanup activities occurred in 1985 with a recommendation for NFA. WDNR concurred with site closure in 2005.   | NFA   |
| 3               | This site is adjacent to Building 1201, where a PCB spill occurred in October 1983 associated with a leaking electrical transformer. Spill cleanup activities occurred in 1983 with a recommendation for NFA. WDNR concurred with NFA in 2005.  | NFA   |
| 4               | This site is the Former POL Storage and Distribution Facility, which includes former pump house Building 405; existing Building 415; four 50,000-gallon USTs used to store aviation fuel; a bulk fuel intake system and refueling station (part of Building 405); pipeline connectivity to a refueling hydrant system; and five smaller USTs (up to 2,000-gallons) that were next to Buildings 414 and 415 and used for storing waste oils, solvents, and detergents. The four 50,000-gallon aviation fuel USTs were installed in 1952 and removed in 1999. Site delineation occurred from 1989 through 1997. Remediation activities occurred from 1998 through 2010. WDNR concurred with NFA in 2012 with the caveat that contaminated soil and groundwater would need to be managed if soil is excavated or removed and if dewatering was going to take place in area. This site has continuing obligations due to residual groundwater and soil contamination. | NFA, Residual groundwater and soil contamination              |
| 5               | This site is a 3,000-gallon used oil UST (1201-1) located south of Building 1201 where a 100-gallon release occurred. UST 1201-1 was removed in October 1991. Site characterization occurred from 1989 through 1994 and groundwater sampling occurred from 1997 through 2006. WDNR concurred with closure in July 2007.   | NFA   |
| 6               | This site is associated with five former USTs and corresponding piping and dispensers located adjacent to the Vehicle Maintenance Building - Building 1000. All five USTs have been removed. Site characterization occurred from 1989 through 1994. Groundwater sampling occurred in 1997 and approximately 15 cubic yards of contaminated soil was removed in 2001. WDNR concurred with site closure in May 2006.  | NFA   |
| 7               | This site is associated with three former USTs located near Buildings 401 and 409. All three USTs have been removed. Site characterization occurred from 1989 through 1994. Groundwater sampling occurred from 1997 through 2006 and soil sampling occurred in March 1999. WDNR concurred with site closure in July 2007.   | NFA   |
| 8 Area 1        | This site is associated with a refueling hydrant system consisting of two fuel lines, a 12,000-gallon UST, and a fuel meter located along the north side of the installation adjacent to Building 412. Impacts at Site 8, Area 1 were comingled with impacts associated with Installation Restoration Program Site 4. Site characterization occurred in 1992 and remediation occurred from 1993 through 2000. Post-remediation sampling occurred from 2004 through 2005 and WDNR concurred with site closure in November 2006.  | NFA   |
| 8 Area 2        | This site encompasses Buildings 412 and 414, and the jet fuel transfer lines associated with the former fuel hydrant system. Site characterization occurred from 1991 through 1992 and again in 1994 to evaluate the presence of hydrocarbons in groundwater. Remediation occurred from 1993 through 2006. Long-term groundwater monitoring occurred from 2000 through 2010. WDNR concurred with site closure in January 2012 with the caveat that contaminated soil and groundwater would need to be managed if soil is excavated or removed and if dewatering was going to take place in area. The site has continuing obligations due to residual groundwater and soil contamination.  | NFA, Residual petroleum contamination in groundwater and soil |

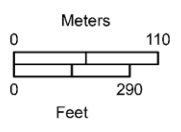
*Legend:* ERP = Environmental Restoration Program; GIS = Geographic Information System; NFA = no further action; PCB= polychlorinated biphenyl; POL = petroleum, oil, and lubricant; WDNR = Wisconsin Department of Natural Resources; UST = underground storage tank.



WI-119



213-053019



**Figure W13.13-2.**  
**Existing Areas of Concern and Perfluorinated Compound Potential Release Location Sites at the 115 FW Installation**



WI-120

A Preliminary Assessment Site Visit was conducted in 2015 to identify possible perfluorinated compound contaminated AOC. Figure WI3.13-2 shows the locations of the potential release location (PRL) sites located on the installation. Based on preliminary findings, there are nine AOCs that were recommended for further investigation via a Site Investigation, including:

- Building 430 (Current Fire Station),
- Building 430 Nozzle Test Area 1,
- Building 430 Nozzle Test Area 2,
- Former Building 403 (Former Fire Station),
- Hangar 400,
- Hangar 406,
- Hangar 414,
- Fuel Spill Ditch, and
- Building 503 Parking Lot (WIANG 2015).

A Site Investigation was conducted at the 115 FW at the nine AOCs in 2018. The results of the Site Investigation Report were finalized in March 2019 (NGB 2019). Three PRLs (Hangar 400, Hangar 406, and Hangar 414) detected PFOS/PFOA in areas of planned construction. The highest concentrations of PFOS/PFOA in any single sample found during the SI in the three PRLs within the planned areas of construction are presented in Table WI3.13-2.

**Table WI3.13-2. PFOS/PFOA Potential Release Locations that Intersect Proposed Construction**

| <i>Building</i>    | <i>Max. Soil (PFOS/PFOA) mg/kg</i> | <i>Groundwater (PFOS/PFOA) µg/l</i> |
|--------------------|------------------------------------|-------------------------------------|
| Hangar 400 (PRL 5) | 0.333 / 0.00458 J                  | 0.174 / 0.0649                      |
| Hangar 406 (PRL 6) | 0.0164 / 0.00101 J                 | 0.121 J / 0.0202                    |
| Hangar 414 (PRL 7) | 0.175 J / 0.00125 J                | 3.56 / 0.116                        |

*Notes:* 1 µg/l = 1 part per billion = 1,000 parts per trillion.  
J = estimated concentration.

*Legend:* µg/l = microgram per liter; mg/kg = milligram per kilogram; PFOA = Perfluorooctanoic Acid; PFOS = Perfluorooctane Sulfonate; PRL = Potential Release Location.

### WI3.13.1.2 Environmental Consequences

#### *Proposed Action*

#### Hazardous Materials

Training activities and other functions related to the current F-16 program would be expected to remain similar for the F-35A beddown. However, with computerized self-tests for all systems, the F-35As are expected to reduce maintenance time and cost, as well as reducing the need for maintenance since the F-35As are newer aircraft. This reduction in maintenance activities associated with the F-35As could result in a slight reduction of the amount of hazardous waste

generated. The major differences in hazardous waste generated would be the omission of hydrazine, cadmium fasteners, chrome plating, copper-beryllium bushings, and the use of a non-chromium primer instead of primers containing cadmium and hexavalent chromium currently used for F-16 aircraft (Luker 2009; Fetter 2008). The F-35A replaces the hydrazine canister (currently used by the F-16s) with an integrated power package (basically a small jet engine) for use in emergency engine restart situations, thus eliminating the potential for hydrazine leaks.

Under this alternative, the total annual number of F-35A operations would increase to 7,190 (including alert mission) from 4,900 F-16 operations which is a 47 percent increase in 115 FW annual operations and approximately 3 percent increase in total aircraft operations at the airfield. The increase in airfield operations would increase the throughput of petroleum substances (e.g., fuels, oils) used during F-35A operations. In addition to the increased amount of fuel usage associated with increased aircraft operations, a short-term increase of fuels used during construction activities (e.g., diesel, gasoline) would be expected to fuel earth-moving equipment and power tools and provide electricity and lighting.

Procedures for hazardous material management established for the 115 FW would continue to be followed in future operations associated with the Proposed Action and as required during all construction and renovation activities.

#### Toxic Substances

Under this alternative, 19 construction projects are proposed to accommodate the beddown of the F-35As, including additions to Buildings 426, 510, and 1207 and interior modification at Buildings 404, 406, 409, 510, and 511 and the possibility of interior modification or demolition of Building 414. ACM is known to occur in Buildings 404, 406, 409, 414, and 510. A LBP survey has not been conducted at the 115 FW, though any buildings built before 1978 may contain LBP and would be tested for LBP prior to demolition or renovation. All buildings included in the planned construction would be inspected for ACM and LBP according to established ANG procedures prior to any construction. All ACMs would be properly removed and disposed of prior to construction in accordance with 40 CFR 61.40 through 157. LBP would be managed and disposed of in accordance with Toxic Substances Control Act, OSHA regulations, Wisconsin requirements, and established ANG procedures. Materials suspected to be contaminated with PCBs (especially discarded oil products, light fixtures, and transformers) would be screened for PCB contamination prior to disposal.

#### Hazardous Waste Management

The number of hazardous waste streams generated by F-35A operations would be expected to be less than those being generated by the existing F-16 aircraft because operations involving

hydrazine, cadmium and hexavalent chromium primer, and various heavy metals have been eliminated or greatly reduced for the F-35A (Luker 2009; Fetter 2008). As with hazardous materials, the waste streams that are targeted for omission or substitution as aircraft are transitioned to the F-35A would be expected to decrease over the amount currently generated in support of F-16 aircraft operations.

Under this alternative, the total number of aircraft operations for the 115 FW would increase approximately 47 percent; therefore, hazardous waste generation would be expected to increase commensurately. The increase in the hazardous waste is supported by the current infrastructure at the installation. Hazardous waste generation would continue to be managed in accordance with the installation's Hazardous Waste Management Plan and all applicable federal, state, and local regulations. Additionally, no changes to the installation's SQG status would be expected to occur due to the increase in hazardous waste generation from aircraft operations.

#### Environmental Restoration Program

In accordance with AFI 32-7020, *The Environmental Restoration Program*, construction, modifications, and/or additions to existing buildings can occur on or in proximity to existing ERP sites. Accordingly, the appropriate organizations (e.g., installation planners, ERP managers, design engineers) must consider a compatible land use based on current site conditions and the selected or projected remedial action alternatives. If the potential for uncharacterized ERP sites exist, the installation is responsible for identifying existing contamination at the proposed construction sites to avoid unknowingly locating construction projects in contaminated areas. The installation is responsible for performing necessary environmental baseline surveys, accomplishing EIAP requirements, and for otherwise being informed about existing site conditions and associated cost impacts in preparation for a construction project. When warranted by the site history, environmental restoration funds may be used to accomplish Resource Conservation and Recovery Act (RCRA) facility assessments, or preliminary assessments and site inspections undertaken in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process, or similar site investigations in accordance with applicable state laws for suspected releases. To the extent that a construction project generates actions to address contamination, or a need to change the timing of ERP-generated actions to address contamination, the costs of such actions are not Environmental Restoration Account-eligible and shall be funded as part of the construction project. This includes the handling, mitigation, and disposal or other disposition of contamination discovered before or during the construction activity.

The removal and disposal of unexpected contamination encountered within the construction project footprint would be undertaken as part of the construction project using project funds, which may include other military construction (MILCON) funds reprogrammed to a MILCON construction project. Construction contractor costs (such as direct delay costs and unabsorbed or

extended overhead) incidental to discovery and removal of the contamination would be construction project funded to the extent that the government is responsible and liable for such costs.

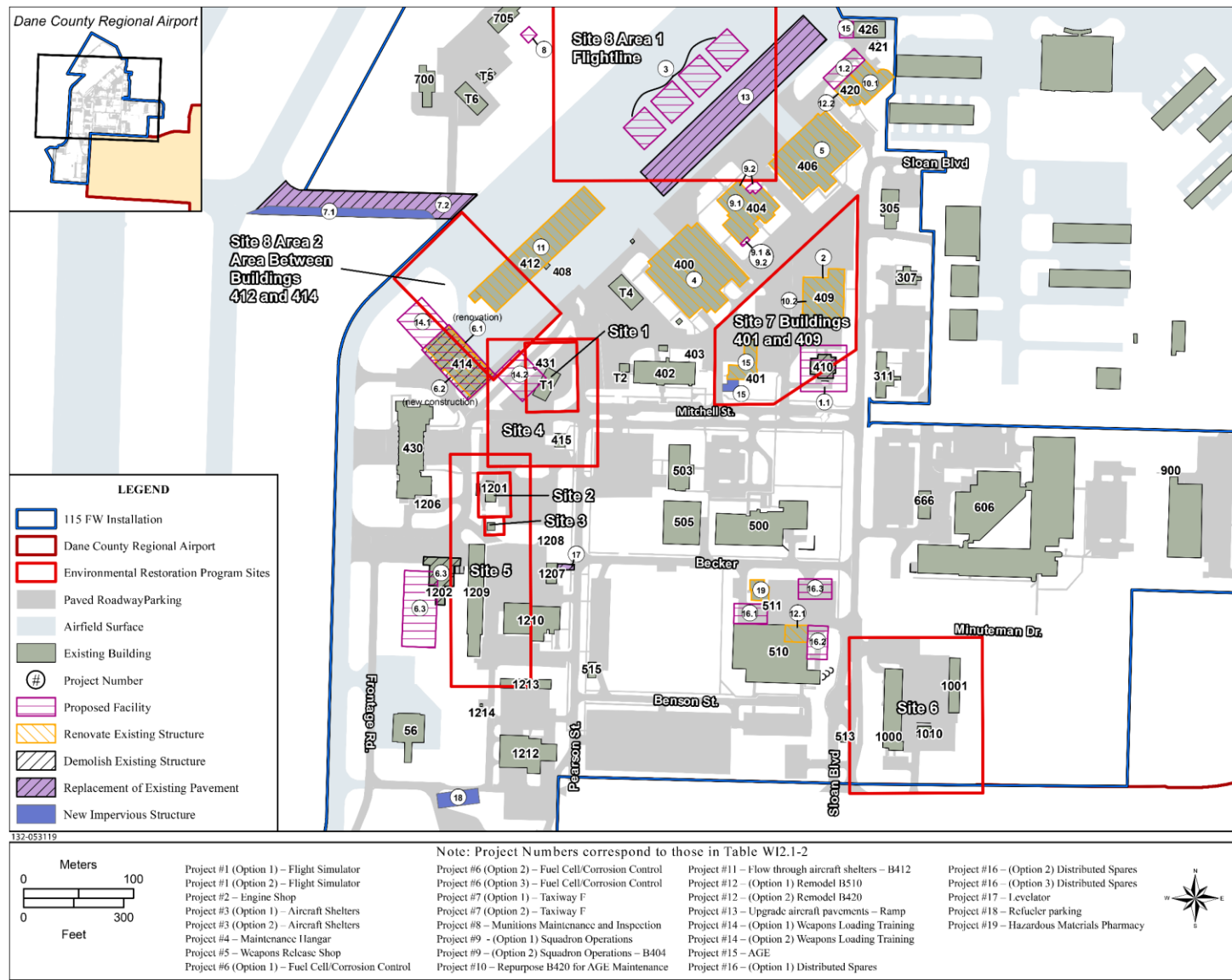
Vapor intrusion should be evaluated when volatile chemicals are present in soil, soil gas, or groundwater that underlies existing structures or has the potential to underlie future buildings and there may be a complete human exposure pathway. Due to their physical properties, volatile chemicals can migrate through unsaturated soil and into the indoor air of buildings located near zones of subsurface contamination.

Six ERP sites (Site 1, Site 4, Site 5, Site 7, Site 8 Area 1, and Site 8 Area 2) overlap with the proposed construction under this alternative (Figure WI3.13-3). ERP Site 7 overlaps with the proposed new asphalt driveway and new doors for B401, proposed interior modification at Building 409, potential demolition of Building 410, and construction of a new flight simulator building; ERP Site 8 Area 1 is adjacent to the proposed construction near Buildings 705, 412, 404, the planned construction of four aircraft shelters, and the pavement upgrade to the aircraft ramp; ERP Site 5 overlaps with the proposed demolition of Building 1202; and ERP Sites 1, 4, and 8 Area 2 overlaps the proposed construction near Buildings 414 and 412. All six ERP sites are closed and monitoring was completed, with ERP Sites 7 and 8 Area 1 being closed with no contamination reported over regulatory limits. ERP Site 4 and 8 have continuing obligations due to residual groundwater and soil contamination. ERP Site 8 Area 2 was closed, but has residual petroleum in groundwater and soil above regulatory limits. However, it is recommended that a vapor intrusion analysis/testing is completed at all buildings overlapped by ERP sites, including Buildings 401, 404, 409, 410, 412, 414, 710, 711, and 1202, prior to construction to investigate any potential concern. If testing indicates a vapor intrusion concern, the installation would implement practices in accordance with site-specific vapor mitigation design considerations.

Five AOCs, including OW011, OWO13, OW014, OW015, and OW016, are located in areas of planned construction. OW011 is adjacent to the planned renovation at Hangar 400, OWO13 is located within B401, OW014 overlaps with the planned renovation at Hangar 409, and OW015 and OW016 overlap with the planned construction at Hangar 414. All five AOCs were recommended for no further investigation or remedial action and do not have contaminated media.

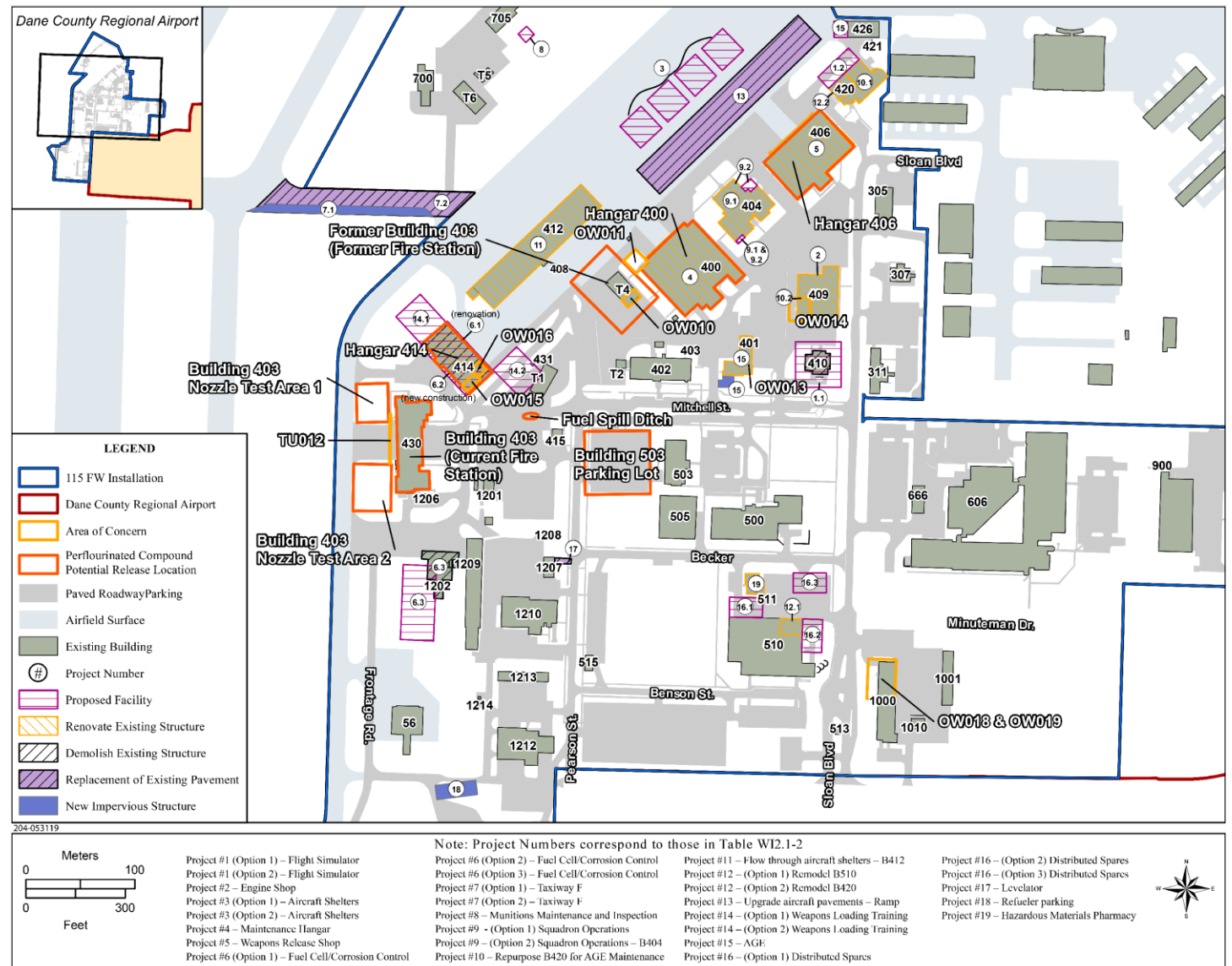
Three PFOS/PFOA PRLs including Hangar 400, Hangar 406, and Hangar 414 overlap with the proposed construction at the aforementioned Hangars (Figure WI3.13-4). The 115 FW will comply with Air Force Guidance Memorandum (AFGM2019-32-01) *AFFF-Related Waste Management Guidance* to manage waste streams containing PFOS/PFOA (USAF 2019). The AFGM will be updated as needed to address changes in regulatory requirements, DoD determinations of risk, or development of new technologies.

WI-125



**Figure WI3.13-3.  
Environmental Restoration Program Sites within the Vicinity of the Proposed Construction  
at the 115 FW Installation**

WI-126



**Figure WI3.13-4.**  
**Areas of Concern and Perfluorinated Compound Potential Release Location Sites within the Vicinity of the Proposed Construction at the 115 FW Installation**

Per the Site Investigation Report, no soil samples exceeded the USEPA risk-based screening level for PFOS/PFOA within the planned construction area. Groundwater samples for PFOS/PFOA exceeded the USEPA Lifetime Health Advisory of 70 parts per trillion (ppt) for drinking water at all three locations within the planned construction area. The next step in the CERCLA process is the Remedial Investigation. During the Remedial Investigation, the agency will collect detailed information to characterize site conditions, determine the nature and extent of the contamination, and evaluate risks to human health and the environment posed by the site conditions by conducting a baseline ecological and human health risk assessment. The CERCLA process will continue regardless of any construction activities. Construction activities, to include the handling, mitigation, and disposal or other disposition of contamination discovered before or during the construction activity, will proceed in accordance with all applicable legal requirements.

If contaminated media (e.g., soil, vapor, groundwater) was encountered during the course of site preparation (e.g., clearing, grading) or site development (e.g., excavation for installation of building footers) for proposed construction activities, work would cease until 115 FW environmental manager establishes an appropriate course of action for the construction project to ensure that any applicable federal and state agency notification requirements are met, and to arrange for agency consultation as necessary if closed ERP sites are affected.

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 115 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Hazardous materials and waste would be expected to remain as described under affected environment in Section WI3.13.1.1. Therefore, there would be no significant impacts to hazardous materials and waste under the No Action Alternative.

#### **WI3.13.2    Airspace**

Impacts to airspace are not considered for this resource because the ROI for hazardous materials and wastes was considered to consist only of the installations themselves. The ROI does not include land beneath the SUA since no ground disturbance or construction would occur.

#### **WI3.13.3    Summary of Impacts**

Under the Proposed Action at the 115 FW installation, there would not be an increased risk of hazardous waste releases or exposure. Any LBP or ACM that may be found in buildings that are proposed for construction activities would be managed per applicable USAF regulations. Six ERP sites (Site 1, Site 4, Site 5, Site 7, Site 8 Area 1, and Site 8 Area 2) overlap with the proposed

construction under this alternative. All six ERP sites are closed and monitoring was completed, with ERP Sites 7 and 8 Area 1 being closed with no contamination reported over regulatory limits. ERP Site 4 remains on the WDNR's Redevelopment Program GIS due to residual groundwater and soil contamination. ERP Site 8 Area 2 was closed, but has residual petroleum in groundwater and soil above regulatory limits. Three PFOS/PFOA PRLs, including Hangar 400, Hangar 406, and Hangar 414, overlap with the proposed construction at the aforementioned hangars. The 115 FW will comply with Air Force Guidance Memorandum (AFGM2019-32-01) *AFFF-Related Waste Management Guidance* to manage waste streams containing PFOS/PFOA (USAF 2019). Five AOCs, including OW011, OWO13, OW014, OW015, and OW016, are located in areas of planned construction. All five AOCs were recommended for no further investigation or remedial action and do not have contaminated media.

If additional contaminated media were encountered during the course of site preparation or site development, work would cease until the 115 FW environmental manager establishes an appropriate course of action for the construction project to ensure that applicable federal and state agency notification requirements are met. Impacts relative to hazardous materials and wastes would not be significant.

#### **WI4.0 CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

According to CEQ regulations, the cumulative effects analysis of an EIS should consider the potential environmental impacts resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7). Cumulative effects may occur when there is a relationship between a Proposed Action or alternative and other actions expected to occur in a similar location or during a similar timeframe. The effects may then be incremental and may result in cumulative impacts. Actions overlapping with or in close proximity to the Proposed Action or alternatives can reasonably be expected to have more potential for cumulative effects on “shared resources” than actions that may be geographically separated. Similarly, actions that coincide in the same timeframe tend to offer a higher potential for cumulative effects.

This EIS addresses cumulative impacts to assess the incremental contribution of the alternatives to impacts on affected resources from all factors. The ANG has made an effort to identify actions on or near the affected areas that are under consideration and in the planning stage at this time. These actions are included in the cumulative effects analysis, drawn from the level of detail that exist now. Although the level of detail available for those future actions varies, this approach provides the decision-maker with the most current information to evaluate the consequences of the Proposed Action Alternatives.

#### **WI4.1 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS**

In this section, an effort was made to identify past and present actions in the region and those reasonably foreseeable actions that are in the planning phase at this time. Actions that have a potential to interact with the Proposed Action are included in this cumulative analysis. This approach enables decision-makers to have the most current information available so that they can evaluate the environmental consequences of the beddown of the F-35A aircraft at the 115 FW installation and training in associated airspace.

The 115 FW is an active military installation that undergoes changes in mission and in training requirements in response to defense policies, current threats, and tactical and technological advances. The installation, like any other major institution (e.g., university, industrial complex), requires new construction, facility improvements, infrastructure upgrades, and maintenance and repairs. In addition, tenant organizations may occupy portions of the installation, conduct aircraft operations, and maintain facilities. All of these actions (i.e., mission changes, facility improvements, and tenant use) will continue regardless of which alternative is selected.

The projects, associated with this Proposed Action Alternative, were identified for their potential to have cumulative impacts on resources within the ROI and overlap in time; they are listed in Table WI4.1-1. Other ongoing maintenance and repair activities (e.g., repairing existing infrastructure and interior building renovations/alterations) would not introduce any newly disturbed or impervious surfaces and are, therefore, not included herein.

**Table WI4.1-1. Current and Reasonably Foreseeable Actions at 115 FW Installation  
(Page 1 of 3)**

| <i>Year</i>                       | <i>Action</i>   | <i>Total Area of New Ground Disturbance (SF)</i> | <i>New Impervious Surface (SF)</i> |
|-----------------------------------|---|--|------------------------------------|
| <b>POL Fuel Truck Canopy</b>      |   |  |                                    |
| 2026                              | Construct one canopy covering up to seven R-11 fuel trucks in the POL area.   | 20,000   | 0                                  |
| <b>Replace Diesel/MOGAS Tanks</b> |   |  |                                    |
| 2021                              | Project would replace existing tanks (B1010).   | 1,300  | 0                                  |
| <b>Construct Jet A Fuel Tanks</b> |   |  |                                    |
| 2026 or 2027                      | Replace existing two 100,000-gallon tanks with five new 50,000-gallon. This would include 4,500 SF of new concrete pads for the tanks.  | 8,100  | -3,600                             |
| <b>Arm/Dearm Pad</b>              |   |  |                                    |
| 2026                              | Construct a new arm/dearm near the intersection of Taxiways G and F.  | 15,900   | 12,700                             |
| <b>Main Gate</b>                  |   |  |                                    |
| 2024                              | A new gate house, two POV lanes, and one truck lane would be added to the main gate.  | 118,400  | -17,300                            |
| <b>Base Wide Pavements</b>        |   |  |                                    |
| 2025 to 2026                      | All roads would be repaved. There would be no footprint expansion.  | 322,000  | 0                                  |
| <b>Mitchell Street</b>            |   |  |                                    |
| 2024                              | Mitchell Street would be converted to a two-lane road and the parking areas to the south would be expanded to the north. Utilities would be moved to the north side of Mitchell Street. | 32,275   | -600                               |
| <b>MSA Berm</b>                   |   |  |                                    |
| 2023                              | Addition of an earthen berm outside the MSA fence on the eastern and northern side.   | 11,240   | 0                                  |
| <b>Segregated Cell Storage</b>    |   |  |                                    |
| 2025                              | Add five 1,000 SF concrete cells/buildings to existing cell (B716).   | 5,000  | 5,000                              |
| <b>MSA Igloos</b>                 |   |  |                                    |
| 2025                              | Construct two new igloos to the northeast side of the existing igloos (B710 and B711).  | 16,800   | 16,800                             |
| <b>Taxiway G</b>                  |   |  |                                    |
| 2026                              | Convert the 50-foot wide asphalt taxiway to a 40-foot wide concrete road.   | 84,100   | -18,000                            |

**Table WI4.1-1. Current and Reasonably Foreseeable Actions at 115 FW Installation  
 (Page 2 of 3)**

| <i>Year</i>                            | <i>Action</i>   | <i>Total Area of New Ground Disturbance (SF)</i> | <i>New Impervious Surface (SF)</i> |
|--|---|--|------------------------------------|
| <b>New Parking</b>                     |   |  |                                    |
| 2022                                   | B311 (multi-use facility) and B307 (credit union) would be demolished and turned into parking areas.  | 32,000   | 23,000                             |
| <b>B500 Renovations</b>                |   |  |                                    |
| 2023                                   | Internal renovations of B500 would occur in order to create room for a multi-use facility and potentially a new fitness center.   | 0  | 0                                  |
| <b>Medical Readiness Facility</b>      |   |  |                                    |
| 2021                                   | A new facility would be constructed west of B505. This would include a 3,400 SF warehouse.  | 18,650   | 18,650                             |
| <b>Boundary Fence</b>                  |   |  |                                    |
| 2024                                   | New boundary fencing would be installed in two other areas in order to separate the ANG property from the airport and Army property as well as enclose the buildings related to the flying mission. The current fence would be replaced and the height would increase from 8 feet to 10 feet. | 8,000 LF   | 0                                  |
| <b>B503 Renovations</b>                |   |  |                                    |
| 2023                                   | Internal renovations to B503 in order to move Wing Commander and JAG functions into this building.  | 0  | 0                                  |
| <b>GOV Parking Shelters</b>            |   |  |                                    |
| 2020                                   | Two 500-SF unheated enclosed shelters would be constructed for maintenance storage and operations vehicles. In addition, all existing asphalt would be repaved in the B402 complex and T2, T3, and grain bin would be demolished.   | 30,000   | 0                                  |
| <b>EOD BSERV Bay</b>                   |   |  |                                    |
| 2024                                   | A 15-by-100-foot wide bay would be added to the west side of B1210 for warm storage for the BSERV.  | 1,500  | 600                                |
| <b>Fire Department Crash Truck Bay</b> |   |  |                                    |
| 2025                                   | Construct a 1,500-SF bay on the south side of B430 for a second crash truck. B1206 would be demolished and 665 SF will be converted to grass.   | 2,165  | 50                                 |
| <b>Security Forces</b>                 |   |  |                                    |
| 2020                                   | This project would include internal Renovations of B1212, including adding windows.   | 0  | 0                                  |
| <b>Indoor Small Arms Range</b>         |   |  |                                    |
| 2020                                   | Construction of a 10,500-SF indoor small arms range.  | 10,500   | 10,500                             |
| <b>CATM</b>                            |   |  |                                    |
| 2020                                   | An 1,800-SF CATM facility would be added as an addition.  | 1,800  | 1,800                              |

**Table WI4.1-1. Current and Reasonably Foreseeable Actions at 115 FW Installation  
(Page 3 of 3)**

| <i>Year</i>                               | <i>Action</i>  | <i>Total Area of New Ground Disturbance (SF)</i> | <i>New Impervious Surface (SF)</i> |
|---|--|--|------------------------------------|
| <b>Off-Installation Road Pavements</b>    |  |  |                                    |
| 2023 to 2024                              | Repair roads near the front gate of the installation, including Pierstorff Street to Highway 51 and Person Road down to Anderson Avenue. | 300,000  | 0                                  |
| <b>Vehicle Maintenance Storm Drainage</b> |  |  |                                    |
| 2021                                      | Replace pavement and regrade area around B1000 and B1001 to proper grades.   | 53,000   | 0                                  |
| <b>Communications</b>                     |  |  |                                    |
| 2026                                      | Project would install underground fiber optic communications cable.  | 5,600  | 0                                  |
| <b>Small Arms Storage</b>                 |  |  |                                    |
| 2020                                      | Construct a 1,000-SF small arms storage building near the new small arms range.  | 1,000  | 1,000                              |
| <b>Base Street Lighting</b>               |  |  |                                    |
| 2026                                      | Add new street lighting on Benson and Becker Streets.  | 0  | 0                                  |

Notes: AT/FP = Anti-terrorism/Force Protection; BASH = Bird/Wildlife Aircraft Strike Hazard; BSERV = Base Support Emergency Response Vehicle; CATM = Combat Arms Training and Maintenance; EOD = Explosive Ordnance Disposal; FOD = Foreign Object Debris; GOV = Government Owned Vehicle; JAG = Judge Advocate General; LF = Linear Feet; MCCA = Master Cooperative Construction Agreement; MOGAS = Motor Gasoline; MSA = Munitions Storage Area; NEPA = National Environmental Policy Act; POL = Petroleum, Oil, and Lubricant; POV = Privately Owned Vehicle; QD = Quantity-Distance; SF = square feet/foot;

In addition to construction projects on the installation, projects listed in Table WI4.1-2 could interact with the beddown of the F-35A at the 115 FW installation:

115 FW has pursued a Letter of Agreement (LOA) with Minneapolis Center to authorize additional periods to expand into the higher altitudes and fly supersonic.

**Table WI4.1-2. Past, Present, and Reasonably Foreseeable Actions  
(Page 1 of 2)**

| <i>Proponent</i> | <i>Project Name</i>  | <i>Anticipated Year for Implementation</i> |
|------------------|--|--|
| Airport          | Construction of a new employee parking lot.  | 2018                                       |
| Airport          | Terminal modernization.  | 2019-2020                                  |
| Airport          | Replacing jetways.   | NA   |
| Airport          | Road relocation.   | 2018                                       |
| Airport          | Reconstruct Taxiway J, construct Taxiway M, and Remove Taxiway A2 and K and a portion of Taxiway C. Construct parallel taxiway to Runway 14/32. Other projects include expanding runway 9/27 and apron, reconstruct terminal access road, reconstruct west air carrier ramp, reconfigure runway 18/36. | 2019-2024                                  |
| Airport          | Construct a new corporate taxiway.   | 2020                                       |
| Airport          | Reconstruct south ramp.  | 2023                                       |
| Airport          | Private hangar – constructed by a tenant.  | 2019                                       |
| Airport          | Pavement joint replacements on runways.  | 2019                                       |

**Table WI4.1-2. Past, Present, and Reasonably Foreseeable Actions  
(Page 2 of 2)**

| <i>Proponent</i>                       | <i>Project Name</i>  | <i>Anticipated Year for Implementation</i> |
|--|--|--|
| Airport                                | Solar installation – private developer.  | 2021                                       |
| Wisconsin Department of Transportation | U.S. 51, Stoughton Road Corridor Project – This project will address safety concerns, reduce congestion, and improve bicycle and pedestrian accommodations within the corridor. Alternatives include adding travel lanes, improving intersection spacing, and consolidating access points. | 2020 or later                              |
| Army National Guard                    | Construct New Aircraft Maintenance Hanger.   | NA   |

**WI4.2 ANALYSIS OF CUMULATIVE EFFECTS**

The following analysis considers how the impacts of these other actions might affect or be affected by those resulting from the Proposed Action at the 115 FW installation and whether such a relationship would result in potentially additive impacts. Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the resources, quantifiable data are not available and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made based on an understanding of the nature of the project regarding cumulative impacts related to this EIS.

Past implementation of force structure changes at the 115 FW are integrated into the affected environment and analyzed under the No Action Alternative. Additionally, all aircraft operations are incorporated in the relevant resource categories for the proposed F-35A beddown.

**WI4.2.1 Noise**

Under the Proposed Action Alternative, 1,320 more acres off the airport property would be exposed to noise levels equal to or greater than 65 dB DNL, which would be a significant impact. The addition of those projects listed in Table WI4.1-1, and on the list of non-installation-related projects, would not be expected to substantially add to the noise impacts; however, given that impacts from the Proposed Action would be significant, cumulative impacts would similarly be significant. All of the non-installation projects are short-term construction projects and would occur in the airport environs or in areas identified as industrial. Noise associated with the construction projects would not affect sensitive receptors, disturb sleep, interrupt speech, or cause classroom disruptions in the long term. Noise from implementation of these actions would be short-term and localized, and would not be expected to increase the overall DNL noise contours. See Section WI4.2.5 for discussion of land use compatibilities.

If the LOA described above is approved, noise generated by aircraft (other than the F-35A), including sonic booms, could change noise levels in SUA when considered along with the F-35A

beddown. However, there would be no changes in the number of flights or type of aircraft operating in the airspace if the LOA were approved. Fighter jet-generated noise would continue to dominate sound levels in the training airspace. Cumulative impacts that are anticipated when considered with the Proposed Action for the 115 FW installation would not be significant.

#### **WI4.2.2 Airspace**

At the installation, airfield airspace operations would not be impacted by any reasonably foreseeable actions; therefore, negligible effects would occur when considered along with the F-35A beddown. Cumulatively, aircraft would conduct more supersonic operations if the LOA is signed. However, this is consistent with designated airspace use; therefore, it is not anticipated that this action, along with the F-35A beddown, would create more than minimal cumulative impacts. Military aircraft would continue to operate under existing flight rules designed to separate aircraft activities. ANG and FAA positive control and management would continue to guide operations within the airspace. The existing number of operations would increase; however, the magnitude of impacts would not be significant and would be the same as those described in Section WI3.2.2.2.

#### **WI4.2.3 Air Quality**

Based on the ACAM calculations, the emissions associated with construction activities described in Table WI4.1-1 would not be significant. All of the criteria pollutant emissions are below the comparative indicator values. Based on information on these projects, and in combination with the decrease in annual criteria pollutant emissions anticipated from the proposed F-35A beddown, it is unlikely that significant impacts to air quality, such as violation of a NAAQS, would result. It is more likely that the overall level of criteria pollutant emissions would increase temporarily during construction periods, but at a level that would generate few, if any, impacts.

GHG emissions would modestly increase due to implementing the F-35A beddown, as identified in WI3.3.1.2. All of the projects listed in Table WI4.1-1 and in the bulleted text would generate GHGs and most involve construction, which is of temporary duration. Some long-term benefits may offset the GHGs emitted during construction (for example, energy-efficient buildings or solar generation). While quantification of GHG emissions for all of these projects is not possible, it can generally be assumed that an overall small increase in GHG emissions, compared to the current levels, would occur, primarily as a result of the beddown, which would be an ongoing activity compared to construction projects that have limited timeframes.

Climate change, by definition, is a cumulative impact that results from the incremental addition of GHG emissions from millions of individual sources that collectively have a large impact on a

global scale. Impacts of climate change on the region will include severe rain events and flooding, which could produce negative impacts on mission activities and installation infrastructure.

#### **WI4.2.4 Safety**

Providing new and renovated facilities for the 115 FW installation that support operational requirements of the F-35A, and are properly sited with adequate space and a modernized supporting infrastructure, would generally enhance ground and flight safety during required operations, training, maintenance and support procedures, security functions, and other activities conducted by the 115 FW. Proposed renovation and infrastructure improvement projects listed in Table WI4.1-1 would not impact aircraft take-off and landings or penetrate any RPZs. New building construction is not proposed within RPZs; therefore, construction activity would not result in any greater safety risk or obstructions to navigation. While there are some planned construction projects within the proposed QD arcs, per Air Force Manual 91-201, *Explosive Safety Standards*, all PTRDs and IBDs meet specified NEWQD criteria. No explosives would be handled during construction or demolition activities. Therefore, no additional risk would be expected as a result of implementation of this alternative. AT/FP have also been addressed in all facility construction projects. The fire and crash response capability currently provided by the 115 FW installation is sufficient to meet all requirements. Risk of a catastrophic event occurring during construction activities under this alternative or those activities described in Table WI4.1-1 is considered low, and strict adherence to all applicable occupational safety requirements further minimize the relatively low risk associated with described construction activities. Cumulative impacts to ground or flight safety would be negligible at the airfield. Within the SUA, ANG and FAA positive control and management would continue to ensure safe operations within the airspace. In summary, implementing the Proposed Action at the 115 FW installation would not result in significant cumulative airspace or airfield safety risks when considered with past, present, and reasonably foreseeable future actions.

#### **WI4.2.5 Land Use**

Under the Proposed Action at the 115 FW installation, acreage off-base property experiencing noise levels greater than 65 dB DNL would increase by approximately 1,320 acres, which would be a significant impact. As mentioned in Section WI4.2.1, construction projects are inside the installation boundaries and would introduce short-term noise increases that would not generate noise levels to cumulatively affect or change land use compatibilities. However, given that impacts to land use from the Proposed Action would be significant, cumulative impacts would similarly be considered significant.

#### **WI4.2.6 Socioeconomics**

Economic activity associated with proposed construction activities described as a component of this alternative and those shown in Table WI4.1-1, such as employment and materials purchasing, would provide short-term economic benefits to the local economy. Additionally, there would be a permanent increase in up to 64 personnel positions. However, short-term cumulative beneficial impacts resulting from construction payrolls and materials purchased as a result of implementation of the Proposed Action Alternative and those projects listed in Table WI4.1-1 would not be significant on a regional scale.

#### **WI4.2.7 Environmental Justice and the Protection of Children**

None of the projects listed in Table WI4.1-1 would be expected to impact environmental justice communities or children individually. Although the projects listed in Table WI4.1-1 would not be expected to impact residential populations, including minority and low-income populations or children, impacts as a result of the Proposed Action would be significant. Therefore, cumulative impacts to the health or safety of environmental justice populations or children would be significant.

#### **WI4.2.8 Infrastructure**

For the purposes of this analysis, infrastructure includes potable, waste, and storm water; electrical and natural gas systems; solid waste management; and transportation. Under the Proposed Action at the 115 FW installation, short- and long-term demand for all services would increase by a minor degree when considered regionally. The Proposed Action and other projects would increase demand for potable water, increase production of wastewater, and create more impervious surfaces to increase stormwater runoff. However, cumulative effects are anticipated to be minimal because there is current and long-term capacity to meet increased demand for drinking water and disposal of wastewater. For stormwater, BMPs such as silt fencing, vegetation management, and ditching would minimize erosion and sedimentation during the short-term construction phases; retention and detention pond systems would avoid excessive runoff due to increases in impervious surfaces in the long term.

Demand for electricity and natural gas would be expected to increase in the short-term due to construction activities and in the long term due to increases in personnel. In the short-term, existing energy systems have the ability to meet increased demand. In the long term, there is capacity to meet the demands of the minor increase in personnel; however, a solar generation plant is planned in the near future and could reduce electricity demand from the local energy service providers. Further, any new facilities and additions associated with these projects would incorporate Leadership in Energy and Environmental Design and sustainable development

concepts to achieve optimum resource efficiency, sustainability, and energy conservation when compared to facilities currently in place.

Under the Proposed Action at the 115 FW installation and reasonably foreseeable future projects, it is anticipated that there would be both short- and long-term increases in solid waste generation. During demolition and construction phases, all materials would be disposed in permitted facilities, which have the capacity to accept these materials. In the long term, solid waste generated by the regionally minor increase in personnel could be handled by existing solid waste management systems.

In terms of transportation, the local traffic network has the ability to meet the short-term increases in traffic during construction activities from the Proposed Action and reasonably foreseeable future projects. In the long term, the transportation network would be able to meet the needs of the minor increase in personnel. In summary, cumulative impacts to infrastructure due to the Proposed Action at the 115 FW installation and reasonably foreseeable future projects would not be significant.

#### **WI4.2.9 Earth Resources**

Total acreage disturbed by the F-35A beddown would be up to 212,883 SF (4.9 acres) of temporary soil disturbance, including up to 71,883 SF (1.7 acres) of new impervious surface such as roofs and paved areas. New construction associated with projects listed in Table 4.1-1 would result in up to 1,094,330 SF (25.1 acres) of new construction footprint, including up to 50,600 SF (1.2 acres) of new impervious surfaces. All proposed construction is within the footprint of the developed 115 FW installation. As such, minimal impacts to geology or topography are expected under the Proposed Action at the 115 FW installation.

The CWA considers stormwater from a construction site as a point source of pollution regulated by the NPDES permit. Therefore, those projects described in Table WI4.1-1 larger than 1 acre are required to have a site-specific and detailed SWPPP that coordinates the timing of soil disturbing activities with the installation of soil erosion and runoff controls in an effort to reduce the impacts to the local watershed; this is an effective way of controlling erosion while soil is exposed and subject to construction activity. Implementation of standard construction practices would be used to limit or eliminate soil movement, stabilize erosion, and control sedimentation. These standard construction practices would include the use of: velocity dissipation devices; well-maintained silt fences; minimizing surficial area disturbed; stabilization of cut/fill slopes; minimization of earth-moving activities during wet weather; and use of temporary detention ponds. Following construction, disturbed areas not covered with impervious surfaces would be reestablished with appropriate vegetation and managed to minimize future erosion potential. Given the use of

engineering practices that would minimize potential erosion, cumulative impacts to earth resources would be expected to be minor.

The FPPA is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. However, none of the projects (neither the Proposed Action at the 115 FW installation, nor the present/reasonably foreseeable projects) are proposed on lands subject to the FPPA. In summary, implementing the Proposed Action at Madison, along with other anticipated projects, would not result in significant cumulative impacts to earth resources.

#### **WI4.2.10 Water Resources**

***Surface Water.*** Those projects that exceed 1 acre in size under the Proposed Action at the 115 FW installation or other projects, would require coverage under Wisconsin's Construction General Permit. In compliance with coverage under this permit, a Construction BMP Plan (CBMPP) would be implemented and prepared to maintain effective erosion and sediment controls. The CBMPP includes the erosion, sediment, and pollution controls used, identifies periodic compliance inspections, and prescribes maintenance measures for the controls identified, throughout the life of the construction projects. Through compliance with Wisconsin's Construction General Permit, cumulative effects would not be significant when considering the Proposed Action at the 115 FW installation and other projects listed in Table WI4.1-1.

***Groundwater.*** Construction and demolition impacts to groundwater under the Proposed Action at the 115 FW installation, when considered with present and reasonably foreseeable projects, would not extend below ground surface to a depth that would affect the underlying aquifer. Although fuel or other chemicals could be spilled during construction, demolition, and renovation activities, implementation of the required Spill Prevention Control and Countermeasures Plan and immediate cleanup of any spills would prevent any infiltration into groundwater resources. Therefore, cumulative impacts to groundwater resources would not be significant under this alternative.

***Stormwater.*** Construction and demolition activities associated with the Proposed Action at the 115 FW installation, when considered with present and reasonably foreseeable projects, could result in a temporary, cumulative increase in surface water turbidity; however, BMPs associated with the SWPPP are designed to minimize these impacts. These BMPs include practices such as wetting of soils and installation of silt fencing, as well as adherence to federal and state erosion and stormwater management practices, to contain soil and runoff on the project areas. All other present and foreseeable projects would be required to follow the same state and federal guidelines for construction permitting to ensure water quality was protected from possible erosion and sedimentation. This includes implementing project-specific BMPs to minimize impacts to water quality and using stormwater engineering controls (e.g., stormwater runoff control systems

directing water off the developed areas) to decrease future impacts to water quality following construction. The use of spill prevention plans and SWPPPs during construction would minimize impacts to water quality.

Additionally, in accordance with UFC 3-210-10, *Low Impact Development* (as amended, 2016) and EISA Section 438, any temporary increase in surface water runoff as a result of the proposed construction is required to be attenuated through the use of temporary and/or permanent drainage management features. Under these requirements, federal facility projects with over 5,000 SF of new impervious surface must maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow. This would apply to several of the construction projects proposed under this alternative and as such would minimize impacts to stormwater runoff. Cumulative impacts to stormwater would not be significant.

***Floodplains.*** None of the Proposed Action Alternative projects or other projects lie within the 100-year floodplain. Therefore, cumulative impacts to floodplains would not be significant when the Proposed Action at the 115 FW installation is considered along with present and reasonably foreseeable projects.

***Wetlands.*** None of the construction activities are associated with wetlands. Therefore, cumulative impacts to wetlands would not be significant when the Proposed Action at the 115 FW installation is considered along with present and reasonably foreseeable projects.

#### **WI4.2.11 Biological Resources**

Noise levels would be expected to increase from the affected environment with the conversion to the F-35A aircraft. However, these noise levels from operations and construction are not expected to impact wildlife in the area because they are likely accustomed to elevated noise levels associated with current aircraft and military operations. The opportunity for bird-aircraft strikes to occur, including those with migratory birds, would remain the same as current levels. No threatened and endangered or special status species are currently known to reside on the 115 FW installation or within the land area under the projected noise contours. Construction-related impacts to the vegetation at the installation and in the vicinity of projects identified in Table WI4.1-1 would be minor due to the lack of sensitive vegetation in the project areas. In general, construction activities at the 115 FW installation and at the Dane County Airport would primarily occur on sites that are already highly altered. These impacts would include the removal of some vegetation and associated wildlife habitat. However, wildlife that use these areas are typical of urban and suburban areas. No impacts to any federally or state threatened, endangered, or special status species is expected as a result of the Proposed Action at the 115 FW installation; therefore, cumulative impacts to biological resources would not be significant.

#### **WI4.2.12 Cultural Resources**

The areas of proposed construction are considered to have no to low probability of containing archaeological resources. In the event of an inadvertent discovery during ground-disturbing operations, work would cease immediately, the area would be secured, and the environmental manager would be contacted. The environmental manager would follow ANG Inadvertent Discovery protocol. None of the facilities listed for renovation and/or modification under the Proposed Action at the 115 FW installation or those listed in Table WI4.1-1 are eligible for listing in the NRHP. No traditional cultural resources have been identified on the installation or in areas proposed for present and future development. Therefore, cumulative impacts to cultural resources would not be significant under the Proposed Action at the 115 FW installation.

#### **WI4.2.13 Hazardous Materials and Wastes, and Other Contaminants**

The types of hazardous materials needed for maintenance and operation of the F-35A would be expected to remain similar to those currently used for maintenance and operation of the F-16 fleet. Under this alternative, the total number of airfield operations would increase approximately 3 percent; therefore, throughput of petroleum substances and hazardous waste streams would be expected to increase. Additionally, it is expected that short-term increases in the quantity of fuel used during construction activities for this action and the present/reasonably foreseeable project would occur. Hazardous waste generation (e.g., used oil, used filters, oily rags, etc.) would continue to be managed in accordance with the installation's Hazardous Waste Management Plan and all applicable federal, state, and local regulations. The pollution prevention practices would continue to be managed in accordance with the Hazardous Waste Management Plan and would include any construction-related materials or waste associated with aircraft operations. Additionally, no changes to the 115 FW installation's SQG status would be expected to occur due to the no net change in hazardous waste generation from aircraft operations. Any structures proposed for demolition, addition, or retrofit would be inspected for ACM and LBP according to established procedures prior to any renovation or demolition activities. Cumulative impacts as a result of the Proposed Action at the 115 FW installation and present/reasonably foreseeable projects would not be significant.

#### **WI4.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

NEPA CEQ regulations require environmental analyses under an EIS to identify "...any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action should it be implemented" (40 CFR Section 1502.16). Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a

reasonable time frame. Building construction material such as gravel and gasoline usage for construction equipment would constitute the consumption of nonrenewable resources. Irretrievable resource commitments also involve the loss in value of an affected resource that cannot be restored as a result of the action.

Training operations would involve consumption of nonrenewable resources, such as gasoline used in vehicles and jet fuel used in aircraft. Use of training ordnance would involve commitment of chemicals and other materials. None of these activities would be expected to substantially affect environmental resources because the relative consumption of these materials is expected to change negligibly.

The primary irretrievable impacts of implementation of the Proposed Action at the 115 FW installation or for any of the alternatives would involve the use of energy, labor, materials and funds, and the conversion of some lands from an undeveloped condition through the construction of buildings and facilities on the installation. Irretrievable impacts would occur as a result of construction, facility operation, and maintenance activities. Direct losses of biological productivity and the use of natural resources from these impacts would be inconsequential.

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# 124 FW - BOISE, ID





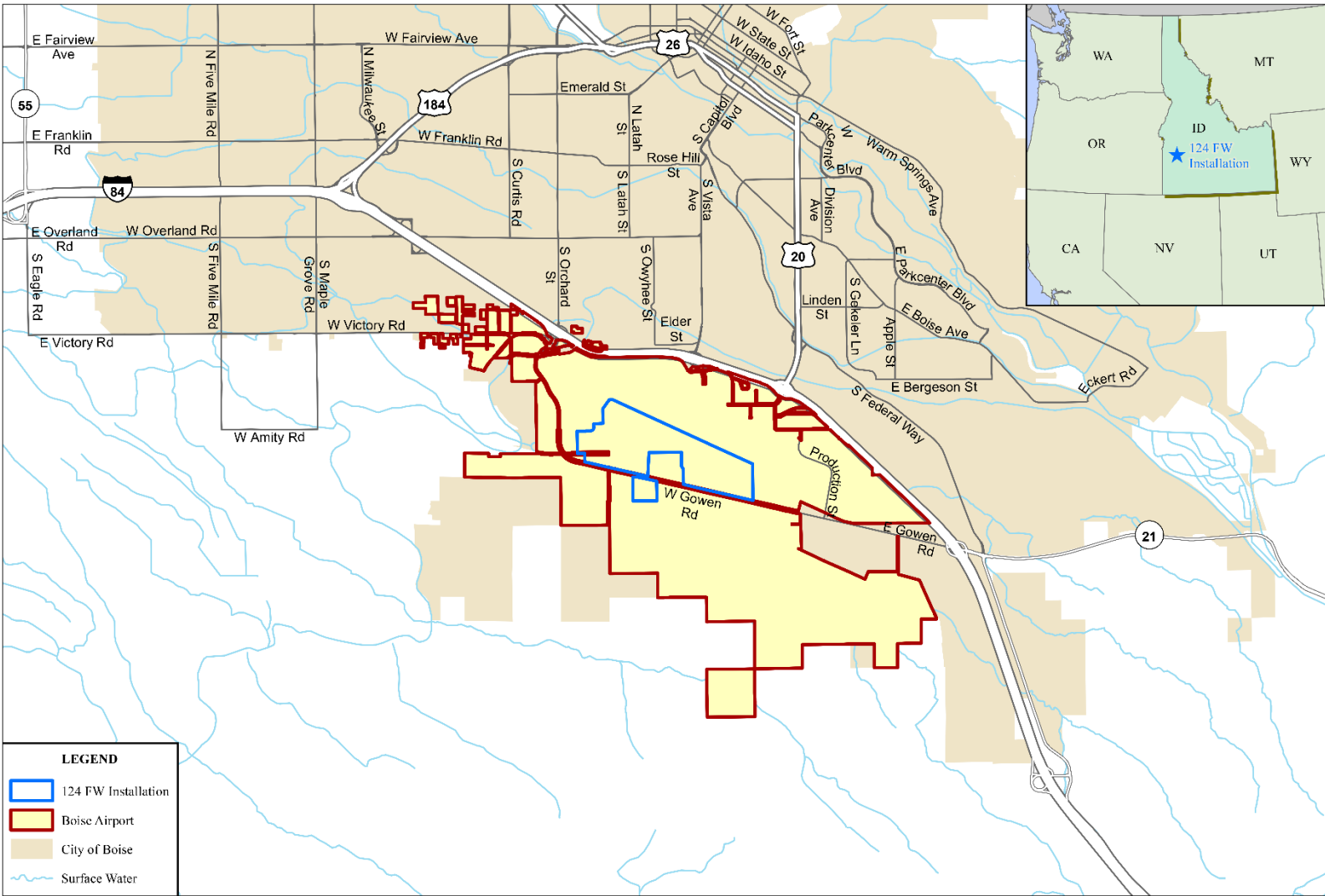
## **ID1.0 124<sup>TH</sup> FIGHTER WING INSTALLATION OVERVIEW**

This section presents an overview of the 124<sup>th</sup> Fighter Wing (124 FW), Idaho; the specifics of the Proposed Action as it relates to both the airfield and the associated airspace; construction and facility modifications required at the installation; and changes to personnel that would result if the F-35A was beddown at the 124 FW installation.

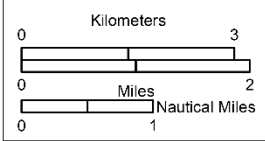
The 124 FW of the Idaho Air National Guard (IDANG) is located in the southern half of the Boise Airport (also known as Gowen Field) in Idaho (Figure ID1.0-1) on property owned by the airport that is leased by the federal government and then licensed back to the state of Idaho for use by the IDANG. The airport is about 3 miles south of downtown Boise in Ada County, in southwestern Idaho. The 124 FW installation comprises approximately 354 acres in the southern portion of the active areas of the Boise Airport, but is in the center of the Boise Airport property.

The 124 FW's federal mission is to maintain well-trained, well-equipped units available for prompt mobilization during war and provide assistance during national emergencies (such as natural disasters or civil disturbances). During peacetime, they are assigned to Air Combat Command (ACC) to carry out missions compatible with training, mobilization readiness, and humanitarian and contingency operations. The 124 FW also maintains a state mission of protecting life and property and preserving peace, order, and public safety. These missions are accomplished through emergency relief support during natural disasters such as floods; search and rescue operations; support to civil defense authorities; and maintenance of vital public services (IDANG 2017). The 124 FW currently operates 18 A-10 aircraft.

In the sections that follow, ID2.0 presents the installation-specific description of the Proposed Action at the 124 FW installation. Section ID3.0 addresses the affected environment and environmental consequences that could result if the 124 FW installation was selected as one of the F-35A beddown locations. Refer to Chapter 3 for a complete and detailed definition of resources and the methodology applied to identify potential impacts. Section ID4.0 identifies other, unrelated past, present, and reasonably foreseeable future actions in the affected environment and evaluates whether these actions would cause cumulatively significant effects when considered along with the F-35A beddown actions. This section also represents the irreversible and irretrievable resources that would be committed if the beddown was implemented at the 124 FW installation.



004-081418



**Figure ID1.0-1.**  
**Location of the 124 FW Installation**



## **ID2.0 124<sup>TH</sup> FIGHTER WING ALTERNATIVE**

### **ID2.1 124<sup>TH</sup> FIGHTER WING INSTALLATION**

Four elements of this alternative have the potential to affect the 124 FW installation: (1) conversion from A-10s to F-35As, (2) operations conducted by F-35A aircraft, (3) construction and modification projects to support beddown of the F-35A, and (4) personnel changes to meet F-35A requirements. Each is explained in more detail below.

#### **ID2.1.1 Aircraft Conversion**

Under this alternative, 18 F-35A aircraft would be based at the 124 FW installation. The beddown is anticipated to begin in 2023 with delivery of the first F-35A aircraft, and would be complete by 2024 when the full complement of 18 F-35As would be at the base. The F-35A aircraft would replace the 18 A-10s currently based there. Drawdown of the 124 FW's A-10s would be complete approximately 6 months before the arrival of the F-35A.

#### **ID2.1.2 Airfield Operations**

The 124 FW is an integral component of the Combat Air Forces (CAF). The CAF defends the homeland of the United States (U.S.) as well as deploys forces worldwide to meet threats to ensure the security of the U.S. To fulfill this role, the 124 FW must train as it would fight.

Under this alternative, the 124 FW would schedule its flying missions similar to the way it schedules the current fleet of A-10 aircraft, with one mission in the morning and one mission in the afternoon. A flying mission for the A-10s contains multiple aircraft or individual sorties that normally depart and arrive at the airport within 15 minutes of each other. The scheduling of F-35A aircraft would be expected to be similar to that of the A-10s.

Under this alternative, the National Guard Bureau (NGB) anticipates that by 2024 all 18 F-35A aircraft would be flying up to 7,274 operations per year at the airfield, compared to 6,152 annual operations currently with the A-10 (Table ID2.1-1). In total, Boise Airport currently supports about 143,665 operations annually (including the military operations), with 82 percent consisting of commercial and civilian flights occurring 365 days per year. Based on proposed requirements and deployment patterns under CAF, the F-35A operational aircraft would fly some operations during deployments at other locations for exercises, or in preparation for deployments. During such periods, home station flying operations would be reduced accordingly. Some of the home station missions could involve inert ordnance delivery training (within the scope of existing National Environmental Policy Act [NEPA] documentation) at approved ranges.

**Table ID2.1-1. Current and Proposed Annual Airfield Operations at Boise Airport**

|                            | <i>Total Current Operations</i> | <i>Proposed F-35A Operations</i> |
|----------------------------|---------------------------------|----------------------------------|
| Based A-10                 | 6,152                           | -                                |
| Proposed F-35A             | -                               | 7,274                            |
| Other Aircraft             | 137,513                         | 137,513                          |
| Total Airfield Operations  | 143,665                         | 144,787                          |
| Percent Change at airfield | N/A                             | +1%                              |

Note: N/A = not applicable.

Under this alternative, total 124 FW annual airfield operations would increase from 6,152 to 7,274, or an 18 percent increase in 124 FW annual operations. This change would represent a 1 percent increase in total aircraft operations at the airfield.

The F-35As would employ similar departure and landing flight tracks as currently used by the A-10s. However, due to differences in performance, the flight profile and flight paths for the F-35A would vary somewhat from those used by the A-10s. The 124 FW A-10s currently do not use afterburner at the airfield, as the A-10 is not equipped with an afterburner. NGB anticipates that the F-35A may use afterburner for take-offs no more than 5 percent of the time. F-35A operations would adhere to existing restrictions, avoidance procedures, and the quiet-hours program at Boise Airport, known as course rules. The A-10s at Boise Airport currently fly about 2 percent of the time between the hours of 10 p.m. and 7 a.m. (environmental night). At this percentage, the A-10s annually fly about 50 operations during environmental nighttime hours, with the majority of the operations after 10 p.m. being associated with arrivals back to the installation. Although overseas deployments or other departures may occur during the environmental night, but they would be unscheduled and infrequent. In contrast, the civilian and commercial aircraft perform approximately 11 percent of their operations after 10 p.m., or about 12,585 operations per year. The 124 FW would plan to fly a schedule similar to what they currently do with regard to environmental night, although contingencies such as weather or special combat mission training may result in rare unplanned operations during this period. Typically, all required “night training” operations would be achieved prior to 10 p.m.

### **ID2.1.3 Construction**

To support the proposed F-35A operations, additional infrastructure and facilities would be required at the 124 FW installation (Table ID2.1-2). Fourteen infrastructure improvement projects would be required to support the F-35A beddown. Some of these construction projects also have several options that could be implemented. Table ID2.1-2 describes these projects, the total affected area in square feet (SF), and new impervious surfaces introduced. Figure ID2.1-1 identifies the construction locations for each project within the installation. It is anticipated that construction would occur between 2020 and 2023.

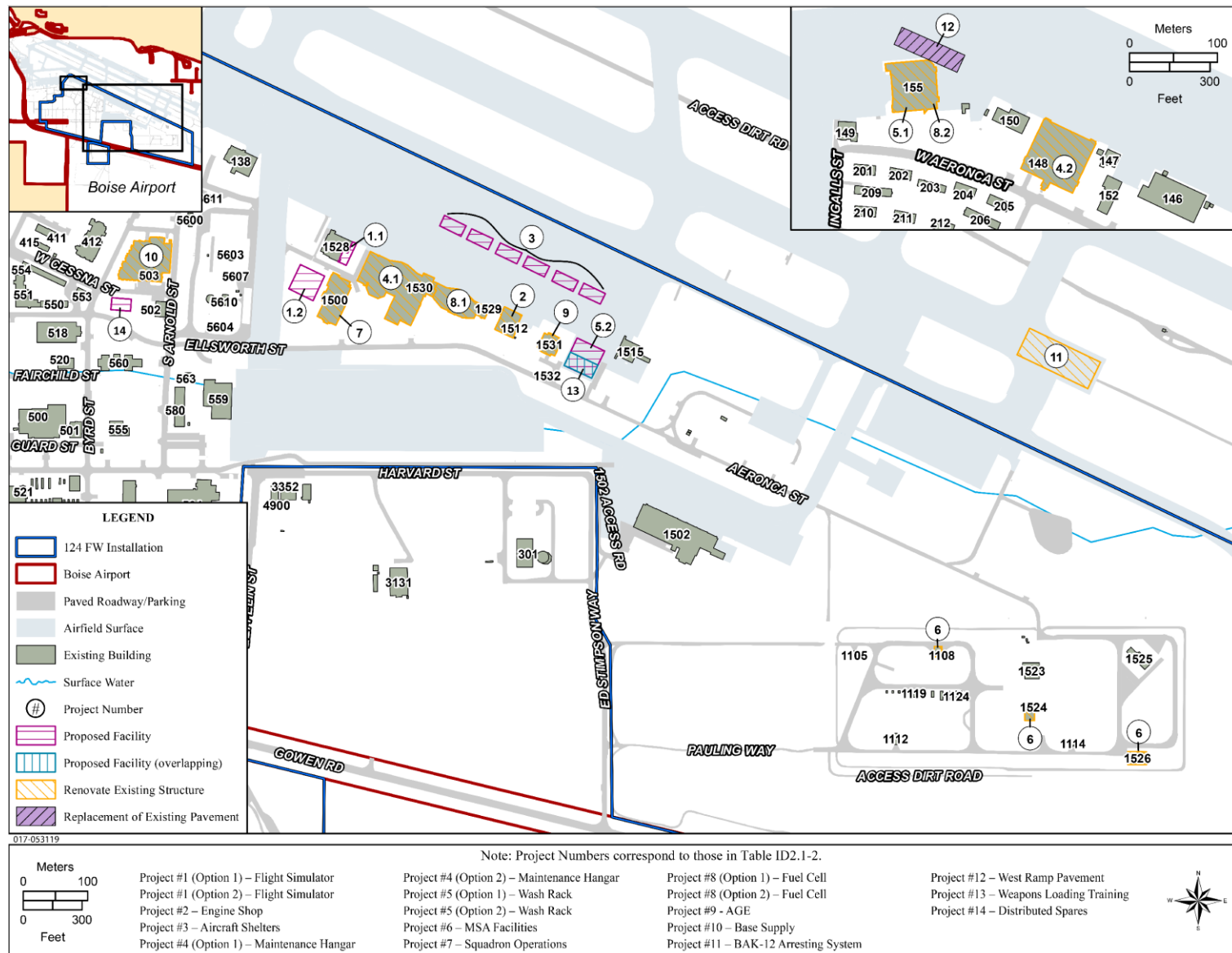
**Table ID2.1-2. Proposed Construction and Modifications for the 124 FW Installation  
(Page 1 of 2)**

| <i>Action</i>   | <i>Total Area of New Ground Disturbance (SF)</i> | <i>New Impervious Surface (SF)</i> |
|---|--|------------------------------------|
| <b>Project #1 (Option 1) – Flight Simulator</b>   |  |                                    |
| Add 4,000 SF to the east side of B1528 to accommodate an F-35A flight simulator.  | 4,000  | 4,000                              |
| <b>Project #1 (Option 2) – Flight Simulator</b>   |  |                                    |
| Construct a new 19,000 SF F-35A simulator building west of B1500.   | 19,000   | 19,000                             |
| <b>Project #2 – Engine Shop</b>   |  |                                    |
| Undertake interior modifications to B1512 to support new crane (6 ton), power upgrades, and removal of fencing on east side curbing to accommodate a drive-through approach.  | 0  | 0                                  |
| <b>Project #3 – Aircraft Shelters</b>   |  |                                    |
| Add six shelters (holding two aircraft each) for the F-35A to the six aircraft shelters that are being added for the A-10 aircraft.   | 44,000   | 0                                  |
| <b>Project #4 (Option 1) – Maintenance Hangar</b>   |  |                                    |
| Undertake interior renovations in B1530 to upgrade the hangar from C-130 to F-35A functions, to include increased power, battery storage, converting space for administration offices, and adding grounding points.   | 0  | 0                                  |
| <b>Project #4 (Option 2) – Maintenance Hangar</b>   |  |                                    |
| Conduct interior renovations in B148, to include increased power, battery storage, converting space for administration offices, and adding grounding points.  | 0  | 0                                  |
| <b>Project #5 (Option 1) – Wash Rack</b>  |  |                                    |
| This project would include the upgrade of the current wash rack in B155 for LPS.  | 30,732   | 0                                  |
| <b>Project #5 (Option 2) – Wash Rack</b>  |  |                                    |
| This project would include the construction of a new wash rack with a sunshade on the vacant pad east of B1531.   | 24,000   | 0                                  |
| <b>Project #6 – MSA Facilities</b>  |  |                                    |
| This project includes interior renovations to the following MSA Facilities: <ul style="list-style-type: none"> <li>• B1108 – LPS, IPS, and power upgrades;</li> <li>• B1524 – install canopy over the MAC pad, grounding, and lights; and</li> <li>• B1526 – change the function from inert storage/training to M&amp;I facility, which requires walls, power, grounding, security, and crane.</li> </ul> | 0  | 0                                  |
| <b>Project #7 – Squadron Operations</b>   |  |                                    |
| Undertake interior renovations in B1500 to support the addition of the ALIS server, upgrade HVAC dedicated to ALIS, reconfigure administration space for ALIS, add heat detection system in server room, and a dedicated electrical panel for ALIS.   | 0  | 0                                  |
| <b>Project #8 (Option 1) – Fuel Cell</b>  |  |                                    |
| Conduct interior renovations in B1529 to increase power and add grounding to support the F-35A airframe.  | 0  | 0                                  |
| <b>Project #8 (Option 2) – Fuel Cell</b>  |  |                                    |
| Conduct interior renovations in B155 to increase power, add grounding, and replace floor.   | 0  | 0                                  |
| <b>Project #9 - AGE</b>   |  |                                    |
| Conduct interior renovations in B1531 to exhaust and ventilation systems.   | 0  | 0                                  |
| <b>Project #10 – Base Supply</b>  |  |                                    |
| Undertake exterior modifications to B503 to widen door and modify loading dock and scale.   | 0  | 0                                  |

**Table ID2.1-2. Proposed Construction and Modifications for the 124 FW Installation  
(Page 2 of 2)**

| <i>Action</i>  | <i>Total Area of<br/>New Ground<br/>Disturbance (SF)</i> | <i>New<br/>Impervious<br/>Surface (SF)</i> |
|--|--|--|
| <b>Project #11 – BAK-12 Arresting System</b>   |  |  |
| Adding a BAK-12 arresting system to both ends of south runway. The south runway would have two concrete 400-foot by 150-foot sections installed to support the arresting system at each end of the runway. | 120,000  | 0  |
| <b>Project #12 – West Ramp Pavement</b>  |  |  |
| 18,000 SF of new pavement work (replacement) would occur north of the fire department (B138) (west ramp).  | 18,000   | 0  |
| <b>Project #13 – Weapons Loading Training</b>  |  |  |
| This project would include the construction of a weapons loading training facility on vacant pad east of B1531.  | 11,500   | 0  |
| <b>Project #14 – Distributed Spares</b>  |  |  |
| Construction of a new 6,000 SF facility.   | 6,000  | 6,000                                      |

*Legend:* ALIS = Autonomic Logistics Information System; B = Building; BAK = Barrier Arresting Kit; HVAC = heating, ventilation, and air conditioning; IPS = Intrusion Protection System; LPS = Lightning Protection System; M&I = Maintenance and Inspection; MAC = Munitions Assembly Conveyor; MSA = Munitions Storage Area; SF = square feet.



**Figure ID2.1-1.**  
**124 FW Installation Construction and Modifications**

#### **ID2.1.4 Personnel**

The 124 FW supports 301 federal technician civilian employees, 288 Active Guard Reserve (AGR), and 756 traditional guardsmen (IDANG 2017). It is expected that the overall number of Air National Guard (ANG) personnel at the 124 FW installation would remain effectively static following conversion to the F-35A. There may be some retraining that occurs, but overall, the number of ANG personnel is expected to remain approximately the same as it currently is at the 124 FW installation. However, as a component of this proposal, a U.S. Air Force (USAF) Active Duty Associate Unit would be installed at the two selected alternatives, which would be comprised of up to 5 pilots, 40 maintenance staff, and approximately 5 other support staff. For more information on the USAF Active Duty Associate Unit, see Section 2.2.1.4. In addition, up to approximately 35 new personnel would be added at each installation to provide security and contract oversight for Full Mission Simulator (FMS) and the Autonomic Logistics Information System (ALIS) (broken down approximately by 7 field service, 15 ALIS support, 10 training, and 3 security personnel).

#### **ID2.2 124<sup>TH</sup> FIGHTER WING: TRAINING AIRSPACE AND RANGES**

The 124 FW primarily uses Mountain Home Range Complex (MHRC), which includes Military Operations Areas (MOAs), overlying Air Traffic Control Assigned Airspace (ATCAAs), and Restricted Areas. Table ID2.2-1 lists the airspace units, with their altitude structures (floors and ceilings) noted. Figure ID2.2-1 illustrates the airspace and the altitude structure used by the 124 FW. Section 2.2.2.1 provides definitions of these airspace units. The beddown action would not require changes in Special Use Airspace (SUA) attributes, volume, or proximity and the type of ordnance employed at the ranges would remain the same or decrease. With the exception of the Saddle A/B MOAs/ATCAAs and the Saddle Corridor, all MOAs/ATCAAs identified in Table ID2.2-1 are approved for use of chaff and flares, with restrictions. Neither chaff nor flares are authorized over the Duck Valley Indian Reservation, and flares are not authorized over inhabited areas or manned sites.

##### **ID2.2.1 Airspace Use**

As the replacement for fighter aircraft, the F-35As would conduct missions and training programs necessary to fulfill its multi-role responsibilities (refer to Chapter 2). All F-35A flight activities would take place in existing airspace, so no airspace modifications would be required. The NGB expects that the F-35A would operate in the airspace currently used by the 124 FW, with approximately the same number of operations in each airspace unit, but may operate somewhat differently than the A-10s now using that airspace. These differences would derive from enhanced capabilities and changed requirements for the F-35A.

**Table ID2.2-1. 124 FW Military Training Airspace**

|                                      | <i>Airspace</i>                 | <i>Floor (feet MSL)<sup>1</sup></i>  | <i>Ceiling (feet MSL)<sup>1</sup></i> |
|--------------------------------------|---------------------------------|--------------------------------------|---------------------------------------|
| Jarbidge/Saylor Creek/Juniper Buttes | Jarbidge North MOA              | 100 AGL                              | To BNI 18,000                         |
| Jarbidge/Saylor Creek/Juniper Buttes | Jarbidge South MOA <sup>2</sup> | 3,000 AGL or 10,000 MSL <sup>3</sup> | To BNI 18,000                         |
| Jarbidge/Saylor Creek/Juniper Buttes | Jarbidge ATCAA <sup>2</sup>     | 18,000                               | 50,000 <sup>4</sup>                   |
| Jarbidge/Saylor Creek/Juniper Buttes | R-3202 Low                      | Surface                              | To BNI 18,000                         |
| Jarbidge/Saylor Creek/Juniper Buttes | R-3202 High                     | 18,000                               | 29,000                                |
| Jarbidge/Saylor Creek/Juniper Buttes | R-3202 ATCAA                    | 30,000                               | 50,000 <sup>4</sup>                   |
| Jarbidge/Saylor Creek/Juniper Buttes | R-3204 A                        | Surface                              | 100 AGL                               |
| Jarbidge/Saylor Creek/Juniper Buttes | R-3204 B                        | 100 AGL                              | To BNI 18,000                         |
| Jarbidge/Saylor Creek/Juniper Buttes | R-3204 C                        | 18,000                               | 29,000                                |
| Jarbidge/Saylor Creek/Juniper Buttes | R-3204 ATCAA                    | 30,000                               | 50,000 <sup>4</sup>                   |
| Owyhee                               | Owyhee North MOA <sup>2</sup>   | 100 AGL                              | To BNI 18,000                         |
| Owyhee                               | Owyhee South MOA <sup>2</sup>   | 3,000 AGL or 10,000 MSL <sup>3</sup> | To BNI 18,000                         |
| Owyhee                               | Owyhee ATCAA <sup>1</sup>       | 18,000                               | 50,000                                |
| Saddle                               | Saddle A MOA                    | 10,000                               | To BNI 18,000                         |
| Saddle                               | Saddle B MOA                    | 8,000                                | To BNI 18,000                         |
| Saddle                               | Saddle ATCAA                    | 18,000                               | 50,000 <sup>4</sup>                   |
| Saddle                               | Saddle Corridor ATCAA           | 18,000                               | 22,000                                |
| Paradise North                       | Paradise North MOA              | 3,000 AGL or 10,000 MSL <sup>3</sup> | To BNI 18,000                         |
| Paradise South                       | Paradise South MOA              | 3,000 AGL or 10,000 MSL <sup>3</sup> | To BNI 18,000                         |
| Paradise South                       | Paradise ATCAA <sup>2</sup>     | 18,000                               | 50,000 <sup>4</sup>                   |

*Notes:* <sup>1</sup>MSL is the elevation (on the ground) or altitude (in the air) of an object, relative to the average sea level. The elevation of a mountain, for example, is marked by its highest point and is typically illustrated as a small circle on a topographic map with the MSL height shown in either feet or meters or both. Because aircraft fly across vast landscapes, where points above the ground can and do vary, MSL is used to denote the “plane” on which the floors and ceilings of training airspace are established and the altitude at which aircraft must operate within that airspace.

<sup>2</sup>Approved for supersonic operations above 10,000 AGL, excepting airspace over the Duck Valley Indian Reservation where no supersonic operations are allowed.

<sup>3</sup>Whichever altitude is higher given the mountainous terrain.

<sup>4</sup>Or as assigned by Salt Lake City Air Route Traffic Control Center (ARTCC).

*Legend:* AGL = above ground level; ATCAA = Air Traffic Control Assigned Airspace; BNI = but not including; all MOAs extend to, but not including, 18,000 feet MSL unless otherwise noted; MOA = Military Operations Area; MSL = mean sea level; R- = Restricted Area.

*Source:* FAA 2017; Salt Lake City ARTCC, 366th Fighter Wing, 266th Range Squadron, Mountain Home AFB, Mountain Home AFB Radar Approach Control, and 552nd Air Control Wing, Tinker AFB 2012.

ID-10

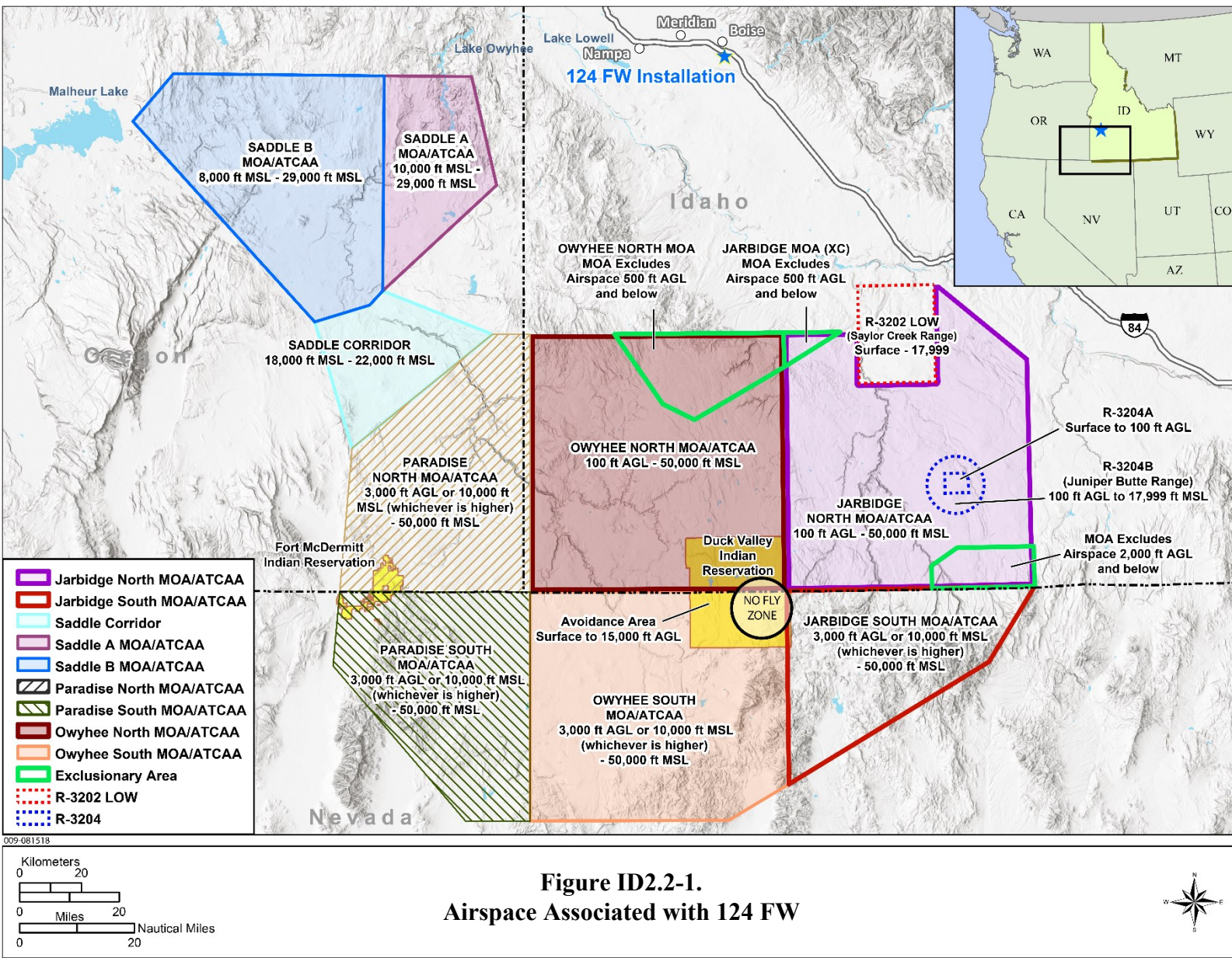


Figure ID2.2-1.  
 Airspace Associated with 124 FW



Although the F-35As would perform missions similar to the A-10s, they represent a different aircraft with vastly different capabilities, and would fly somewhat differently. Pilots would adapt training activities, where necessary, to ensure their accomplishment within available airspace. No changes to airspace structure are anticipated. The differences in utilization of the existing airspace include use of higher altitudes overall, combined use of existing airspace, and generally higher altitudes for supersonic flights that occur.

The Saddle A and B MOAs/ATCAAs are controlled by the 124 FW. Cooperative scheduling of this airspace by both Mountain Home Air Force Base (AFB) and 124 FW, as well as coordination with the Salt Lake City Air Route Traffic Control Center (ARTCC), has ensured the needs of all airspace users are accommodated. In addition to the A-10s of the 124 FW, daily users of these airspace units include the F-15s located at Mountain Home AFB, the primary users of the airspace, as well as occasional use by UH-60 helicopters located at Boise Airport, B-52s, B-1s, C-130s, F/A-18s, KC-135s, KC-10s, EA-6Bs, and E/A-18G. Flight restrictions are in place over the Duck Valley Reservation. Overflights are not authorized within a 5-nautical mile (NM) radius around the town of Owyhee, Nevada and are restricted to 15,000 feet above ground level (AGL) and above over the remaining portions of the reservation. Supersonic operations and the use of chaff or flares are not authorized over any part of the Duck Valley Reservation or within the Saddle A and B MOAs/ATCAAs.

The F-35A would fly more of the time at higher altitudes than the A-10s (Table ID2.2-2), operating more than 90 percent of the time above 10,000 feet mean sea level (MSL). In contrast, the A-10s operate only 37 percent of the time above 10,000 feet MSL, with 63 percent below 10,000 feet AGL, and 37 percent below 5,000 feet AGL. Thus, the F-35A aircraft would conduct most of their operations in the high altitude Jarbidge, Owyhee, and Paradise ATCAAs with some basic fighter maneuver training in the Saddle ATCAA. Regardless of the altitude structure and percent use indicated in Table ID2.2-2, F-35A aircraft (as do existing military aircraft) would adhere to all established floors and ceilings of airspace units. For example, the floor of Saddle A MOA lies at 10,000 feet MSL, so the F-35A would not fly below that altitude in that airspace. Rather, pilots would adapt training to this and other airspace units like the Jarbidge MOAs with lower floors.

**Table ID2.2-2. Approximate 124 FW Current and Proposed Altitude Distribution**

| <i>Altitude (feet)</i> | <i>Percentage Use A-10<sup>1</sup></i> | <i>Percentage Use F-35A</i> |
|------------------------|--|-----------------------------|
| 500-2,000              | 7%                                     | 1%                          |
| 2,000-5,000 AGL        | 30%                                    | 1%                          |
| 5,000-10,000 AGL       | 26%                                    | 5%                          |
| 10,000-18,000 MSL      | 33%                                    | 24%                         |
| 18,000-30,000 MSL      | 4%                                     | 58%                         |
| >30,000 MSL            | 0%                                     | 11%                         |

*Note:* <sup>1</sup>Air-to-ground training mission.

*Legend:* AGL = above ground level; MSL = mean sea level.

Table ID2.2-3 presents historic current operations that occurred from September 2016 to September 2017 in the MHRC and Saddle airspace. The information is broken down into total aircraft operations (includes aircraft operating out of the 124 FW, Mountain Home AFB, and other transient users) and then presents a subset of this information for the 124 FW aircraft. The F-35A proposed airspace operations are also presented and then comparisons made in net change and percent change in total aircraft operations.

**Table ID2.2-3. Approximate 124 FW Current and Proposed Annual Airspace Operations**

| <i>Airspace Unit<sup>1</sup></i>             | <i>Total All Aircraft Current Airspace Operations</i> | <i>A-10 Current Airspace Operations</i> | <i>Proposed Total All Aircraft Airspace Operations</i> | <i>Proposed F-35A Airspace Operations</i> |
|--|---|---|--|---|
| Jarbidge North/South MOAs/ATCAAs             | 15,275  | 2,800                                   | 14,985   | 2,510                                     |
| Owyhee North/South MOAs/ATCAAs               | 13,150  | 1,680                                   | 13,980   | 2,510                                     |
| Paradise North/South MOAs/ATCAAs             | 12,128  | 100                                     | 14,538   | 2,510                                     |
| Saddle A, B MOAs/ATCAAs, Saddle Bridge ATCAA | 10,019  | 32                                      | 12,772   | 2,785                                     |
| R-3202 High/Low (Saylor Creek Range)         | 15,643  | 2,800                                   | 15,353   | 2,510                                     |
| R-3204 A/B/C (Juniper Butte Range)           | 22,643  | 2,800                                   | 22,353   | 2,510                                     |

*Note:* <sup>1</sup>MOA and ATCAA operations combined

*Legend:* ATCAA = Air Traffic Control Assigned Airspace; MOA = Military Operations Area; R- = Restricted Area.

*Sources:* 366<sup>th</sup> Operations Support Squadron/OSA 2017; 124 FW n.d.

Similar to the A-10 aircraft, the F-35A would fly approximately 90-minute long missions, including take-off, transit to and from the training airspace, training activities, and landing. The 124 FW A-10 aircraft currently conduct up to 2,500 annual sorties (or approximately 208 monthly sorties) lasting approximately 60 minutes in the airspace. Under the Proposed Action, the F-35A aircraft would conduct up to 3,061 annual sorties (approximately 250 monthly sorties) lasting 30-60 minutes. On occasion during an exercise, the F-35A may spend up to 90 minutes in one or more airspace units. Based on this, the time spent in the airspace by the 124 FW would be expected to increase approximately 47 percent relative to the affected environment.

To train with the full capabilities of the aircraft, the F-35A would employ supersonic flight at altitudes and within airspace already authorized for such activities. Due to the F-35A’s mission and the aircraft’s capabilities, the NGB anticipates that approximately 10 percent of the time spent in air combat training would involve supersonic flight. All supersonic flight would be conducted above 15,000 feet MSL, with 90 percent occurring above 30,000 feet MSL. Only the Jarbidge North MOA/ATCAA and Owyhee North MOA/ATCAA are authorized for supersonic flight down

to 10,000 feet AGL. Supersonic flight is authorized above 30,000 feet MSL in the ATCAAs above the Paradise North and South, Jarbidge South, and Owyhee South MOAs.

In a 1996 Settlement Agreement between the USAF and the Shoshone-Paiute Tribes, the USAF agreed, absent compelling national security circumstances, military contingencies, or hostilities, to not fly below 10,000 feet AGL, and voluntarily not fly below 15,000 feet AGL for training operations over the present boundaries of Duck Valley Indian Reservation except during emergencies, such as aircraft mechanical problems or avoidance of weather (USAF 1998a). The USAF also does not fly at any altitude within 5 NM of the town of Owyhee, Nevada located in the Duck Valley Indian Reservation. The USAF complies with all other terms contained within the 1996 Settlement Agreement. Additionally, no supersonic operations would occur over the Duck Valley Indian Reservation (USAF 1998b). These restrictions would not change if the F-35A were to beddown at the 124 FW installation.

### **ID2.2.2      Ordnance Use and Defensive Countermeasures**

Most air-to-ground training would be simulated, where nothing is released from the aircraft, and target scoring is done electronically. As was discussed in Chapter 2, Section 2.2.2.7, however, the F-35A is capable of carrying and employing several types of air-to-air and air-to-ground ordnance (including strafing) and pilots would need training in their use. As the NGB currently envisions, the type of ordnance employed at MHRC is expected to remain the same or decrease. F-35A pilots would only use ranges and airspace authorized for the type of ordnance being employed and within the number already approved at a range and/or target. If in the future the NGB identifies weapons systems that are either new or could exceed currently approved levels, appropriate NEPA documentation would need to occur prior to their employment.

Saylor Creek (Restricted Area [R-] 3202 Low and R-3202 High) and Juniper Butte Ranges (R-3204A/B/C) are part of the MHRC and contain varied target sets for supporting laser and air-to-ground weapons training. The Restricted Areas are surrounded by the Jarbidge North MOA. The MHRC also has a number of threat emitters located under the Jarbidge North MOA that can be used to simulate combat. Thirteen of these threat emitters can be relocated to 34 positions within the MHRC to vary the threat scenarios. No live weapons are permitted in the MHRC. It is expected that any live-fire training would be conducted during formal training exercises conducted remotely from the 124 FW installation.

Like the A-10, the F-35A would employ chaff and flares as defensive countermeasures in training. Chaff and flares are the principal defensive mechanisms dispensed by military aircraft to avoid attack by enemy air defense systems. For the purposes of this analysis, it is estimated that the expenditure of chaff and flares by the F-35As would not exceed use by the legacy A-10s on a per operation basis for the 124 FW. Chaff and flares would be used only in areas currently approved

for use, including Jarbidge North and South, Owyhee North and South, and Paradise North and South MOAs and their overlying ATCAAs and within R-3202 Low, R-3202 High, and R-3204 A/B and C. Chaff and flares are not authorized in the Saddle A or B MOAs/ATCAAs or within the Saddle Corridor. All current restrictions on the amount, altitude, or timing of chaff and flare use would also apply. These include seasonal limitations to prevent wildfires and a prohibition of chaff and flare use over the Duck Valley Indian Reservation. Over most of the affected area, minimum flare release altitude is 2,000 feet AGL. Based on the emphasis on flight at higher altitudes for the F-35A, roughly 90 percent of F-35A flare releases throughout the MOAs would occur above 15,000 feet MSL. At this altitude, most flares would be released more than seven times higher than the minimum release altitude permitted (2,000 feet AGL) over non-government-owned or -controlled property and ensure complete burnout before reaching the ground.

### **ID2.3        AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES AT THE 124 FW                   INSTALLATION**

Analysis of affected environment provides a benchmark that enables decision-makers to evaluate the environmental consequences of the proposed beddown alternatives at each installation. For each resource, this installation-specific section uses description of the affected environment and the evaluation of the No Action Alternative. Changes to the affected environment that are attributable to the Proposed Action are then examined for each resource. Thus, the change (increase or decrease) in the resource at each installation can be compared for all alternative locations.

### **ID2.4        PERMITS, AGENCY CONSULTATIONS, AND GOVERNMENT-TO-GOVERNMENT                   CONSULTATIONS**

The 124 FW operates under agreements with a series of environmental permitting agencies for such resources as air, water, and cultural resources.

*Permitting.* The following section describes the permits that would be required to implement at this alternative location.

- Facilities that discharge stormwater from certain activities (including industrial activities, construction activities, and municipal stormwater collection systems) require Clean Water Act (CWA) Section 402 National Pollutant Discharge Elimination System (NPDES) permits. For construction activities disturbing greater than 1 acre, the project would require coverage by a general permit for stormwater discharges from construction sites. In compliance with coverage under this permit, a site-specific Stormwater Pollution Prevention Plan (SWPPP) would be developed and the construction manager would

document the erosion, sediment, and pollution controls used, inspect the controls periodically, and maintain the controls throughout the life of the project.

- The 124 FW installation has industrial area stormwater discharges with the potential to enter waters of the U.S.; therefore, the facility is covered under a NPDES stormwater permit. U.S. Environmental Protection Agency (USEPA) Region 10 has primacy over the NPDES program in the state of Idaho and the facility is covered under the NPDES 2015 Multi-Sector General Permit (MSGP) (USEPA 2015). A SWPPP has been prepared per requirements of the 2015 MSGP. The SWPPP is an engineering and management strategy prepared specifically for the 124 FW installation to improve the quality of the stormwater runoff and thereby improve the quality of receiving waters (124 FW 2015a). The existing SWPPP already in place for the installation would be amended, as necessary, to reflect post-construction operations and potentially new best management practices (BMPs).
- Federal projects with a footprint larger than 5,000 SF must maintain predevelopment hydrology and prevent any net increase in stormwater runoff as outlined in Unified Facilities Criteria (UFC) 3-210-10, *Low Impact Development*, and consistent with the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects* under Section 438 of the Energy Independence and Security Act (EISA) of 2007.
- As applicable, the 124 FW will coordinate with the USEPA, Region 10 and Idaho Department of Environmental Quality (DEQ) regarding proposed construction near Environmental Restoration Program (ERP) sites, including potential release locations (PRLs) of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), on the 124 FW installation.
- A conformity applicability determination is required for federal actions occurring in nonattainment or maintenance areas for criteria pollutants when the total direct and indirect stationary and mobile source emissions of nonattainment pollutants or their precursors exceed *de minimis* thresholds. The 124 FW installation is located within northern Ada County, which is a maintenance area for carbon monoxide (CO) and particulate matter less than or equal to 10 microns in diameter (PM<sub>10</sub>). Therefore, a conformity applicability analysis is necessary to identify whether a formal conformity determination is required.
- Personnel conducting construction and/or demolition activities will strictly adhere to all applicable occupational safety requirements during construction activities.
- Sampling for asbestos-containing material (ACM) and lead-based paint (LBP) would occur prior to demolition and renovation activities for those buildings not previously tested; all materials would be handled in accordance with USAF policy. If ACM or LBP is present, the 124 FW would employ appropriately trained and licensed contractors to perform the ACM and/or LBP removal work and would notify the construction contractors of the

presence of ACM and/or LBP so that appropriate precautions could be taken to protect the health and safety of the workers.

Some of the construction and modifications would require prior Federal Aviation Administration (FAA) approval of a change to the airport's Airport Layout Plan. Before providing such approval, the FAA would have to comply with NEPA.

*Consultation.* An initial consultation letter was sent to the Idaho, Oregon, and Nevada State Historic Preservation Offices (SHPOs) in February 2018. Consultation will continue through the Environmental Impact Analysis Process (EIAP).

*Government-to-Government.* An initial phone call to Tribal offices to verify contact information and current Senior-level Tribal Officials before any materials were mailed to the American Indian Tribe was completed in early November 2017. An initial government-to-government consultation letter was sent to six federally-recognized American Indian Tribes with ancestral ties to the 124 FW installation and lands beneath the associated airspace in February 2018. These six American Indian Tribes included the Confederated Tribes of the Warm Springs Reservation of Oregon, Shoshone-Paiute Tribes of Duck Valley Reservation, Burns Paiute Tribes, Shoshone-Bannock Tribes of the Fort Hall Reservation, Paiute and Shoshone Tribes of the Fort McDermitt Indian Reservation, and the Northwestern Band of Shoshone Nation. In addition to ancestral ties to the lands beneath the airspace, two American Indian Reservations underlie the associated airspace used by the 124 FW. The Fort McDermitt Indian Reservation lies under Paradise North and South in Nevada and Oregon. Duck Valley Indian Reservation underlies the Owyhee North and South MOAs. After the initial government-to-government consultation letter was sent, NGB followed up with telephone calls and emails in an effort to increase accessibility and encourage communication in the event an American Indian Tribe would have any concerns regarding the Proposed Action or land below the affected airspace areas. To date, no responses have been received from the federally-recognized American Indian Tribes associated with 124 FW.

## **ID2.5 PUBLIC INVOLVEMENT/AGENCY CONCERNS**

### **ID2.5.1 Scoping**

A scoping meeting was held on February 27, 2018 in Boise, Idaho. There were 138 people that attended the scoping meeting and 1,323 comments were received from the public and agencies prior to close of the scoping period (2 elected officials, 3 agencies, and 1,318 general public).

Most comments received at the meeting were in opposition of the F-35A beddown at the 124 FW installation. The primary issue was concern about noise generated from the airport. Of the 1,318 general public comments, 47 were in support of the proposed beddown, and 884 expressed

concerns about noise. Some of the questions/concerns that the public expressed during the scoping period included:

- Aircraft noise concerns related to:
  - General annoyance
  - Hearing loss
  - Property values
  - Domestic pets
  - Wildlife
  - Sleep interference
  - Impacts to outdoor activities
  - Request for noise mitigation
- Air quality concerns from operation of the F-35.
- Lower income housing areas are located near the airfield.
- Concern regarding fuel and other toxic chemicals that could leach into aquifers.
- Consideration of other alternative locations.
- There was not enough notification for the meetings, nor was it given in a timely manner. Suggestion for use of social media such as Twitter, Facebook, etc.
- It was suggested that the Air Force establish a liaison/contact person and/or an advisory committee to respond to citizen inquiries throughout the Environmental Impact Statement (EIS) process.
- Safety/crash concerns.
- Confusion about why the non-preferred alternatives are still being considered.
- The F-35A aircraft are too expensive and not necessary.
- General opposition to the F-35A beddown.
- General support for the F-35A beddown.

### **ID2.5.2 Draft Environmental Impact Statement Public Comment Period**

A Draft EIS public meeting was held on September 5, 2019 in Boise, Idaho. There were over 123 people that attended the meeting and 616 comments were received from the public and agencies with regard to the Proposed Action at Boise prior to close of the comment period. See Section 1.6 of the EIS for more details on the public involvement process. The following are the most prevalent comments received from the Boise public on the Draft EIS. See Appendix A6 for a summary of responses to comments on the Draft EIS.

- 1) General support or opposition to the proposed beddown.
- 2) General complaints about noise.
- 3) Disagreements about how noise is modeled, e.g., Day-Night Average Sound Level (DNL) is not “what one hears.”

- 4) General concerns about Environmental Justice communities.
- 5) There was no obvious use of maximum sound level ( $L_{max}$ ), while previous F-35A Beddown EIS's contained tables of  $L_{max}$ .
- 6) General disbelief that 5 percent afterburner use would be sufficient; thus, requests to model noise at varying levels of afterburner.
- 7) Disagreement/disbelief in number of "home station" operations.
- 8) Concern about increased noise causing health concerns.
- 9) Suggestions to identify less urban areas for the F-35A aircraft.
- 10) The public demonstrated concern that "incompatible" meant "uninhabitable" with respect to anticipated noise increases in residential areas. Text has been added to the Land Use Definition of Resource section to clarify the difference.
- 11) The public requested more elaboration on potential mitigation.
- 12) Concern about the nuclear capability of the F-35A.
- 13) Concern about a decrease in property values and tax base.
- 14) PFOS/PFOA issues.
- 15) Concern about noise impacts to people with post-traumatic stress disorder (PTSD), autism, etc. (special needs).

## **ID2.6        MITIGATION**

The USAF does not have authority to expend appropriated funds on facilities that are not under the direct control of the USAF. However, the FAA has a program that addresses noise and compatible land use near airports. Title 14, Code of Federal Regulations (CFR), Part 150 - *Airport Noise Compatibility Planning*, the implementing regulations of the *Aviation Safety and Noise Abatement Act of 1979*, as amended, provides a voluntary process an airport sponsor can use to mitigate significant noise impacts from airport users. It is important to note that the Part 150 program is not a guarantee that sound mitigation or abatement will take place. Eligibility for sound insulation in noise-sensitive land uses through the FAA's Airport Improvement Program requires that the impacted property is located within a DNL 65 decibels (dB) or higher noise contour and meet various other criteria in FAA guide documents used for sound mitigation.

Noise Exposure Maps (NEMs) can and do change over time. NEMs include an existing year and a future year (5 years forward in time). These NEMs have to be updated every 5 years or certified to the FAA that they are current. Non-compatible land uses (i.e., residences) can become compatible if the DNL 65 dB noise contour changes shape or becomes smaller due to changes in operational procedures, fleet mix, or nighttime operations.

Upon completion of the Final EIS, a mitigation plan will be prepared in accordance with 32 CFR 989.22(d). The mitigation plan will address specific mitigations identified and agreed to during the EIAP, as discussed in the EIS and identified in the Record of Decision (ROD). The Mitigation

and Monitoring Plan will be developed for those installations chosen, and will include metrics to track and monitor those activities that are identified to minimize the impacts. These could include afterburner usage, flight tracks, number of operations, etc. The Mitigation and Monitoring Plan will identify who is responsible for implementing specific mitigation procedures, who is responsible for funding them, and who is responsible for tracking these measures to ensure compliance.

## **ID3.0 124<sup>TH</sup> FIGHTER WING AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

### **ID3.1 NOISE**

The following sections present the noise environment generated by military and civil/commercial aircraft operations around the airfield, followed by an evaluation of the noise generated by military aircraft in training airspace. Both the affected environment and the Proposed Action Alternative (environmental consequences) are analyzed and the results presented. For purposes of this analysis, the No Action Alternative is the same as the affected environment, whereby no F-35A aircraft would be beddown at the installation and operations would continue as presented.

#### **ID3.1.1 Installation**

The USAF and ANG specify use of the NOISEMAP software program suite to model noise exposure at and around military air bases for military aircraft activity, while the FAA requires the Aviation Environmental Design Tool (AEDT) to model commercial and civil aircraft operations at and around airfields. To comply with both organizations' requirements, the noise analysis utilized both software models for the 124 FW installation.

The affected environment reflects minor updates to the operational data prepared in support of the *Boise Airport 14 CFR Part 150 Study Update* (Boise Airport 2015) and conversion of the 2015 civilian aircraft noise files from the Integrated Noise Model to the AEDT. Operational information relied on radar data and manual updates provided by FAA representatives at Boise Airport. Radar data covering portions of 2013 and 2014 provided flight trajectory data with additional flight details such as airline, aircraft, origin, destination, and time. Development and adjustment of flight tracks, day/night split, and estimated stage length also utilized radar data. The FAA provided 1 year of aircraft operations between February 2014 and January 2015 (Boise Airport 2015). Interviews with members of the 124 FW provided updates to the military flight operations to reflect current operational conditions.

Noise modeling utilized annual average day (AAD) aircraft operations computed by dividing the total yearly airport operations by 365 days per year. The noise modeling relies on aircraft's flight tracks (paths over the ground) and profiles (which includes altitude, airspeed, power settings, and other flight conditions). The noise analysis considers the numbers of each type of operation by aircraft/track/profile, local climate, terrain surrounding the airfield, and similar data related to aircraft engine runs that occur at specific static locations on the ground (e.g., pre- and post-flight and maintenance activities). A team primarily made up of representatives from the installation's flying squadrons and air traffic controllers, as well as the NGB, developed this data through iterative meetings and discussions subsequently compiled into a data validation package. The NGB team reviewed the data validation package and approved the operational details for modeling (124 FW 2019).

ID3.1.1.1 Affected Environment

For the noise analysis at and around the 124 FW installation, the affected environment is the area that experiences noise generated by aircraft operations. These areas include along taxiways, runways, engine run sites, and in adjacent airspace where aircraft operating at the airfield transit along flight routes, approach or depart the airfield, and conduct closed pattern operations.

Table ID3.1-1 summarizes the modeled annual military flight operations of aircraft based at the 124 FW installation as well as transient military aircraft that visit the airfield on a temporary basis, referred to as ‘transients.’ Table ID3.1-2 summarizes the modeled annual civil/commercial flight operations, which includes 737, 757, A300s classified as Jetliners, and smaller regional jets categorized as Small Jet. In 2015, there were 143,665 flight operations at Boise Airport, over 82 percent of which (117,913) were civil/commercial aircraft. Based and transient military aircraft account for less than 18 percent of the total flight operations (25,752). Of the military aircraft, the UH-60 conducts the most flight operations (16,100), or about 11 percent of the total for the airport; followed by the A-10 (6,152), or about 4 percent of the total for the airport. Runway use varies for different aircraft categories.

**Table ID3.1-1. Annual Airfield Operations for Based and Transient Military Aircraft at Boise Airport – Current**

| <i>Aircraft Type</i>               | <i>Modeled As</i> | <i>Arrivals Day</i> | <i>Arrivals Night</i> | <i>Departures Day</i> | <i>Departures Night</i> | <i>Closed Patterns Day</i> | <i>Closed Patterns Night</i> | <i>Total Day</i> | <i>Total Night</i> | <i>Total</i>  |
|------------------------------------|-------------------|---------------------|-----------------------|-----------------------|-------------------------|----------------------------|------------------------------|------------------|--------------------|---------------|
| <b>Based Military Aircraft</b>     |                   |                     |                       |                       |                         |                            |                              |                  |                    |               |
| A-10                               | A-10              | 2,450               | 50                    | 2,500                 | 0                       | 1,152                      | 0                            | 6,102            | 50                 | 6,152         |
| C-12                               | C-12              | 200                 | 0                     | 200                   | 0                       | 0                          | 0                            | 400              | 0                  | 400           |
| UH-60                              | UH-60             | 1,995               | 535                   | 2,331                 | 199                     | 11,040                     | 0                            | 15,366           | 734                | 16,100        |
| <b>Subtotal Based</b>              |                   | <b>4,645</b>        | <b>585</b>            | <b>5,031</b>          | <b>199</b>              | <b>12,192</b>              | <b>0</b>                     | <b>21,868</b>    | <b>784</b>         | <b>22,652</b> |
| <b>Transient Military Aircraft</b> |                   |                     |                       |                       |                         |                            |                              |                  |                    |               |
| C-130E                             | C-130E            | 600                 | 0                     | 600                   | 0                       | 0                          | 0                            | 1,200            | 0                  | 1,200         |
| F-15E                              | F-15E             | 300                 | 0                     | 300                   | 0                       | 100                        | 0                            | 700              | 0                  | 700           |
| F-18E/F                            | F-18E/F           | 100                 | 0                     | 100                   | 0                       | 0                          | 0                            | 200              | 0                  | 200           |
| KC-135R                            | KC-135R           | 200                 | 0                     | 200                   | 0                       | 0                          | 0                            | 400              | 0                  | 400           |
| T-6                                | T-6               | 300                 | 0                     | 300                   | 0                       | 0                          | 0                            | 600              | 0                  | 600           |
| <b>Subtotal Transient</b>          |                   | <b>1,500</b>        | <b>0</b>              | <b>1,500</b>          | <b>0</b>                | <b>0</b>                   | <b>0</b>                     | <b>3,100</b>     | <b>0</b>           | <b>3,100</b>  |
| <b>Total Military Aircraft</b>     |                   | <b>6,145</b>        | <b>585</b>            | <b>6,531</b>          | <b>199</b>              | <b>12,292</b>              | <b>0</b>                     | <b>24,968</b>    | <b>784</b>         | <b>25,752</b> |

Notes: Day = 7 a.m. to 10 p.m., Night = 10 p.m. to 7 a.m.  
For total airfield operations, a closed pattern includes two operations (one departure and one arrival).  
Totals may be off due to rounding.

**Table ID3.1-2. Annual Airfield Operations for Civil/Commercial Aircraft at  
Boise Airport – Current**

| <i>Aircraft Type</i>        | <i>Modeled As</i>  | <i>Arrivals Day</i> | <i>Arrivals Night</i> | <i>Departures Day</i> | <i>Departures Night</i> | <i>Closed Patterns Day</i> | <i>Closed Patterns Night</i> | <i>Total Day</i> | <i>Total Night</i> | <i>Total</i>   |
|-----------------------------|--------------------|---------------------|-----------------------|-----------------------|-------------------------|----------------------------|------------------------------|------------------|--------------------|----------------|
| Fighter Jet                 | Dassault Alpha Jet | 11                  | 4                     | 15                    | 0                       | 0                          | 0                            | 26               | 4                  | 30             |
| Jetliner                    | B737, B757, A320   | 6,431               | 2,146                 | 7,680                 | 905                     | 0                          | 0                            | 14,111           | 3,051              | 17,162         |
| Single Engine Prop          | Cessna 210         | 7,198               | 544                   | 7,391                 | 347                     | 10,304                     | 1,515                        | 24,893           | 2,406              | 27,299         |
| General Aviation            | Cessna 180/185     | 1,971               | 219                   | 1,971                 | 219                     | 0                          | 0                            | 3,942            | 438                | 4,380          |
| Small Jet                   | CRJ-700, E170      | 7,264               | 945                   | 7,497                 | 719                     | 0                          | 0                            | 14,761           | 1,664              | 16,425         |
| Turbo-prop                  | Q-400, Super King  | 16,803              | 2,258                 | 18,150                | 904                     | 12,642                     | 1,860                        | 47,595           | 5,022              | 52,617         |
| <b>Total Civil Aircraft</b> |                    | <b>39,678</b>       | <b>6,116</b>          | <b>42,704</b>         | <b>3,094</b>            | <b>22,946</b>              | <b>3,375</b>                 | <b>105,328</b>   | <b>12,585</b>      | <b>117,913</b> |

Notes: Day = 7 a.m. to 10 p.m., Night = 10 p.m. to 7 a.m.

For total airfield operations, a closed pattern includes two operations (one departure and one arrival).

Totals may be off due to rounding.

Modeling includes over 100 distinct modeled aircraft types; only types with highest proportion of ops listed.

### Noise Exposure

Noise exposure computed with the NOISEMAP software program is presented graphically in a plot of contour lines of DNL, a table of DNL at specific noise-sensitive representative locations, and counts of on- and off-airport acreages within each noise contour.

Figure ID3.1-1 and Table ID3.1-3 present a graphical depiction and tabular description of the 12 points of interest (POIs), representing a cross section of nearby schools, places of worship, and daycare center which inform on the adjacent residential area conditions. This is not intended to be an exhaustive list of POIs, but rather representative. The Kingdom Hall of Jehovah’s Witness currently experiences the greatest DNL of 69 dB. No other locations reach or exceed 65 dB and only Owyhee-Harbor Elementary School reaches 60 dB DNL.

**Table ID3.1-3. DNL at Representative Points of Interest – Current**

| <i>POI Number</i> | <i>Named POI</i>                            | <i>DNL (dB)</i> |
|-------------------|---|-----------------|
| 1                 | Barefoot Baby Nursery School                | 49              |
| 2                 | South Boise Child Care Center               | 51              |
| 3                 | Bridgepoint Church                          | 50              |
| 4                 | Church of Jesus Christ of Latter-day Saints | 54              |
| 5                 | Columbia Heights Baptist Church             | 52              |
| 6                 | Kingdom Hall of Jehovah’s Witness           | 69              |
| 7                 | Treasure Valley Full Gospel                 | 53              |
| 8                 | West Jr. High School                        | 52              |
| 9                 | Frank Church High School                    | 53              |
| 10                | Hawthorne Elementary School                 | 52              |
| 11                | Owyhee-Harbor Elementary School             | 60              |
| 12                | Silver Sage Elementary School               | 52              |

Legend: dB = decibel; DNL = Day-Night Average Sound Level; POI = Point of Interest.

Sources: 124 FW 2019.

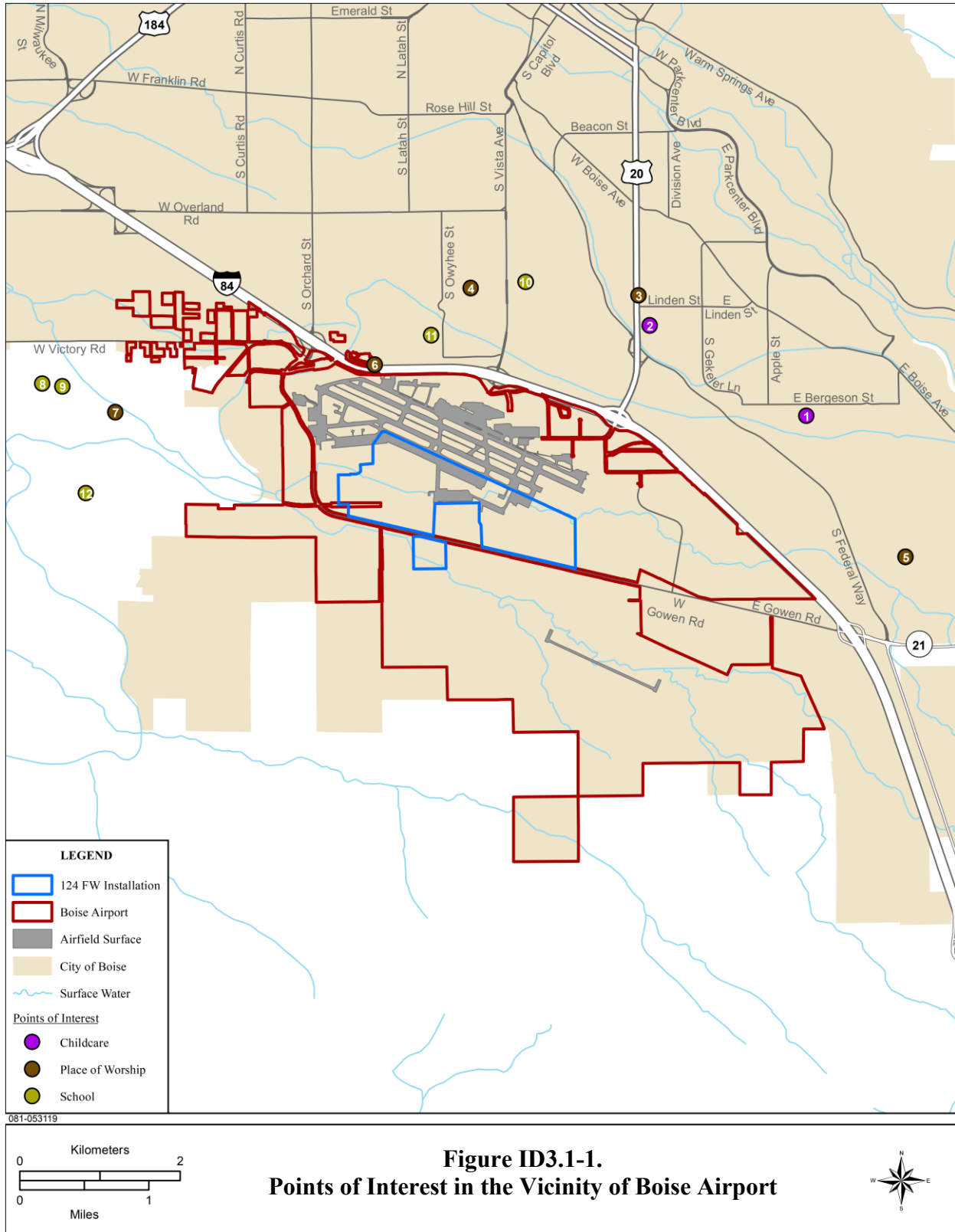


Figure ID3.1-2 shows the DNL contours for the affected environment at Boise Airport in 5 dB increments from 65 to 85 dB DNL. As shown, the 65 dB DNL contour extends outside of the airport boundary to the northwest, and remains inside the Boise Airport boundary in the southeast. The majority of the noise contours greater than 65 dB DNL remain within the Boise Airport boundary.

Table ID3.1-4 shows the acreage lying within noise contours of 65 to 85 dB DNL under the affected environment. Outside airport boundaries, there are 154 acres within the 65 to 75 dB DNL noise contours; 1 acre is impacted by noise levels 75 to 80 dB DNL.

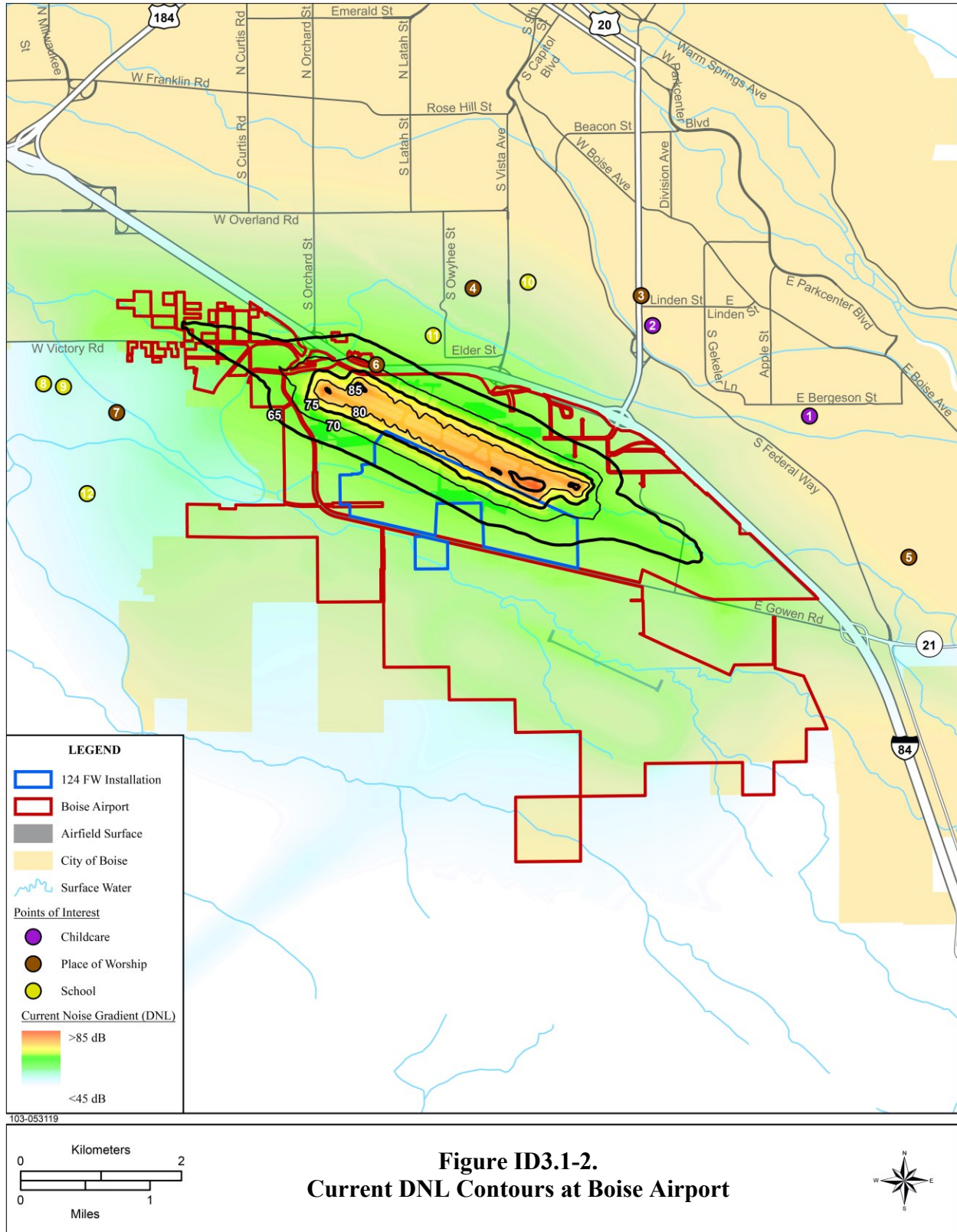
**Table ID3.1-4. Acreage within Noise Contour Bands – Current**

| <i>DNL Level (dBA)</i> | <i>On Airport</i> | <i>Off-Airport</i> | <i>Total</i> |
|------------------------|-------------------|--------------------|--------------|
| 65-70                  | 737               | 126                | 863          |
| 70-75                  | 306               | 27                 | 333          |
| 75-80                  | 211               | 1                  | 212          |
| 80-85                  | 268               | 0                  | 268          |
| 85+                    | 17                | 0                  | 17           |
| <b>Total</b>           | <b>1,539</b>      | <b>154</b>         | <b>1,693</b> |

*Note:* Totals may be off due to rounding.

*Legend:* dBA = A-weighted decibel; DNL = Day-Night Average Sound Level.

Table ID3.1-5 presents noise exposure within each DNL contour band for off-airport household and population counts. According to the U.S. Census Bureau, households are defined as a house, an apartment, a mobile home, a group of rooms, or a single room occupied (or if vacant, intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live separately from any other people in the building and that have direct access from the outside of the building or through a common hall. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated people sharing living quarters (U.S. Census Bureau 2010). Contour bands were overlaid over aerial imagery and household buildings within each 5 dB contour band were counted manually. Buildings intersected by contour lines were counted as if exposed to the higher of the two bands. The number of people per household was determined independently for each U.S. Census block group (from the American Community Survey, 5-year estimates and U.S. Census Bureau 2010). Adopting this methodology gives a more accurate estimate of the number of people who may be exposed to noise levels within the noise contour band. Acreage reported here excludes the entire Boise Airport because it does not include any POIs or residential areas. Exposure to noise levels of 65 dB DNL and greater includes an estimated 400 people and 167 households.



**Table ID3.1-5. Off-Airport Noise Exposure within Contour Bands at Boise Airport – Current**

| <i>Contour Band (dB DNL)</i> | <i>Population</i> | <i>Households</i> |
|------------------------------|-------------------|-------------------|
| 65–70                        | 354               | 148               |
| 70–75                        | 46                | 19                |
| 75–80                        | 0                 | 0                 |
| 80–85                        | 0                 | 0                 |
| 85+                          | 0                 | 0                 |
| <b>Total</b>                 | <b>400</b>        | <b>167</b>        |

Legend: dB = decibel; DNL = Day-Night Average Sound Level.

*Supplemental Metrics*

To supplement the cumulative metric analysis, the greatest single-event sound exposure levels (SELs) are provided for each POI, as listed in Table ID3.1-6. SEL accounts for both the magnitude and duration of individual events, making it a good metric to compare disparate noise events. Table ID3.1-6 also includes the corresponding number of weekly events as well as the DNL values for reference. For instance, at POI #3 (Bridgepoint Church) the current DNL is 50 dB with a maximum SEL of 92 dB with less than 1 event per week. The greatest SELs are primarily due to transient F-18 aircraft (those not assigned to Boise, but occasionally use the airfield). The loudest events tend to occur closest to the airfield and nearest the flight tracks that align with the airport runways.

**Table ID3.1-6. Loudest Events at Each POI, Calculated in SEL – Current**

| <i>Map ID</i> | <i>Named Point of Interest</i>              | <i>DNL</i> | <i>SEL (dBA)</i> | <i>Average Number Per Week Day</i> | <i>Average Number Per Week Night</i> |
|---------------|---|------------|------------------|------------------------------------|--------------------------------------|
| 1             | Barefoot Baby Nursery School                | 49         | 92               | <1                                 | 0                                    |
| 2             | South Boise Child Care Center               | 51         | 94               | <1                                 | 0                                    |
| 3             | Bridgepoint Church                          | 50         | 92               | <1                                 | 0                                    |
| 4             | Church of Jesus Christ of Latter-day Saints | 54         | 100              | <1                                 | 0                                    |
| 5             | Columbia Heights Baptist Church             | 52         | 102              | <1                                 | 0                                    |
| 6             | Kingdom Hall of Jehovah's Witness           | 69         | 121              | <1                                 | 0                                    |
| 7             | Treasure Valley Full Gospel                 | 53         | 105              | <1                                 | 0                                    |
| 8             | West Jr. High School                        | 52         | 106              | <1                                 | 0                                    |
| 9             | Frank Church High School                    | 53         | 108              | <1                                 | 0                                    |
| 10            | Hawthorne Elementary School                 | 52         | 97               | <1                                 | 0                                    |
| 11            | Owyhee-Harbor Elementary                    | 60         | 107              | <1                                 | 0                                    |
| 12            | Silver Sage Elementary                      | 52         | 103              | <1                                 | 0                                    |

Legend: dB = decibel; dBA = A-weighted decibel; DNL = Day-Night Average Sound Level; POI = Point of Interest; SEL = Sound Exposure Level.

Source: 124 FW 2019.

**Classroom Speech Interference.** Six of the 12 POIs identified near Boise Airport are schools and one a childcare center. Table ID3.1-7 lists these points along with the calculation of Exterior Equivalent Sound Level ( $L_{eq}$ ), number of speech-interfering events per school day hour, and time above and interior level 50 dB during an 8-hour school day. Normally, schools are screened for classroom speech interference if the outdoor  $L_{eq}$  is over 60 dB. As can be seen in Table ID3.1-7, under the affected environment indoors with windows open, the most interfering events per hour occur at Owyhee-Harbor Elementary School. South Boise Child Care, Frank Church High School, and Hawthorne Elementary all experience an average of two events per hour. The duration of time during an 8-hour school when the interior levels exceed 50 dB due to aircraft noise varies from less than 1 minute to approximately 2 minutes at Owyhee-Harbor Elementary.

**Table ID3.1-7. Classroom Speech Interference – Current**

| <i>POI Number</i> | <i>Named POI</i>                | <i>Exterior <math>L_{eq(8)}</math> (dBA)</i> | <i>Speech-Interfering Events per School Day (hour)<sup>1</sup></i> | <i>Time above 50 dBA per 8-hour School Day (minutes)<sup>1</sup></i> |
|-------------------|---------------------------------|--|--|--|
| 1                 | Barefoot Baby Nursery School    | 49   | 1  | 1  |
| 2                 | South Boise Child Care Center   | 51   | 2  | <1   |
| 8                 | West Jr. High School            | 53   | 1  | 1  |
| 9                 | Frank Church High School        | 54   | 2  | 1  |
| 10                | Hawthorne Elementary School     | 53   | 2  | <1   |
| 11                | Owyhee-Harbor Elementary School | 61   | 7  | 2  |
| 12                | Silver Sage Elementary School   | 53   | 1  | 1  |

*Note:* <sup>1</sup>Assumes even distribution of daytime operations throughout the day.

*Legend:* dBA = A-weighted decibel;  $L_{eq(8)}$  = 8-Hour Equivalent Noise Level; POI = Point of Interest.

*Source:* 124 FW 2019.

**Residential Speech Interference.** Residential speech interference examines the number of events exceeding 50 dB interior levels during the daytime. It represents the number of hourly interruptions to common activities like conversation and watching television during a 15-hour day (from 7 a.m. until 10 p.m.). Typically this metric applies to residential locations but this analysis is shown for all 12 POIs because schools and places of worship are often located near residential areas. Table ID3.1-8 shows the number of indoor speech-interfering events per hour for both windows open and windows closed conditions computed with the standard values for noise attenuation of 15 dB for windows opened and 25 dB for windows closed. For the windows closed condition, only one location, the Kingdom Hall of Jehovah’s Witness, exceeds one interruption per hour under the affected environment. The rest of the locations experience one or less speech-interfering event per average hour with windows closed. With windows open, the number of speech-interfering events per average hour range from 1 to 13.

**Table ID3.1-8. Residential Speech Interference Events  
per hour (Daytime) – Current**

| <i>POI<br/>Number</i> | <i>Named POI</i>                            | <i>Windows Open<sup>1, 2</sup></i> | <i>Windows Closed<sup>1, 3</sup></i> |
|-----------------------|---|------------------------------------|--------------------------------------|
| 1                     | Barefoot Baby Nursery School                | 1                                  | 0                                    |
| 2                     | South Boise Child Care Center               | 2                                  | 0                                    |
| 3                     | Bridgepoint Church                          | 1                                  | 0                                    |
| 4                     | Church of Jesus Christ of Latter-day Saints | 4                                  | 0                                    |
| 5                     | Columbia Heights Baptist Church             | 2                                  | 0                                    |
| 6                     | Kingdom Hall of Jehovah's Witness           | 13                                 | 6                                    |
| 7                     | Treasure Valley Full Gospel                 | 3                                  | 0                                    |
| 8                     | West Jr. High School                        | 1                                  | 0                                    |
| 9                     | Frank Church High School                    | 2                                  | 0                                    |
| 10                    | Hawthorne Elementary School                 | 2                                  | 0                                    |
| 11                    | Owyhee-Harbor Elementary School             | 7                                  | 1                                    |
| 12                    | Silver Sage Elementary School               | 1                                  | 0                                    |

Notes: <sup>1</sup>Assumes even distribution of daytime operations throughout the day.

<sup>2</sup>Assumes 15 dB attenuation.

<sup>3</sup>Assumes 25 dB attenuation.

Legend: POI = Point of Interest.

Sources: 124 FW 2019.

**Sleep Disturbance.** The probability of awakening for each POI has been computed consistent with the American National Standards Institute (ANSI) standard S12.9 methodology. Note that while residences may not be present at each of the POIs, the points serve as good representations of the noise environment in the immediate vicinity, which often include residences. Table ID3.1-9 shows the cumulative probability of awakening at least once during that period for both windows closed and windows open conditions.

**Table ID3.1-9. Probability of Awakening – Current**

| <i>POI<br/>Number</i> | <i>Named POI</i>                            | <i>Windows<br/>Open<sup>1</sup></i> | <i>Windows<br/>Closed<sup>2</sup></i> |
|-----------------------|---|-------------------------------------|---------------------------------------|
| 1                     | Barefoot Baby Nursery School                | 1%                                  | 1%                                    |
| 2                     | South Boise Child Care Center               | <1%                                 | <1%                                   |
| 3                     | Bridgepoint Church                          | <1%                                 | <1%                                   |
| 4                     | Church of Jesus Christ of Latter-day Saints | <1%                                 | <1%                                   |
| 5                     | Columbia Heights Baptist Church             | 1%                                  | <1%                                   |
| 6                     | Kingdom Hall of Jehovah's Witness           | 9%                                  | 6%                                    |
| 7                     | Treasure Valley Full Gospel                 | <1%                                 | <1%                                   |
| 8                     | West Jr. High School                        | <1%                                 | <1%                                   |
| 9                     | Frank Church High School                    | <1%                                 | <1%                                   |
| 10                    | Hawthorne Elementary School                 | <1%                                 | <1%                                   |
| 11                    | Owyhee-Harbor Elementary                    | <1%                                 | <1%                                   |
| 12                    | Silver Sage Elementary                      | <1%                                 | <1%                                   |

Notes: <sup>1</sup>Assumes 15 dB attenuation.

<sup>2</sup>Assumes 25 dB attenuation.

Legend: POI = Point of Interest.

Sources: 124 FW 2019.

Under the affected environment, residential areas in the vicinity of Kingdom Hall of Jehovah's Witness experience a probability of awakening ranging from 6 to 9 percent, depending on windows closed or open conditions. All other locations experience probability of awakening of 1 percent or less for either window condition.

**Potential for Hearing Loss.** Potential for Hearing Loss (PHL) applies to people living in high noise environments. The threshold for assessing PHL is exposure to noise greater than 80 dB DNL. Under the affected environment, there are no residential areas on or adjacent to the airport that are exposed to contour bands of 80 dB DNL or greater (see Table ID3.1-6), so PHL does not apply.

**Occupational Noise.** USAF occupational noise exposure prevention procedures, such as hearing protection and monitoring, are currently used and comply with all applicable Occupational Safety and Health Administration (OSHA) and USAF occupational noise exposure regulations.

**Other Noise Sources.** Other generators of noise, such as vehicle traffic, and other maintenance and landscaping activities, are a common ongoing occurrence at Boise Airport. While these sources may contribute to the overall noise environment, they are not distinguishable from aircraft-generated noise at and adjacent to the airport. For this reason, these other noise sources were not considered under the affected environment nor are they analyzed under environmental consequences.

#### ID3.1.1.2 Environmental Consequences

##### *Proposed Action*

This alternative involves the beddown of 18 F-35A aircraft at the 124 FW installation and replacement of the based A-10s. Proposed annual F-35A flight operations total 7,274, resulting in 1,122 greater operations when compared to current operations (or the No Action Alternative). The civil operations were determined to continue relatively unchanged through the Proposed Action implementation. The F-35A aircraft would account for approximately 5 percent of total operations at Boise Airport. F-35As would not be expected to operate after 10 p.m. or before 7 a.m. NGB estimates the F-35A would require afterburner on departure up to 5 percent of the time and would use military for the remaining 95 percent. Individual flight profiles have been modeled for the two departure types.

Noise Exposure

Figure ID3.1-3 shows the DNL contours for the Proposed Action Alternative at Boise Airport in 5 dB increments from 65 to 85 dB DNL. As shown, the 65 and 70 dB DNL contour extends outside of the airport boundary to the north and west. Figure ID3.1-4 compares the No Action and Proposed Action Alternative’s DNL contours. Most of the growth in contours for the Proposed Action Alternative would appear in the north-south direction, with a “fattening” due to the F-35A being louder than the A-10 both adjacent and underneath departure flight paths traveling west, south, or east.

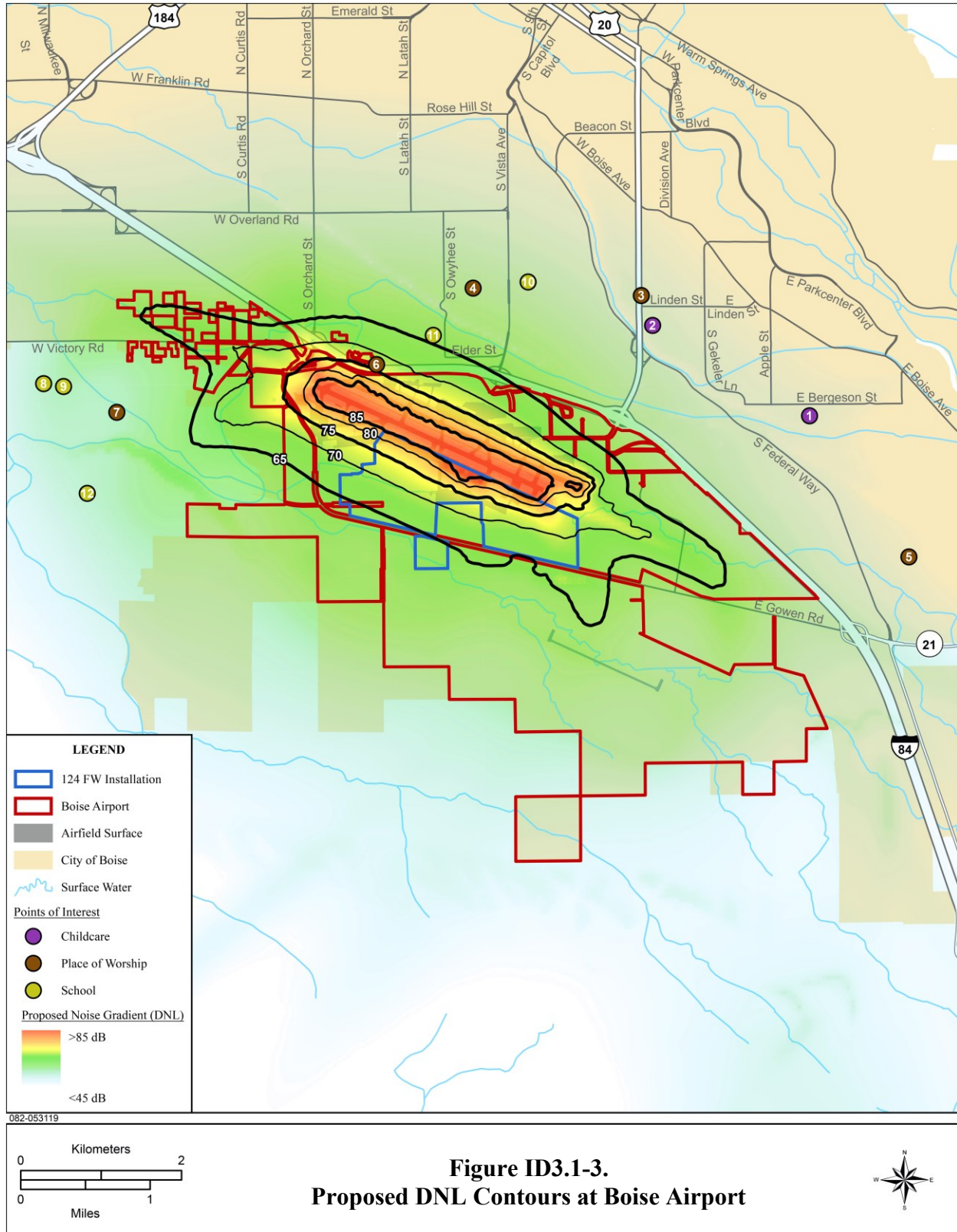
Table ID3.1-10 lists computed DNL for each of the Proposed Action Alternative’s 12 POIs and the change in DNL when compared to the affected environment. Under the Proposed Action Alternative, DNL values at the POIs would range from 50 to 73 dB. The Kingdom Hall of Jehovah’s Witness would experience the greatest DNL of 73 dB, an increase of 4 dB from the affected environment. No other locations would exceed 65 dB DNL due to the Proposed Action. Increase in DNL would range from no change to 4 dB.

**Table ID3.1-10. Proposed Action Alternative DNL at Points of Interest**

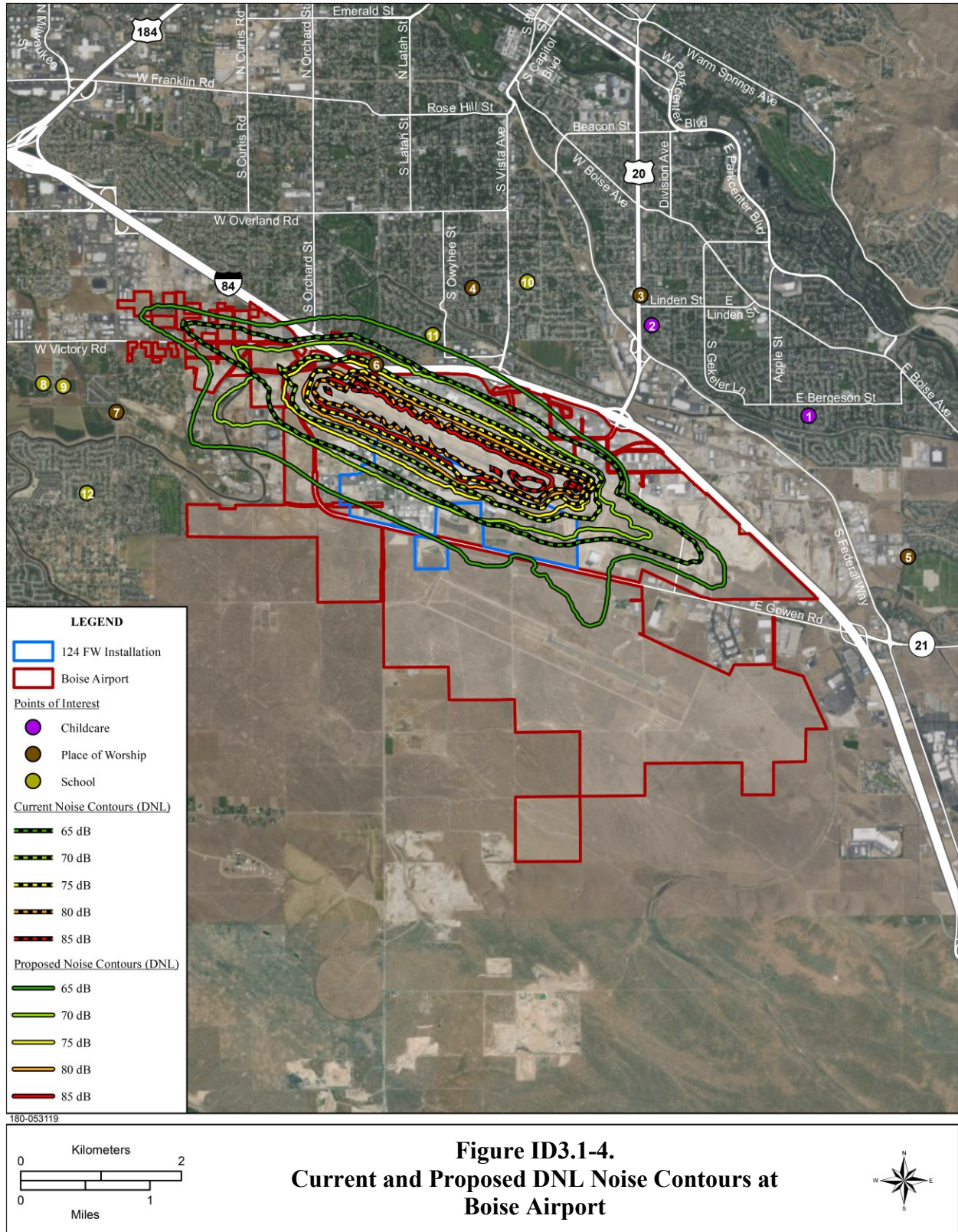
| <i>POI Number</i> | <i>Named POI</i>                            | <i>Proposed Action Alternative DNL (dB)</i> | <i>Change from Current Alternative in DNL (dB)</i> |
|-------------------|---|---|--|
| 1                 | Barefoot Baby Nursery School                | 50  | +1   |
| 2                 | South Boise Child Care Center               | 52  | +1   |
| 3                 | Bridgepoint Church                          | 51  | +1   |
| 4                 | Church of Jesus Christ of Latter-day Saints | 57  | +3   |
| 5                 | Columbia Heights Baptist Church             | 52  | 0  |
| 6                 | Kingdom Hall of Jehovah’s Witness           | 73  | +4   |
| 7                 | Treasure Valley Full Gospel                 | 57  | +4   |
| 8                 | West Jr. High School                        | 56  | +4   |
| 9                 | Frank Church High School                    | 57  | +4   |
| 10                | Hawthorne Elementary School                 | 55  | +3   |
| 11                | Owyhee-Harbor Elementary School             | 64  | +4   |
| 12                | Silver Sage Elementary School               | 56  | +4   |

*Legend:* dB = decibel; DNL = Day-Night Average Sound Level; POI = Point of Interest.  
*Source:* 124 FW 2019.

Table ID3.1-11 presents the estimated off-airport acreage, population, and households within each 5 dB DNL contour band. When compared to the No Action Alternative (off-airport), there would be 446 more acres, 655 more people, and 272 more households that would experience DNL equal to or greater than 65 dB. Most of the growth in contours from this alternative would appear in the north and to the west due to the F-35A being louder than the A-10 in the immediate runway environment and during departure operations. Most of the new households that would be exposed to greater than 65 dB DNL would be located north of the airport between South Orchard Street and South Owyhee Street. This would be considered a significant impact to those persons affected.



Source: 124 FW 2019.



Source: 124 FW 2019.

**Table ID3.1-11. Proposed Action Alternative Off-Airport Noise Exposure**

| <i>DNL (dB)</i> | <i>Proposed Action Alternative Acreage</i> | <i>Proposed Action Alternative Estimated Population</i> | <i>Proposed Action Alternative Households</i> | <i>Change from No Action Alternative Acreage</i> | <i>Change from No Action Alternative Estimated Population</i> | <i>Change from No Action Alternative Households</i> |
|-----------------|--|---|---|--|---|---|
| 65–70           | 442  | 810   | 337   | +316   | +455  | +189  |
| 70–75           | 135  | 245   | 102   | +108   | +199  | +83   |
| 75–80           | 23   | 0   | 0   | +22  | 0   | 0   |
| 80–85           | 0  | 0   | 0   | 0  | 0   | 0   |
| 85+             | 0  | 0   | 0   | 0  | 0   | 0   |
| <b>Total</b>    | <b>600</b>                                 | <b>1,055</b>  | <b>439</b>                                    | <b>+446</b>                                      | <b>+655</b>   | <b>+272</b>   |

Legend: dB = decibel; DNL = Day-Night Average Sound Level.

Source: 124 FW 2019.

### Supplemental Metrics

Consistent with the affected environment supplemental analysis, single-event SELs are provided at each POI for the three greatest noise events for each representative POI. Table ID3.1-12 shows the aircraft events producing the greatest SELs at the airport along with the weekly events during environmental daytime and nighttime hours. Also included are the DNL values at the POIs for reference. Under this alternative, the greatest SELs at the representative POIs would continue to be generated by transient fighter aircraft (F-15 and F-18). Many of the F-35A sound levels would be similar but slightly less than the transient fighter aircraft SELs due to slightly greater climb rates causing the F-35A to reach higher altitudes sooner. Overall, the Proposed Action Alternative would not have a large effect on the loudest aircraft events at the analyzed POIs during either daytime or nighttime. However, the F-35A would generate sound levels 10 to 16 dB greater than the A-10 it would replace, which would increase the frequency of noise events typical of the existing transient fighter jets.

**Table ID3.1-12. Loudest Events at Each POI, Calculated in SEL – Proposed Action Alternative**

| <i>Map ID</i> | <i>Named Point of Interest</i>              | <i>Current DNL</i> | <i>Current SEL (dBA)</i> | <i>Current Average Events Per Week (Daytime)</i> | <i>Current Average Events Per Week (Night)</i> | <i>Proposed Action DNL</i> | <i>Proposed Action SEL (dBA)</i> | <i>Proposed Action Average Events Per Week (Daytime)</i> | <i>Proposed Action Average Events Per Week (Night)</i> |
|---------------|---|--------------------|--------------------------|--|--|----------------------------|----------------------------------|--|--|
| 1             | Barefoot Baby Nursery School                | 49                 | 92                       | <1   | 0  | 50                         | 92                               | <1   | 0  |
| 2             | South Boise Child Care Center               | 51                 | 94                       | <1   | 0  | 52                         | 94                               | <1   | 0  |
| 3             | Bridgepoint Church                          | 50                 | 92                       | <1   | 0  | 51                         | 92                               | <1   | 0  |
| 4             | Church of Jesus Christ of Latter-day Saints | 54                 | 100                      | <1   | 0  | 57                         | 100                              | <1   | 0  |
| 5             | Columbia Heights Baptist Church             | 52                 | 102                      | <1   | 0  | 52                         | 102                              | <1   | 0  |
| 6             | Kingdom Hall of Jehovah's Witness           | 69                 | 121                      | <1   | 0  | 73                         | 121                              | <1   | 0  |
| 7             | Treasure Valley Full Gospel                 | 53                 | 105                      | <1   | 0  | 57                         | 105                              | <1   | 0  |
| 8             | West Jr. High School                        | 52                 | 106                      | <1   | 0  | 56                         | 106                              | <1   | 0  |
| 9             | Frank Church High School                    | 53                 | 108                      | <1   | 0  | 57                         | 108                              | <1   | 0  |
| 10            | Hawthorne Elementary School                 | 52                 | 97                       | <1   | 0  | 55                         | 97                               | <1   | 0  |
| 11            | Owyhee-Harbor Elementary                    | 60                 | 107                      | <1   | 0  | 64                         | 107                              | <1   | 0  |
| 12            | Silver Sage Elementary                      | 52                 | 103                      | <1   | 0  | 56                         | 103                              | <1   | 0  |

*Legend:* dBA = A-weighted decibel; DNL = Day-Night Average Sound Level; POI = Point of Interest; SEL = Sound Exposure Level.

Day = 7 a.m. to 10 p.m., Night = 10 p.m. to 7 a.m.

*Source:* 124 FW 2019.

**Classroom Learning Interference.** As noted under affected environment, 6 of the 12 POIs identified near Boise Airport are schools and 1 is a childcare center. Table ID3.1-13 lists the points along with the calculation of the various metrics with the windows open. Under the Proposed Action Alternative, the West Junior High, Frank Church High School, Owyhee-Harbor Elementary, and Silver Sage Elementary would experience an increase in  $L_{eq}$  of 4 to 5 dB. Owyhee-Harbor Elementary School would be exposed to exterior  $L_{eq}$  of 65 dB, which would equate to 50 and 45 dB interior levels with windows open and windows closed, respectively. The number of speech-interfering events at Owyhee-Harbor would be seven per hour with an average duration of time above 50 dB of 3 minutes per average school day.

**Table ID3.1-13. Classroom Speech Interference – Proposed Action Alternative**

| <i>POI Number</i> | <i>Named POI</i>                | <i>Outdoor <math>L_{eq(8)}</math> (dBA) Current</i> | <i>Outdoor <math>L_{eq(8)}</math> (dBA) Proposed</i> | <i>Outdoor <math>L_{eq(8)}</math> (dBA) Change Relative to Current</i> | <i>Number of Events Interrupting Speech per School Day (hour)<sup>1</sup></i> | <i>Time above 50 dBA per 8-hour School Day (minutes)<sup>1</sup></i> |
|-------------------|---------------------------------|---|--|--|---|--|
| 1                 | Barefoot Baby Nursery School    | 49  | 49   | 0  | 1   | 1  |
| 2                 | South Boise Child Care Center   | 51  | 52   | +1   | 2   | 1  |
| 8                 | West Junior High School         | 53  | 57   | +4   | 2   | 1  |
| 9                 | Frank Church High School        | 54  | 59   | +5   | 2   | 1  |
| 10                | Hawthorne Elementary School     | 53  | 56   | +3   | 3   | 2  |
| 11                | Owyhee-Harbor Elementary School | 61  | 65   | +4   | 7   | 3  |
| 12                | Silver Sage Elementary School   | 53  | 58   | +5   | 2   | 2  |

*Note:* <sup>1</sup>Assumes even distribution of daytime operations throughout the day. Totals may be off due to rounding.

*Legend:* dBA = A-weighted decibel;  $L_{eq(8)}$  = 8-Hour Equivalent Noise Level; POI = Point of Interest.

*Source:* 124 FW 2019.

**Residential Speech Interference.** Residential speech interference examines the number of events above 50 dB as tabulated in Table ID3.1-14. The table presents the number of indoor speech-interfering events per hour, both with windows open and closed, using a standard value for building attenuation of 15 dB and 25 dB, respectively. For the windows open condition, the number of speech-interfering events would increase by one per hour at four locations. With windows closed, which is most likely given the local climate, seven POIs would experience an increase of up to one event per hour in speech interrupting events under the Proposed Action Alternative. The maximum of six interfering events per hour would occur at the Kingdom Hall of Jehovah’s Witness with windows closed while other POIs would not exceed an average of one event per hour.

**Table ID3.1-14. Residential Speech Interference Events – Proposed Action Alternative**

| <i>POI Number</i> | <i>Named POI</i>                            | <i>Windows Open<sup>1, 2</sup><br/>Proposed Action</i> | <i>Windows Closed<sup>1, 3</sup><br/>Proposed Action</i> | <i>Windows Open<sup>1, 2</sup><br/>Change</i> | <i>Windows Closed<sup>1, 3</sup><br/>Change</i> |
|-------------------|---|--|--|---|---|
| 1                 | Barefoot Baby Nursery School                | 1  | 0  | 0   | 0   |
| 2                 | South Boise Child Care Center               | 2  | 0  | 0   | 0   |
| 3                 | Bridgepoint Church                          | 2  | 1  | +1  | +1  |
| 4                 | Church of Jesus Christ of Latter-day Saints | 4  | 1  | 0   | +1  |
| 5                 | Columbia Heights Baptist Church             | 2  | 0  | 0   | 0   |
| 6                 | Kingdom Hall of Jehovah's Witness           | 13   | 6  | 0   | 0   |
| 7                 | Treasure Valley Full Gospel                 | 3  | 1  | 0   | +1  |
| 8                 | West Jr. High School                        | 2  | 1  | +1  | +1  |
| 9                 | Frank Church High School                    | 2  | 1  | 0   | +1  |
| 10                | Hawthorne Elementary School                 | 3  | 1  | +1  | +1  |
| 11                | Owyhee-Harbor Elementary School             | 7  | 1  | 0   | 0   |
| 12                | Silver Sage Elementary School               | 2  | 1  | +1  | +1  |

*Notes:* <sup>1</sup>Assumes even distribution of daytime operations throughout the day.

<sup>2</sup>Assumes 15 dB attenuation.

<sup>3</sup>Assumes 25 dB attenuation.

*Legend:* POI = Point of Interest.

*Sources:* 124 FW 2019.

**Sleep Disturbance.** Table ID3.1-15 shows the probability of awakening for each POI utilizing the ANSI standard S12.9 criteria used in the affected environment analysis. Note that while residences may not be present at each of the POIs, the points serve as good representations of the noise environment in the immediate vicinity, which often includes residences. Under the Proposed Action Alternative, three locations would experience an increase of 1 percent probability of awakening with windows open and no change with windows closed. The immediate area around the Kingdom Hall of Jehovah’s Witness (POI #6) would continue to have a 9 percent probability of awakening when windows are open and a 6 percent probability of awakening when windows are closed. Because civil traffic generates the vast majority of nighttime flights, the proposed changes to military operations would have a negligible impact on average probability of awakening.

**Table ID3.1-15. Probability of Awakening – Proposed Action Alternative**

| <i>POI Number</i> | <i>Named POI</i>                            | <i>Windows Open<sup>1</sup></i> | <i>Windows Closed<sup>2</sup></i> |
|-------------------|---|---------------------------------|-----------------------------------|
| 1                 | Barefoot Baby Nursery School                | 1%                              | 1%                                |
| 2                 | South Boise Child Care Center               | 1%                              | <1%                               |
| 3                 | Bridgepoint Church                          | 1%                              | <1%                               |
| 4                 | Church of Jesus Christ of Latter-day Saints | <1%                             | <1%                               |
| 5                 | Columbia Heights Baptist Church             | 1%                              | <1%                               |
| 6                 | Kingdom Hall of Jehovah's Witness           | 9%                              | 6%                                |
| 7                 | Treasure Valley Full Gospel                 | <1%                             | <1%                               |
| 8                 | West Jr. High School                        | <1%                             | <1%                               |
| 9                 | Frank Church High School                    | <1%                             | <1%                               |
| 10                | Hawthorne Elementary School                 | <1%                             | <1%                               |
| 11                | Owyhee-Harbor Elementary                    | 1%                              | <1%                               |
| 12                | Silver Sage Elementary                      | <1%                             | <1%                               |

Notes: <sup>1</sup>Assumes 15 dB attenuation.

<sup>2</sup>Assumes 25 dB attenuation.

Legend: POI = Point of Interest.

Sources: 124 FW 2019.

**Potential for Hearing Loss.** Under the Proposed Action Alternative, no residential areas on or adjacent to Boise Airport would be exposed to DNL greater than or equal to 80 dB. Therefore, a PHL is not anticipated due to the Proposed Action. This conclusion is justified because hearing loss due to noise exposure would generally require daily exposure over 40 years, or longer, to DNL greater than 80 dB DNL.

**Occupational Noise.** NGB occupational noise exposure prevention procedures, such as hearing protection and monitoring, would continue to be applied under the Proposed Action Alternative. These procedures would comply with all applicable OSHA and NGB occupational noise exposure regulations and ensure no significant adverse impacts under the Proposed Action Alternative.

**Other Noise Sources.** Noise is an unavoidable, short-term byproduct of construction activities. The major noise events for this construction would take place inside airport boundaries at the 124 FW installation with only a negligible increase in traffic noise caused by vehicles entering and exiting the airport for construction deliveries and work force arrivals and departures. During construction, steps would be taken to minimize any impacts. These include making sure all equipment is in good operating condition, with an emphasis on maintenance of mufflers, bearings, and moving machinery parts. Stationary equipment with a potential to emit noise would be placed away from sensitive noise receivers. Whenever possible, noise events would be scheduled to avoid noise-sensitive times. Construction workers would comply with OSHA exposure regulations to ensure no significant adverse effects from noise exposure.

### *No Action Alternative*

Under the No Action Alternative, the acoustic environment at and around the airport would not differ from the conditions presented under the affected environment. Therefore, refer to Section ID3.1.1.1 for noise exposure and supplemental noise metrics.

### **ID3.1.2      Airspace**

The U.S. Government prescribes the use of the Onset-Rate Adjusted Monthly DNL ( $L_{dnmr}$ ) for aircraft noise analysis in the SUA environment.  $L_{dnmr}$  is based on the month with the most aircraft activity in each airspace unit to account for the sporadic nature of operations.  $L_{dnmr}$  is similar to the DNL except that an additional penalty is applied to account for the startle effect of aircraft operating at low altitudes and at high rates of speed (over 400 knots) generating quick sound level increases. The penalty is calculated from the rate of increase in sound level and varies from 0 to 11 dB. Noise modeling, using MR\_NMAP, was accomplished by determining the operations in each airspace unit and building each aircraft's flight profiles based on the aircraft's configuration (airspeed and power setting) and the amount of time spent at various altitudes throughout the airspace.

BOOMAP was used to calculate the C-weighted Day-Night Average Sound Level (CDNL) resulting from the proposed supersonic operations in the MHRC. This metric captures the impulsive characteristics of supersonic noise as DNL. Supersonic flight activity only occurs where authorized.

In rural and open areas, the analysis of noise impacts are vastly different compared to areas near population centers. In these areas, public concerns can include effects to wildlife, domestic animals, natural sounds, and outdoor recreation. Although many studies have been conducted on noise impacts to animals, if the animal of concern has not been included in any of these studies, biological expertise is required to determine if additional research is needed or a surrogate animal can be used for the assessment of impacts. See Section ID3.11, *Biological Resources* for a discussion of noise impacts to wildlife.

#### **ID3.1.2.1      Affected Environment**

The 124 FW uses the MHRC and Saddle MOAs for training missions (see Figure ID2.2-1). This SUA includes MOAs with Restricted Areas and overlying ATCAAs. Supersonic flight is authorized in Owyhee North and Jarbidge North MOAs and in the ATCAAs overlying the Paradise North and South, Owyhee South, and Jarbidge South MOAs. No supersonic activity is authorized over the Duck Valley Indian Reservation. For this analysis, the affected environment for the MHRC is based on historical usage data for Fiscal Years (FY) 2014, 2015, and 2016 for subsonic aircraft activity and FY2017 for supersonic activity.

MHRC data was provided by 366<sup>th</sup> Operations Support Squadron, Mountain Home AFB, Idaho. The A-10 accounts for up to 2,500 annual sorties within the MHRC and Saddle MOAs/ATCAAs. Flight profile data for the F-15’s were provided by representatives from the 366<sup>th</sup> Fighter Wing Mountain Home AFB and data for the A-10s were provided by the 124 FW.

*Noise Exposure*

**Subsonic.** Table ID3.1-16 shows the  $L_{dnmr}$  levels, rounded to whole decibels, for the affected environment within each of the respective MOAs/ATCAAs. As can be seen, Jarbidge North MOA, Owyhee North MOA, and R-3202 have the highest exposure to noise with the  $L_{dnmr}$  reaching 59 dB; all other locations are below 52 dB.

**Table ID3.1-16.  $L_{dnmr}$  Beneath SUA – Current**

| <i>Airspace</i>                   | <i><math>L_{dnmr}</math> (dB)</i> |
|-----------------------------------|-----------------------------------|
| Jarbidge North/R-3204 A/B/C/ATCAA | 59                                |
| Jarbidge South/ATCAA              | 44                                |
| Owyhee North/ATCAA                | 59                                |
| Owyhee South/ATCAA                | 42                                |
| Paradise North/ATCAA              | 51                                |
| Paradise South/ATCAA              | 36                                |
| Saddle A/ATCAA                    | 35                                |
| Saddle B/ATCAA                    | 35                                |
| Saddle Corridor/ATCAA             | 35                                |
| R-3202 Low/High/ATCAA             | 59                                |
| Gunfighter ALTRV                  | 35                                |

*Notes:* ATCAAs overlaying Jarbidge, R-3202, Owyhee, Saddle, and Paradise are included in modeling above appropriate MOAs.

*Legend:* ALTRV = Altitude Reservation; dB = decibel;  $L_{dnmr}$  = Onset-Rate Adjusted Day-Night Average Sound Level; R- = Restricted Area.

*Source:* 124 FW 2019.

**Supersonic.** Supersonic operations in the MHRC and Saddle MOAs/ATCAAs comprise 2,324 annual events primarily attributable to the F-15s located at Mountain Home AFB; the A-10s do not conduct supersonic operations. During FY2017, 1,859 (80 percent) supersonic events occurred during environmental daytime (7 a.m. to 10 p.m.) and 465 (20 percent) occurred during environmental nighttime (10 p.m. to 7 a.m.). Note that like subsonic operations, supersonic events in the SUA and ATCAAs are counted each time aircraft use a different airspace unit, so one aircraft sortie typically generates more than one supersonic event in the airspace. Supersonic flight operations data were provided by representatives from the 366<sup>th</sup> Fighter Wing at Mountain Home AFB.

Table ID3.1-17 shows the CDNL highest levels calculated for the affected environment within each of the respective MOAs/ATCAAs/Restricted Areas. Figure ID3.1-5 depicts the current CDNL contours produced by BOOMAP.

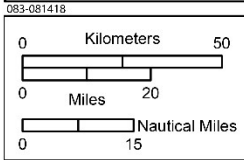
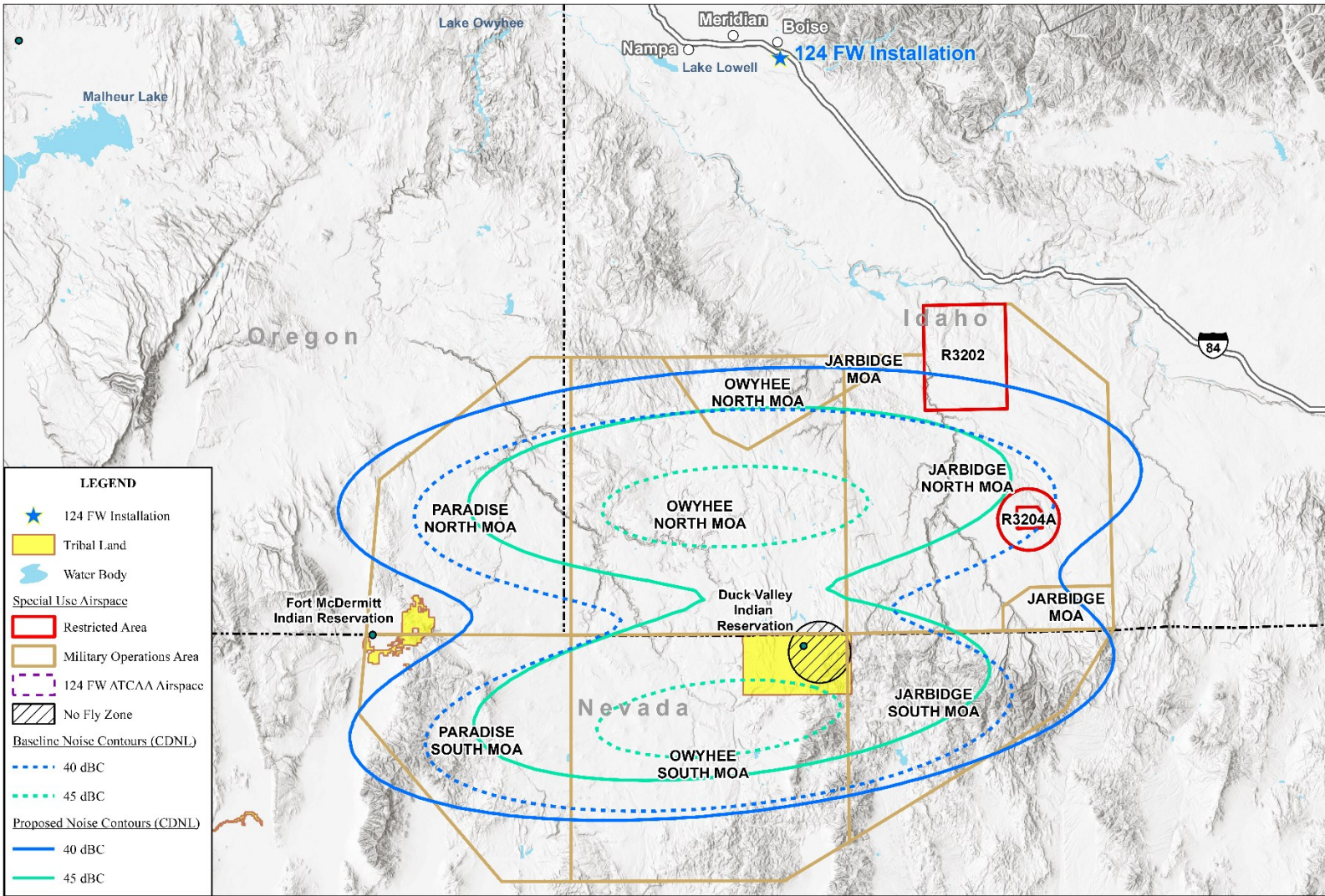


Figure ID3.1-5. Airspace Approved for Supersonic Flight Activity



ID-40

**Table ID3.1-17. CDNL Beneath SUA – Affected Environment**

| <i>Airspace</i>          | <i>CDNL (dBC)</i> |
|--------------------------|-------------------|
| Jarbidge North MOA/ATCAA | 40                |
| Jarbidge South ATCAA     | 40                |
| Owyhee North MOA/ATCAA   | 45                |
| Owyhee South ATCAA       | 45                |
| Paradise North ATCAA     | 40                |
| Paradise South ATCAA     | 40                |

*Legend:* ATCAA = Air Traffic Control Assigned Airspace; dBC = C-weighted decibel; CDNL = C-weighted Day-Night Average Sound Level; MOA = Military Operations Area.

*Source:* 124 FW 2019.

### ID3.1.2.2 Environmental Consequences

#### *Proposed Action*

This section presents noise conditions in the airspace and ranges that would be used by F-35A aircraft under the 124 FW beddown scenario. For this alternative, F-35A aircraft would replace the 124 FW A-10s. All other aircraft operations would be unchanged from those described under the No Action Alternative. Under the Proposed Action Alternative, there would be an increase of 22 percent of sorties in the airspace, with each sortie lasting 30 to 60 minutes. Therefore, there would be an approximately 47 percent increase in the time spent in the airspace by 124 FW aircraft.

Although the F-35A would be expected to operate more often at higher altitudes than the A-10, no other changes in airspace or airspace use are proposed. The noise analysis accounts for subsonic flight operations and supersonic operations in airspace that is authorized for supersonic flight. Subsonic noise is quantified by  $L_{dnmr}$ ; the cumulative sonic boom environment is quantified by CDNL and by the number of booms per month that would be heard on the surface.

#### Noise Exposure

**Subsonic.** Table ID3.1-18 shows the  $L_{dnmr}$  levels under the Proposed Action Alternative conditions and rate of change within each of the respective MOAs/ATCAAs/Restricted Areas. As can be seen, the greatest change in  $L_{dnmr}$  is 8 dB in the Saddle A and B MOAs; however, noise levels would be 43 dB  $L_{dnmr}$ . The highest noise exposure continues to be within Jarbidge North MOA, Owyhee North MOA, and R-3202; however, there is no perceptible change under the Proposed Action Alternative when compared to the affected environment at an  $L_{dnmr}$  of 59 dB. All other SUA remain below 52 dB.

The noise levels computed in Table ID3.1-18 represent only the military aircraft contributions to sound levels and does not consider other sources, such as road traffic and wind. Typical ambient  $L_{dnmr}$  for ‘quiet suburban residential’ areas range from 49 to 52 dB while rural is typically less than 49 dB (ANSI 2013). Although several areas listed in Table ID3.1-18 would experience relatively

large increases in  $L_{dnmr}$  (Paradise South, Saddle A, Saddle B, and Saddle Corridor) due to aircraft noise, the proposed conditions would not be likely to exceed current ambient levels when all noise sources are considered.

**Table ID3.1-18. Comparison of the Proposed Action Alternative  $L_{dnmr}$  Beneath SUA to the Affected Environment**

| <i>Airspace</i>                            | <i>Current <math>L_{dnmr}</math> (dBA)</i> | <i>Proposed Action Alternative <math>L_{dnmr}</math> (dBA)</i> | <i>Change <math>L_{dnmr}</math> (dBA)</i> |
|--|--|--|---|
| Jarbidge North/ATCAA<br>R-3204 A/B/C/ATCAA | 59   | 59   | 0   |
| Jarbidge South/ATCAA                       | 44   | 45   | +1  |
| Owyhee North/ATCAA                         | 59   | 59   | 0   |
| Owyhee South/ATCAA                         | 42   | 44   | +2  |
| Paradise North/ATCAA                       | 51   | 51   | 0   |
| Paradise South/ATCAA                       | 36   | 42   | +6  |
| Saddle A/ATCAA                             | 35   | 43   | +8  |
| Saddle B/ATCAA                             | 35   | 43   | +8  |
| Saddle Corridor/ATCAA                      | 35   | 41   | +7  |
| R-3202 Low/High/ATCAA                      | 59   | 59   | 0   |
| Gunfighter ALTRV                           | 35   | 36   | +1  |

*Legend:* ALTRV = Altitude Reservation; ATCAA = Air Traffic Control Assigned Airspace; dBA = A-weighted decibel; Onset-Rate Adjusted Day-Night Average Sound Level; R- = Restricted Area.

*Source:* 124 FW 2019.

**Supersonic.** The Proposed Action Alternative supersonic operations include the No Action Alternative 2,324 annual events primarily attributable to the F-15s located at Mountain Home AFB, plus 3,000 events attributable to the proposed F-35A. There are no proposed F-35A supersonic operations during environmental nighttime hours. Figure ID3.1-5 that shows both the No Action Alternative CDNL levels and those predicted under this alternative. Table ID3.1-19 presents the highest CDNL predicted within each airspace unit along with the rate of change in dB CDNL. As can be seen in both the table and figure, the highest CDNL under this alternative would be 45 dB CDNL. When compared to the affected environment, the area affected by these noise levels would be more under the 124 FW Proposed Action.

**Table ID3.1-19. Comparison of the Proposed Action Alternative  $L_{dnmr}$  Beneath SUA to the Affected Environment**

| <i>Airspace</i>          | <i>Current CDNL (dBC)</i> | <i>Proposed Action Alternative CDNL (dBC)</i> | <i>Change CDNL (dBC)</i> |
|--------------------------|---------------------------|---|--------------------------|
| Jarbidge North MOA/ATCAA | 40                        | 45  | 5                        |
| Jarbidge South ATCAA     | 40                        | 45  | 5                        |
| Owyhee North MOA/ATCAA   | 45                        | 45  | 0                        |
| Owyhee South ATCAA       | 45                        | 45  | 0                        |
| Paradise North ATCAA     | 40                        | 45  | 5                        |
| Paradise South ATCAA     | 40                        | 45  | 5                        |

*Legend:* ATCAA = Air Traffic Control Assigned Airspace; CDNL = C-weighted Day-Night Average Sound Level; dBC = C-weighted decibel; MOA = Military Operations Area.

*Source:* 124 FW 2019.

### *No Action Alternative*

Under the No Action Alternative, the acoustic environment in the airspace would not differ from the conditions presented under the affected environment. Therefore, refer to Section ID3.1.2.1 for noise exposure.

#### **ID3.1.3 Summary of Impacts**

Under the Proposed Action at the 124 FW installation, F-35A aircraft operations at the installation would increase off-installation acreage contained within the 65 dB DNL and greater noise contours by 446 acres. There would be an estimated addition of 272 households and 655 more people would reside within the 65 and greater dB DNL contours. Predicted changes in the DNL at POIs range from +1 to +5 dB. Levels at all representative POIs would remain under 65 dB, with the exception of the Kingdom Hall of Jehovah's Witness, which would be at 73 dB DNL. Three of the school POIs located within the Region of Influence (ROI) would experience an increase in the number of events causing speech interference but only Owyhee-Harbor Elementary School would exceed  $L_{eq}$  of 65 dB. The predicted increase in  $L_{dnmr}$  in SUA would range from 0 to 7 dB with the highest  $L_{dnmr}$  remaining at or below 59 dB. Increases in the CDNL resulting from the addition of supersonic activity would be between 0 and 5 dB with levels remaining at 45 C-weighted decibels (dBC). Additional discussion regarding noise impacts on factors such as health effects and noise-induced vibration effects can be found in Appendix B, *Noise Modeling, Methodology, and Effects*. Based on context and intensity, the change in the noise environment associated with the Proposed Action would be considered significant in the area surrounding the airfield but would not be significant in the SUA.

The USAF does not have authority to expend appropriated funds on facilities that are not under the direct control of the USAF. However, the FAA has a program that addresses noise and compatible land use near airports. Title 14, CFR, Part 150 - *Airport Noise Compatibility Planning*, the implementing regulations of the *Aviation Safety and Noise Abatement Act of 1979*, as amended, provides a voluntary process an airport sponsor can use to mitigate significant noise impacts from airport users. It is important to note that the Part 150 program is not a guarantee that sound mitigation or abatement will take place. Eligibility for sound insulation in noise-sensitive land uses through the FAA's Airport Improvement Program requires that the impacted property is located within a DNL 65 dB or higher noise contour and meet various other criteria in FAA guide documents used for sound mitigation.

A Mitigation and Monitoring Plan will be developed for those installations chosen, and will include metrics to track and monitor those activities that are identified to minimize the impacts. These could include afterburner usage, flight tracks, number of operations, etc. The Mitigation and Monitoring Plan will identify who is responsible for implementing specific mitigation

procedures, who is responsible for funding them, and who is responsible for tracking these measures to ensure compliance.

## **ID3.2 AIRSPACE**

### **ID3.2.1 Installation**

#### **ID3.2.1.1 Affected Environment**

Boise Airport is a joint-use airport located approximately 3 miles south of downtown Boise, Idaho. It is publicly owned and operated by the City of Boise with the FAA providing air traffic control (ATC) services for pilots operating in the local airspace. The 124 FW cantonment area is located in the southern half of the Boise Air Terminal (see Figure ID1.0-1). The airport has two parallel runways, Runway 10L/28R and Runway 10R/28L. The majority of civil and commercial air traffic departs and arrives to Runway 10L/28R with military operations occurring primarily on Runway 10R/28L.

Several other public and private airfields are located near Boise Airport. There are three publicly owned airports: Nampa Municipal Airport (about 13 NM west), Caldwell Industrial Airport (approximately 19 NM away), and Emmett Municipal Airport (approximately 22 NM away). There are multiple privately owned airfields, including Bybee Field, Hubler Field, Green Acres, Peaceful Cove, Red Baron Airpark, Harrington Airport, Loomis Airport, Sky Ranch North, Sands, Foster Field – Skydive Idaho Airport, and Lanham Field. In addition, one military airfield, Mountain Home AFB, is located approximately 35 NM to the southeast of Boise Airport.

The 124 FW currently flies and maintains 18 A-10 aircraft in support of its mission for the USAF and IDANG. Aircraft operations into and out of Boise Airport are controlled by FAA air traffic controllers who use the Class C airspace immediately surrounding the airfield, and the Class E extension airspace associated with the radar approach control area. In 2015, there were 143,665 annual airfield operations conducted at Boise Airport, including 6,152 by based A-10 aircraft.

#### **ID3.2.1.2 Environmental Consequences**

##### *Proposed Action*

The replacement of 18 A-10 aircraft with 18 F-35A aircraft at the 124 FW installation would result in an increase of 4 percent in military airfield operations and an increase in the total number of airfield operations conducted at Boise Airport by less than 1 percent. This minimal increase in total operations would not affect airspace management or use within the local air traffic environment. No changes to Boise Airport airspace or arrival and departure procedures would be required to accommodate F-35A. The alternative departure procedure identified in the 2015 Boise

Airport FAA Part 150 Study Update was designed to minimize noise exposure from fighter aircraft and would not affect the local air traffic environment (Boise Airport 2015). Neither the alternative departure procedure nor the minimal change in operations would adversely affect the capabilities of Boise Air Terminal Radar Approach Control or its control tower handling air traffic within the local airspace. Impacts on airspace use in the local air traffic environment would not be significant.

**Table ID3.2-1. Comparison of Current and Proposed Annual Airfield Operations**

| <i>Aircraft</i>                               | <i>Current</i> | <i>Proposed Airfield Operations</i> |
|---|----------------|-------------------------------------|
| Based A-10                                    | 6,152          | 0                                   |
| Other Assigned Military Aircraft <sup>1</sup> | 16,500         | 16,500                              |
| Transient Military                            | 3,100          | 3,100                               |
| Civilian                                      | 117,913        | 117,913                             |
| F-35A   | 0              | 7,274                               |
| <b>Total</b>                                  | <b>143,665</b> | <b>144,787</b>                      |
| <b>Percent Change from Current</b>            | <b>-</b>       | <b>+1%</b>                          |

*Notes:* <sup>1</sup>Includes Army National Guard UH-60 and C-12; Boise Airport aircraft pattern work by F-15C, KC-135, C-12, A-10, and others.

*Source:* 124 FW 2019.

### *No Action Alternative*

Under the No Action Alternative, the A-10s would continue to fly from Boise Airport. Negligible changes to the frequency of operations, or use of arrival or departure routes, would occur. Operations would remain as described in Section ID3.2.1.1. There would be no change in use of local airspace; therefore, no significant impacts would occur.

## **ID3.2.2 Airspace**

As noted in Chapter 2, Section 2.1.2, F-35A aircraft would not use Military Training Routes, either to access the training airspace or conduct training. Therefore, this aspect of airspace use is not addressed in this EIS.

### **ID3.2.2.1 Affected Environment**

The 124 FW uses several airspace units that consist of MOAs, Restricted Areas, and ATCAAs collectively known as the MHRC and the Saddle MOAs/ATCAAs (see Table ID2.2-2 and Figure ID2.2-1). The 124 FW A-10 aircraft currently conduct up to 2,500 annual sorties (or approximately 208 monthly sorties) lasting approximately 60 minutes in the airspace. The 124 FW A-10s fly about 9 percent of total operations in the MHRC and Saddle MOAs/ATCAAs; the F-15s based at Mountain Home AFB and other transient users of the airspace account for the remaining 91 percent of the total use. The scheduling agency of the MHRC is the 366<sup>th</sup> Fighter Wing out of Mountain Home AFB, Idaho. Published times of use are from 7:30 a.m. to 10 p.m. daily, with other times scheduled by Notice to Airmen (NOTAM). The scheduling agency of the

Saddle MOAs is the 124 FW, with intermittent use by NOTAM. The controlling agency for the MHRC and Saddle MOAs/ATCAAs is the FAA, Salt Lake City ARTCC.

No low-altitude civil routes (Victor [V] or Tango [T]) transect the MHRC. One high-level jet route, J-523, transits the western edge of Paradise North/South ATCAA with a Minimum Enroute Altitude (MEA) of 29,000 feet MSL where aircraft on the route are in Class A airspace and under positive ATC. No Q routes transect the MHRC or Saddle ATCAAs.

**Table ID3.2-2. Air Traffic Service Routes in the Vicinity of the Training Airspace**

| <i>Route Name</i> | <i>MEA<sup>1</sup></i> | <i>Associated Airspace</i> |
|-------------------|------------------------|----------------------------|
| J-523             | 29,000 MSL             | Paradise North/South ATCAA |

*Note:* MEA as published in the vicinity of the training airspace.

*Legend:* ATCAA = Air Traffic Control Assigned Airspace; MEA = Minimum Enroute Altitude; MSL = mean sea level.

Over the past 10 years, commercial aircraft activity in Idaho has fluctuated but forecast to grow over the next 20 years (FAA 2018). As shown in Table ID3.2-3, there are 11 airports located beneath the training airspace used by the 124 FW, 6 open to the public and 5 private airports. Two of the airports, Grasmere and Murphy Hot Springs, are publicly owned by the State of Idaho, Transportation Department’s Division of Aeronautics, and one airport, the Stevens-Crosby Airport, is owned by the Bureau of Land Management. The Owyhee Airport is publicly owned by the Shoshone-Paiute Tribe. Two airports, the Owyhee Reservoir State Airport and the Mc Dermitt State Airport, are owned by the Oregon Department of Aviation.

**Table ID3.2-3. Public and Private Airports in the Vicinity of the Training Airspace**

| <i>Airport Name</i>                   | <i>Airport Ownership</i> | <i>Associated MOA</i> | <i>Based Aircraft</i> | <i>Annual Operations</i> |
|---------------------------------------|--------------------------|-----------------------|-----------------------|--------------------------|
| Grasmere Airport                      | Public                   | Jarbidge North MOA    | None Reported         | 150                      |
| Murphy Hot Springs                    | Public                   | Jarbidge North MOA    | None Reported         | 900                      |
| Owyhee Airport                        | Public                   | Owyhee South MOA      | None Reported         | 1,360                    |
| Owyhee Reservoir State Airport        | Public                   | Saddle A MOA          | None Reported         | 550                      |
| Stevens-Crosby Airport <sup>1</sup>   | Public                   | Jarbidge South        | 1                     | 230                      |
| Mc Dermitt State Airport <sup>1</sup> | Public                   | Paradise North        | 1                     | 2,200                    |
| I-L Ranch Airport (NV12)              | Private                  | Owyhee South MOA      | None Reported         | Not Reported             |
| Petan Ranch Airport                   | Private                  | Owyhee South MOA      | None Reported         | Not Reported             |
| Canyon Airport (ID04)                 | Private                  | Owyhee North MOA      | None Reported         | Not Reported             |
| Crowley Ranch Airstrip                | Private                  | Saddle B MOA          | None Reported         | Not Reported             |
| Black Bull Spring Ranch Airport       | Private                  | Saddle B MOA          | None Reported         | Not Reported             |

*Note:* <sup>1</sup>Near the MOA boundary.

*Legend:* MOA = Military Operations Area.

*Source:* Skyvector 2018.

Occasionally, the Bureau of Land Management and Idaho Department of Fish and Game (IDFG) require use of the MHRC and Saddle MOAs for land management flights, fire spotting/response, game surveys, and other such activities. Mountain Home AFB airspace management assists in coordinating these flights when contacted by the agencies to help make both agency and military

aircrews aware of the timing, duration, location, and altitudes of each other's flight activities. Close coordination of scheduling and use of this SUA by the respective scheduling agencies for these and other activities ensures safe air traffic operations throughout the region. Therefore, other air traffic traveling in or near these airspace units are not in conflict with military flight activities.

#### ID3.2.2.2 Environmental Consequences

##### *Proposed Action*

Selection of 124 FW for beddown of operational aircraft would not result in adverse impacts on airspace use and management throughout this region and no comments were received during the public scoping period revealing conflicts with civil or commercial aviation. This alternative would not require any changes to the current lateral or vertical configuration of the MOAs, Restricted Areas, or ATCAAs, nor would it alter their normally scheduled times of use. The existing agreements in place between the FAA and 366<sup>th</sup> Operations Group at Mountain Home AFB would be sufficient to support F-35A flight operations. Under the 124 FW Proposed Action, there would be an increase of 22 percent of sorties, with each sortie lasting 30-60 minutes. Based on this, the time spent in the airspace by the 124 FW would be expected to increase approximately 47 percent relative to the affected environment (see Table ID2.2-3) due to additional sorties expected to be conducted by the F-35A (see Table ID2.2-4). In accordance with previous agreements, supersonic activity would occur only in the airspace and at altitudes and times currently approved for supersonic flight. The addition of F-35 supersonic events occurring above 10,000 feet AGL and below 30,000 feet MSL in the Owyhee North and Jarbidge North MOAs/ATCAAs could result in an exceedance of the number of supersonic operations (730 events) approved in the 2016 supersonic waiver (366<sup>th</sup> Operations Support Squadron/OSO 2016). Supersonic operations above 30,000 feet MSL are not limited.

The existing procedures and altitude structure would continue to support use of the Air Traffic Service Routes traversing the training airspace. The existing published times of use (7:30 a.m. to 10 p.m., with other times by NOTAM) for Paradise North/South, Owyhee North/South and Jarbidge North/South MOAs, and R-3202 High/Low and R-3204A/B/C would not change as a result of the Proposed Action Alternative when compared to the No Action Alternative conditions. While the F-35A would operate more frequently at higher altitudes, the traffic on the one high altitude route, J-523 (that traverses the Paradise North/South ATCAA), is within Class A airspace (over 18,000 feet MSL) and under positive ATC. Flight operations would continue to be controlled by the Salt Lake City ARTCC. An increase in use of the Saddle MOAs/ATCAAs would result in additional NOTAMs being issued; however, there are no Air Traffic Service Routes that would be affected and the ATCAAs would continue to be released only if the airspace is not needed by the FAA for other aircraft operations. Impacts to civil and commercial aviation traffic in the training airspace used by the 124 FW would not be significant due to increases in F-35A operations.

Use of existing procedures and continued close coordination for scheduling use of the MOAs, ATCAAs, and Restricted Areas would continue to ensure safe air traffic operations throughout this region. Civilian pilots can continue to access real-time MOA information by contacting Cowboy Control for radio-equipped aircraft (very high frequency [VHF] 134.1 MHz), or calling (208) 828-4804 prior to flight. Continued coordination between Mountain Home AFB's 366<sup>th</sup> Operations Group and land management agencies would minimize any impacts military operations would have on these agency flights. Considering that the operations would represent a continuation of current activities with a modest increase in number of operations with no predicted changes in the scheduled times of use for the MHRC or the Saddle MOAs, as well as there being no comments received during the public scoping period revealing conflicts with civil or commercial aviation, no significant impacts on airspace use or management would be expected.

#### *No Action Alternative*

Under the No Action Alternative, the A-10s would continue to fly from Boise Airport and use the same training airspace as they do today. No changes to the number of operations or frequency of use of the training airspace would occur. Operations would remain as described in Section ID3.2.1.1. There would be no change in use of training airspace; therefore, no significant impacts would occur.

### **ID3.2.3 Summary of Impacts**

The one-for-one replacement of A-10 military aircraft with F-35A aircraft assigned to the 124 FW would not require changes in local airspace or airfield management. Eventual replacement of A-10 aircraft at the installation with F-35As would result in an increase of 18 percent in military airfield operations, and approximately 1 percent increase in total airfield operations when compared to the current operations. This minor increase in airfield operations would have a minimal effect on the local air traffic environment. Time spent in the SUA would be expected to increase by approximately 47 percent. No changes to the Boise Airport terminal airspace arrival or departure procedures would be required to accommodate the F-35A. Close coordination of scheduling and use of the SUA by the 124 FW with the scheduling agencies would continue to ensure safe air traffic operations throughout the region. Therefore, impacts to airspace around the 124 FW installation and the SUA associated with the 124 FW would not be significant as a result of the F-35A beddown.

### **ID3.3 AIR QUALITY**

#### **ID3.3.1 Installation**

The following section describes the affected environment and examines the extent to which the beddown of the F-35A at the 124 FW installation would be consistent with federal, state, and local air quality regulations.

##### **ID3.3.1.1 Affected Environment**

The affected environment for the air quality analysis is Ada County, Idaho, which is part of the Metropolitan Boise Intrastate Air Quality Control Region (AQCR) (40 CFR 81.87). Ada County is in attainment for all criteria pollutants, but is designated as a maintenance area for CO and PM<sub>10</sub>. Because of the maintenance area designations, the General Conformity Rule applies and a General Conformity Applicability Analysis has been included in the air quality analysis performed for this location.

Table ID3.3-1 presents the 2014 emission inventory for Ada County, which includes the city of Boise, as well as Boise Airport.

**Table ID3.3-1. 2014 Criteria Pollutant Emissions for Ada County, Idaho (tons/year)**

| <i>Location</i>   | <i>VOCs</i> | <i>NO<sub>x</sub></i> | <i>CO</i> | <i>SO<sub>2</sub></i> | <i>PM<sub>10</sub></i> | <i>PM<sub>2.5</sub></i> |
|-------------------|-------------|-----------------------|-----------|-----------------------|------------------------|-------------------------|
| Ada County, Idaho | 19,999      | 11,264                | 59,153    | 184                   | 19,988                 | 3,387                   |

*Legend:* CO = carbon monoxide; NO<sub>x</sub> = nitrogen oxides; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter; PM<sub>10</sub> = particulate matter less than or equal to 10 microns in diameter; SO<sub>2</sub> = sulfur dioxide; VOC = volatile organic compound.

*Source:* USEPA 2018a.

In the Ada County, Idaho region, the summers are short, hot, dry, and mostly clear and the winters are cold and partly cloudy with frequent inversions. Over the course of the year, the temperature typically varies from 24 degrees Fahrenheit (°F) to 93°F and is rarely below 10°F or above 101°F. The rainy period of the year lasts for 9.1 months, from September 18 to June 20, with a sliding 31-day rainfall of at least 0.5 inch. The most rain falls during the 31 days centered around December 7, with an average total accumulation of 1.5 inches during that period (Weather Spark 2018).

Much of the water needed for agriculture, public supplies, and other uses comes from mountain snowpack, which melts in spring and summer, running off into rivers and filling reservoirs. As the climate warms, less precipitation falls as snow, and more snow melts during the winter, which decreases the snowpack. Since the 1950s, Idaho's snowpack has been decreasing in most locations. Climate change can also increase the frequency and severity of fires that burn forests, grasslands, and desert vegetation. On average, nearly 1 percent of the land in Idaho has burned per year since 1984, making it the most heavily burned state in the nation. Changes in climate are

likely to more than double the area in the northwest burned by forest fires during an average year by the end of the 21st century. Although drier soils alone increase the risk of wildfire, many other factors also contribute. Increasing wildfires threaten homes and other structures and pollute the air. Higher temperatures and a drier climate will generally extend the geographic range of the Great Basin desert (USEPA 2016).

Airfield operations are performed by the 124 FW, which currently flies 18 A-10 aircraft that would be replaced by the F-35A under this alternative. For the air quality analysis, only the aircraft to be replaced have been analyzed, as all other aircraft and their activities would remain the same. The annual operations for the aircraft include 2,500 landings and take-offs and 1,152 closed pattern operations. Other sources of air emissions associated with aircraft operations include airfield equipment such as tow tractors, and aircraft engine testing. Table ID3.3-2 presents the annual A-10 emissions for the 124 FW at Boise Airport. Emission estimates were developed for the aircraft using the TF34-GE-100 engines. Emission estimates were derived manually using installation-specific data, and include landings and take-offs, closed patterns, annual aircraft engine testing, and Aerospace Ground Equipment (AGE) operations. A-10 aircraft emissions are based on operations data provided by the installation, and represent the most recent data available on flight operations. AGE emissions were derived from the USAF’s Air Conformity Applicability Model (ACAM), where a number of default values were used.

**Table ID3.3-2. Annual A-10 Emissions Estimates for the 124 FW at Boise Airport  
(tons/year)**

| <i>Emission Source</i> | <i>VOCs</i> | <i>NO<sub>x</sub></i> | <i>CO</i> | <i>SO<sub>2</sub></i> | <i>PM<sub>10</sub></i> | <i>PM<sub>2.5</sub></i> | <i>CO<sub>2e</sub></i> |
|------------------------|-------------|-----------------------|-----------|-----------------------|------------------------|-------------------------|------------------------|
| A-10 Operations        | 103.12      | 75.59                 | 238.31    | 5.64                  | 24.70                  | 15.65                   | 9,229                  |

*Legend:* CO = carbon monoxide; CO<sub>2e</sub> = carbon dioxide equivalent, NO<sub>x</sub> = nitrogen oxides; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter; PM<sub>10</sub> = particulate matter less than or equal to 10 microns in diameter; SO<sub>2</sub> = sulfur dioxide; VOC = volatile organic compound.

### ID3.3.1.2 Environmental Consequences

#### *Proposed Action*

Air quality impacts within the affected environment were reviewed relative to federal, state, and local air pollution standards and regulations. Refer to Section 3.4 for a detailed discussion of air quality resource definitions and the analytical methodology for evaluating impacts. Ada County is a designated maintenance area for CO and PM<sub>10</sub>. For purposes of the analysis of CO and PM<sub>10</sub>, 100 tons per year per pollutant was used as the General Conformity Rule *de minimis* threshold for each pollutant to assess the applicability of General Conformity to the Proposed Action. For the remaining criteria pollutants (nitrogen oxides [NO<sub>x</sub>], sulfur oxides [SO<sub>x</sub>], and particulate matter less than or equal to 2.5 microns in diameter [PM<sub>2.5</sub>]) or their precursors (volatile organic compounds [VOCs]), potential impacts to air quality are evaluated with respect to the extent, context, and intensity of the impact in relation to relevant regulations, guidelines, and scientific

documentation. The Council on Environmental Quality (CEQ) defines significance in terms of context and intensity in 40 CFR 1508.27. This requires that the significance of an action be analyzed in respect to the setting of the action and based relative to the severity of the impact. For attainment area criteria pollutants, the project air quality analysis uses the USEPA's Prevention of Significant Deterioration (PSD) permitting threshold of 250 tons per year as an initial indicator of the local significance of potential impacts to air quality. It is important to note that these indicators only provide a clue to the potential impacts to air quality. In the context of criteria pollutants for which the proposed project region is in attainment of a National Ambient Air Quality Standards (NAAQS), the analysis compares the annual net increase in emissions estimated for each project alternative to the 250 tons per year PSD permitting threshold. The PSD permitting threshold represents the level of potential new emissions below which a new or existing minor non-listed stationary source may acceptably emit without triggering the requirement to obtain a permit. Thus, if the intensity of any net emissions increase for a project alternative is below 250 tons per year in the context of an attainment criteria pollutant, the indication is the air quality impacts will be insignificant for that pollutant. In the case of criteria pollutants for which the proposed project region does not attain a NAAQS, the analysis compares the net increase in annual direct and indirect emissions to the applicable pollutant *de minimis* threshold(s). If the net direct and indirect emissions from the project alternative equal or exceed an applicable *de minimis* threshold, then a positive general conformity determination is required before any emissions from the actions may occur.

### Construction

As a result of the proposed construction, there would be up to 249,232 SF (5.7 acres) of new construction footprint, including up to 25,000 SF (0.6 acre) of new impervious surface at the 124 FW installation. All proposed construction would be within the footprint of the developed installation. The calculations have been performed to account for all construction in 12 months, even though some projects would last longer than 12 months. This is to ensure a worst-case emissions scenario is captured. The following assumptions were used for construction projects at the 124 FW installation:

- New building foundations require excavation of at least 1 foot of grade soil.
- Airfield pavements require excavation of at least 3 feet of grade soil.
- All buildings are single story.
- All new buildings require at least 100 feet of utility trenching.
- All new impervious surfaces are assumed to be concrete.
- All construction activities were assumed to occur in 1 year to provide a worst-case scenario for emissions. This means all construction was calculated to occur in 2020.

- Where two options are under consideration, the option that would generate the greatest emissions was selected for analysis.

Construction emission estimates were prepared using the USAF air model ACAM. Emissions would primarily be generated by:

- diesel-powered construction equipment operating on-site,
- trucks removing or delivering materials from the construction areas,
- construction worker vehicles,
- application of architectural coatings, and
- dust created by grading and other bare earth construction activities.

Results of the modeling are presented in Table ID3.3-3. The 100-ton per year value serves as the *de minimis* threshold for CO and PM<sub>10</sub>. To provide clarity, the values specifically evaluated for the General Conformity Applicability Analysis are bolded. Detailed information on the modeling can be found in Appendix C.

**Table ID3.3-3. Annual Construction Emissions Estimates for the  
124 FW installation at Boise Airport - 2019 (tons/year)**

| <i>Year</i>  | <i>VOC</i> | <i>NO<sub>x</sub></i> | <i>CO</i>   | <i>SO<sub>x</sub></i> | <i>PM<sub>10</sub></i> | <i>PM<sub>2.5</sub></i> | <i>CO<sub>2e</sub></i> |
|--|------------|-----------------------|-------------|-----------------------|------------------------|-------------------------|------------------------|
| 2019   | 0.65       | 3.56                  | <b>3.06</b> | 0.01                  | <b>1.96</b>            | 0.16                    | 742                    |
| <i>De Minimis Threshold/<br/>Comparative Indicator</i> | 250        | 250                   | <b>100</b>  | 250                   | <b>100</b>             | 250                     | NA                     |
| <i>Exceedance (Yes/No)</i>                             | No         | No                    | <b>No</b>   | No                    | <b>No</b>              | No                      | NA                     |

*Legend:* CO = carbon monoxide; CO<sub>2e</sub> = carbon dioxide equivalent; NO<sub>x</sub> = nitrogen oxides; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter; PM<sub>10</sub> = particulate matter less than or equal to 10 microns in diameter; SO<sub>x</sub> = sulfur oxides; VOC = volatile organic compound.

Based on the ACAM calculations, the criteria pollutant emissions associated with the construction necessary to prepare the 124 FW installation for the basing of the F-35A would not exceed the *de minimis* thresholds for CO and PM<sub>10</sub>. Because the emission results do not exceed the thresholds, the General Conformity Applicability Analysis for construction is complete and the construction activities as described are exempt from the General Conformity Regulations. Additionally, all of the remaining criteria pollutant/precursor emissions (VOC, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>2.5</sub>) are below the comparative indicator values. The emissions associated with the construction necessary at the 124 FW installation for the basing of the F-35A would not be significant. A Record of Conformity Applicability is included in Appendix C as a record demonstrating that General Conformity does not apply to the Proposed Action. A Record of Air Analysis (ROAA) has also been prepared to document that the impacts associated with the remaining criteria pollutants (VOC, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>2.5</sub>) would not be significant, and can be found in Appendix C.

### Airfield Operations

Airfield operations for the 18 F-35A would be similar to those currently occurring with the A-10. The primary differences would be that the annual number of landings and take-offs is projected to increase by 561. The net change in operation emissions at the 124 FW installation are presented in Table ID3.3-4 for 2025, when all 18 F-35A aircraft would be on-site and operational. This would represent the new airfield emission profile moving forward. The emissions account for the difference in the engine operations between the A-10 and F-35A aircraft, the decrease in annual operations, and an increase in 85 commuting personnel who would be assigned to the 124 FW installation as a result of basing the F-35A.

**Table ID3.3-4. Annual Airfield Emissions Estimates for 124 FW – 2025 (tons/year)**

| <i>Emissions Source</i>                                | <i>VOC</i> | <i>NO<sub>x</sub></i> | <i>CO</i>      | <i>SO<sub>x</sub></i> | <i>PM<sub>10</sub></i> | <i>PM<sub>2.5</sub></i> | <i>CO<sub>2e</sub></i> |
|--|------------|-----------------------|----------------|-----------------------|------------------------|-------------------------|------------------------|
| F-35A Operations                                       | 6.00       | 71.20                 | <b>21.22</b>   | 14.20                 | <b>2.36</b>            | 2.26                    | 20,816                 |
| A-10 Operations  | 103.12     | 75.59                 | 238.31         | 5.64                  | 24.70                  | 15.65                   | 9,229                  |
| Net Change   | -97.12     | -4.39                 | <b>-217.08</b> | 8.56                  | <b>-22.34</b>          | -13.38                  | 11,587                 |
| <b>De Minimis Threshold/<br/>Comparative Indicator</b> | 250        | 250                   | <b>100</b>     | 250                   | <b>100</b>             | 250                     | NA                     |
| Exceedance (Yes/No)                                    | No         | <b>No</b>             | <b>No</b>      | No                    | <b>No</b>              | No                      | NA                     |

*Legend:* CO = carbon monoxide; CO<sub>2e</sub> = carbon dioxide equivalent; NO<sub>x</sub> = nitrogen oxides; PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter; PM<sub>10</sub> = particulate matter less than or equal to 10 microns in diameter; SO<sub>x</sub> = sulfur oxides; VOC = volatile organic compound.

The net change is the difference in emissions resulting from instituting the Proposed Action to base the F-35A as compared to not introducing the action.

Based on the calculations, the F-35A operational emissions associated with the 124 FW installation would not exceed the *de minimis* thresholds for CO and PM<sub>10</sub>.

All criteria pollutant emissions would decrease as a result of the aircraft conversion except for SO<sub>x</sub>, which would increase slightly. Because the CO and PM<sub>10</sub> emission results do not exceed the thresholds, the General Conformity Applicability Analysis for airfield operations is complete and these activities as described are exempt from the General Conformity Regulations. The change in criteria pollutant emissions associated with the basing of the F-35A at the 124 FW installation would not be significant. A Record of Conformity Applicability is included in Appendix C as a record demonstrating that General Conformity does not apply to the Proposed Action. In addition, a ROAA has been prepared to document that the VOC, NO<sub>x</sub>, SO<sub>x</sub> and PM<sub>2.5</sub> airfield operation emissions would be minimal, and can be found in Appendix C.

### Greenhouse Gas Emissions

The proposed construction activities would contribute directly to greenhouse gas (GHG) emissions from fossil fuels. Demolition and construction activities would generate 742 tons of carbon dioxide equivalent (CO<sub>2e</sub>) emissions for 2020. To put these emissions in perspective, 742 tons of GHGs is the equivalent of 145 cars driving the national average of 11,500 miles per year (USEPA

2018b). The operation of new facilities may result in a small increase in installation-related GHG emissions, primarily through the consumption of electricity and possibly through the combustion of fossil fuel on-site if any oil or natural gas boilers or other heating units are installed in the new facilities.

GHG emissions from airfield operations are based on the same mobile sources as the criteria pollutants: aircraft flight operations at the airfield, AGE, and jet engine testing. For the proposed F-35A basing, additional commuter emissions are included because of an increase in personnel resulting from the basing of the F-35A. The annual airfield CO<sub>2e</sub> emissions would increase by approximately 11,587 tons or 126 percent. This is equivalent to adding an additional 2,264 passenger vehicles onto roads, driving 11,500 miles per year on average.

While the GHG emissions generated from the construction and F-35A airfield operations alone would not be enough to cause global warming, in combination with past and future emissions from all other sources they would contribute incrementally to the global warming that produces the adverse effects of climate change.

#### *No Action Alternative*

Under the No Action Alternative, the transition of A-10 aircraft to F-35A aircraft would not occur. There would be no construction nor alterations to the 124 FW installation in support of the F-35A beddown. Air emissions would not be notably different from those that occur today, and as such would not be significant.

### **ID3.3.2      Airspace**

#### **ID3.3.2.1    Affected Environment**

The affected environment is the airspace units that are used by the 124 FW that consist of the MHRC and Saddle MOAs for training missions (see Figure ID2.2-1). The A-10s currently fly approximately 17 percent of the time below 3,000 feet AGL, which is below the mixing height and where emissions from the flying aircraft can influence ground-level air quality. None of the areas are designated by USEPA as nonattainment or maintenance areas for criteria pollutants.

#### **ID3.3.2.2    Environmental Consequences**

##### *Proposed Action*

Generally, the F-35A would fly at higher altitudes, operating at 3,000 feet AGL or higher about 99 percent of the flight time. This would be a 16 percent decrease in flight below the mixing height compared to the legacy A-10 aircraft. No new airspace or airspace reconfigurations are proposed,

or would be required to support the F-35A beddown at the 124 FW installation. The overall impact on air quality as a result of F-35A flight in the airspace would be expected to be beneficial, with fewer criteria air pollutant emissions below the mixing height. As a result, there would be no significant impacts to air quality in the airspace as a result of the Proposed Action.

GHG emissions that occur both below and above the mixing height contribute to climate change. Aircraft training activities in the airspace is highly variable, and it is not possible to quantitatively analyze the affected environment or Proposed Action GHG emissions in airspace. GHG emissions would increase even with the reduction in operations due to the fact that the F-35A consumes more fuel than the A-10 when performing the same operations.

#### *No Action Alternative*

Under the No Action Alternative, the transition of A-10 aircraft to F-35A aircraft would not occur and the A-10 would continue to operate from the 124 FW installation. Airspace activities would not be notably different from those that occur today, and as such would not be significant.

### **ID3.3.3 Summary of Impacts**

Ada County is in attainment for all criteria pollutants but is designated as a maintenance area for CO and PM<sub>10</sub>. Emissions for construction and operations would not exceed threshold levels. Though there would be an anticipated decrease of approximately 16 percent for operations below the mixing height in the SUA, which would be a slightly positive impact in the SUA. Impacts to air quality associated with the proposed beddown of the F-35A at the 124 FW installation would not be significant.

### **ID3.4 SAFETY**

#### **ID3.4.1 Installation**

##### **ID3.4.1.1 Affected Environment**

#### *Fire/Crash Response*

Day-to-day operations and maintenance activities conducted by the 124 FW are performed in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by Air Force Occupational Safety and Health (AFOSH) requirements. The 124 FW provides fire, crash, rescue, and structural fire protection for the installation and its aircraft. The 124 FW has a cooperative response agreement with the local Boise Airport fire department for mutual aid in fire protection, first responder and lifesaving services, and hazardous materials incident response. The 124 FW adheres to specific emergency-response procedures

contained in the Technical Order 00-105E-9, *Aerospace Emergency Rescue and Mishap Response Information*, for aircraft mishaps involving composite materials (USAF 2018). Specifically, Technical Order 00-105E-9 contains a section (Chapter 3) on Mishap Composite Awareness that provides guidance on fire response to aircraft containing composite materials.

#### *Accident Potential Zone/Runway Protection Zone*

Runway Protection Zones (RPZs) are trapezoidal zones extending outward from the ends of active runways at commercial airports and delineate those areas recognized as having the greatest risk of aircraft mishaps, most of which occur during take-off or landing (Figure ID3.4-1). Development restrictions associated with RPZs are intended to preclude incompatible land use activities from being established in these areas (see Section ID3.5.1.1 for specific RPZ discussion and Section ID3.6.1 for land use compatibilities). The City of Boise utilizes the FAA's airport land use compatibility guidelines, and as such, the RPZs have allowed development to be compatible with airport operations.

#### *Explosive Safety*

The 124 FW stores, maintains, and uses a small range of munitions required for performance of their mission. The Munitions Storage Area (MSA) at the 124 FW installation currently has 18 facilities: an administration and trailer maintenance facility, a maintenance and inspection facility, an aboveground magazine, an inert training pad with an inert storage facility, and 13 earth-covered magazines. Figure ID3.4-2 shows the quantity-distance (QD) arcs associated with these facilities.

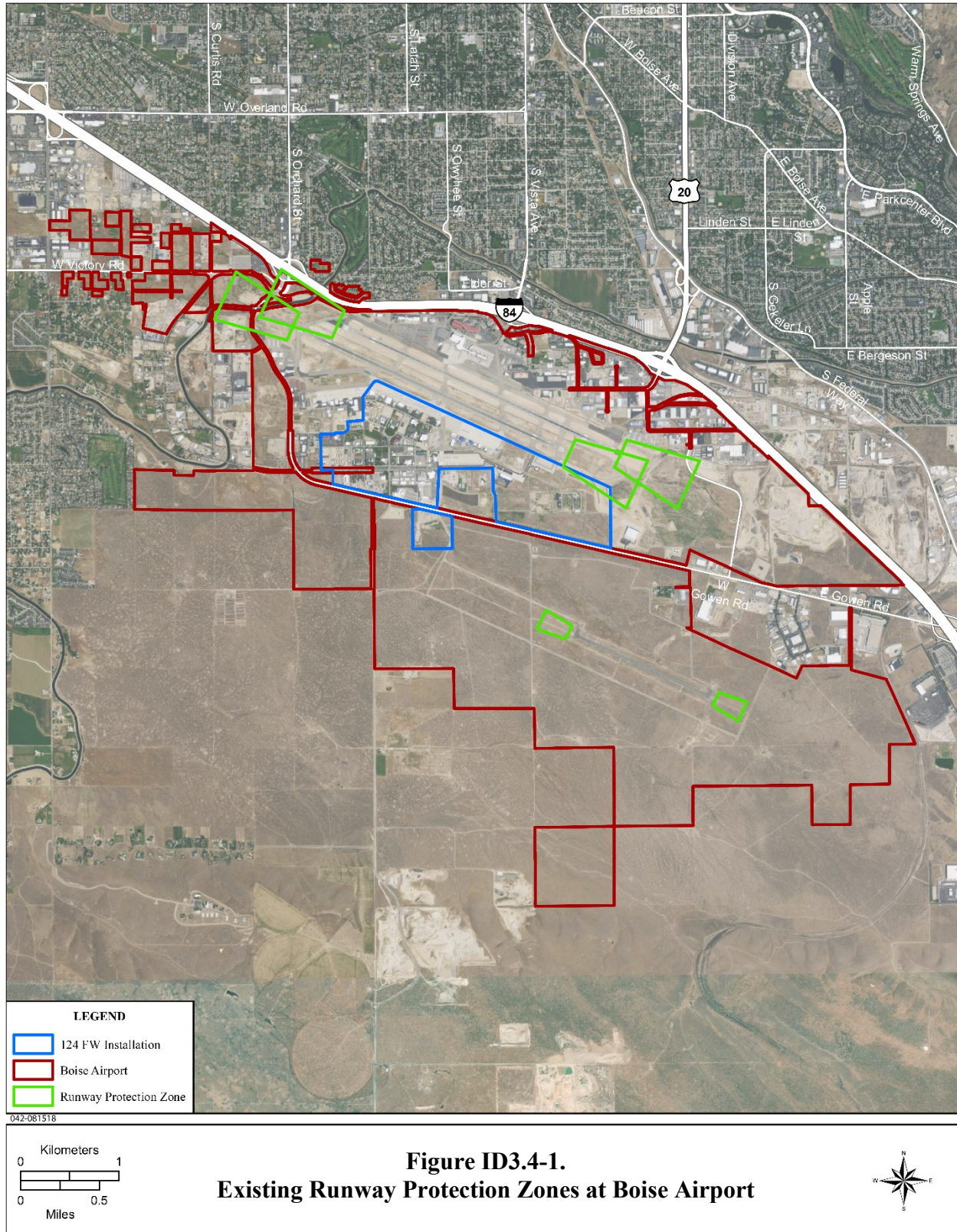
#### *Anti-terrorism/Force Protection*

Many of the military facilities at the 124 FW installation were constructed before Anti-terrorism/Force Protection (AT/FP) considerations became a critical concern. Thus, many facilities do not currently comply with all current AT/FP standards. However, as new construction occurs and as facilities are modified, the 124 FW would incorporate these standards to the maximum extent practicable.

#### ID3.4.1.2 Environmental Consequences

##### *Proposed Action*

Existing facilities at the 124 FW installation for fire response and crash recovery meet F-35A beddown requirements (ANG n.d.).



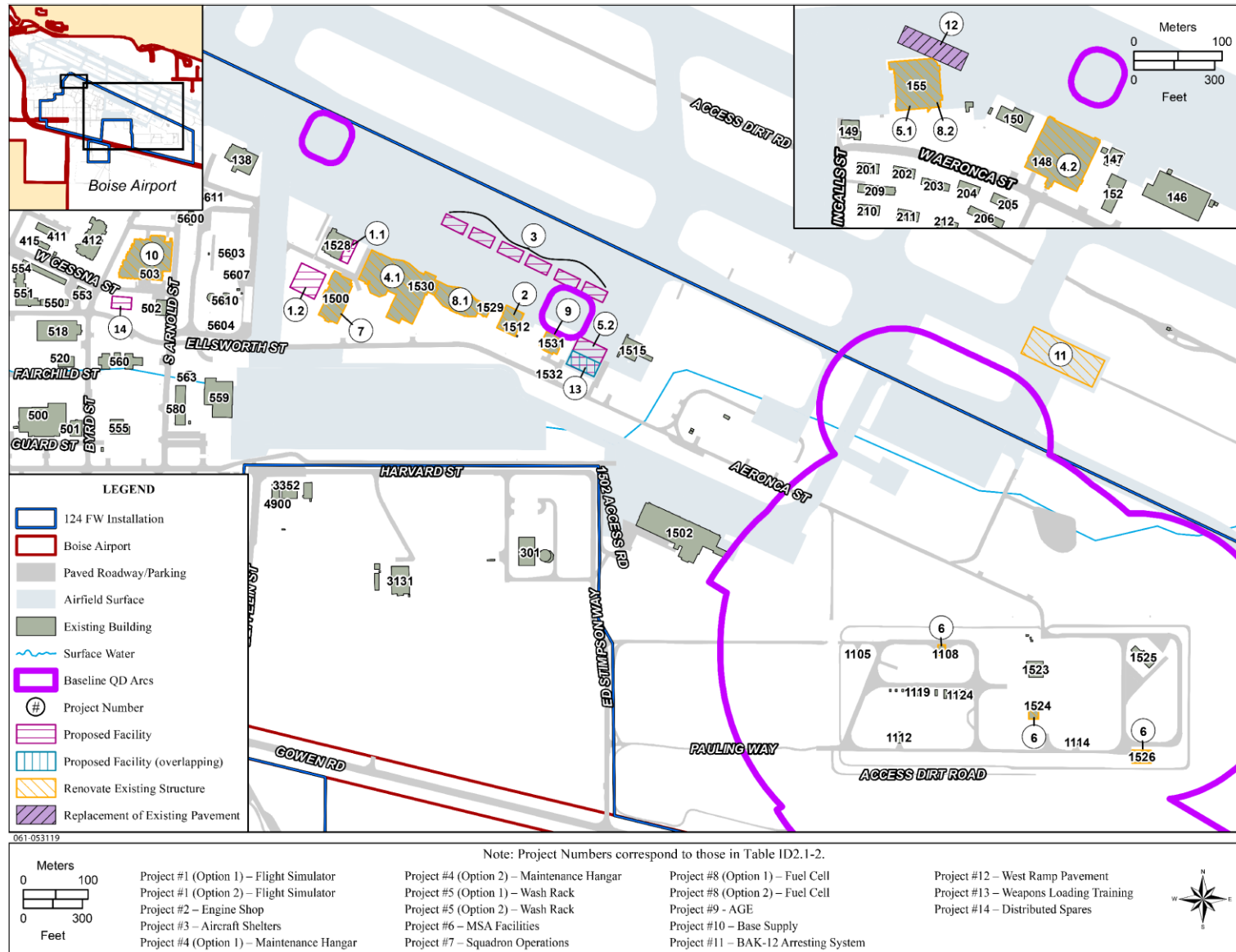


Providing new and renovated facilities for the 124 FW that support operational requirements of the F-35A, and are properly sited with adequate space and a modernized supporting infrastructure, would generally enhance ground and flight safety during required operations, training, maintenance and support procedures, security functions, and other activities conducted by the 124 FW.

Proposed renovation and infrastructure improvement projects related to this alternative would not impact aircraft take-off and landings or penetrate any RPZs. New building construction is not proposed within RPZs; therefore, construction activity would not result in any greater safety risk or obstructions to navigation. Operations would fall within the same general types as those that have historically occurred at the 124 FW installation. For example, the F-35A would follow established local approach and departure patterns used. Therefore, flight activity and subsequent operations would not require changes to RPZs.

The QD arcs would not change under the Proposed Action at the 124 FW installation. While there are a few planned construction projects within the QD arcs, per Air Force Manual 91-201, *Explosive Safety Standards*, all public traffic route distances (PTRDs) and inhabited building distances (IBDs) meet specified net explosive weight quantity-distance (NEWQD) criteria (Figure ID3.4-3). No explosives would be handled during construction or demolition activities. Therefore, no additional risk would be expected as a result of implementation of this alternative.

The proposed construction projects meet all criteria specified in the ANG Handbook 32-1084, *Facility Space Standards*. AT/FP requirements have also been addressed to the extent practicable in all projects. Projects would use AT/FP site design standards for siting of facilities, parking, walkways, and other features. Renovations would bring the facilities into compliance with UFC 4-022-01, *Security Engineering: Entry Control Facilities/Access Control Points* and UFC 4-010-01, *DoD Minimum Anti-terrorism Standards for Buildings*, providing additional protection for the personnel based there.



**Figure ID3.4-3.**  
**Existing QD Arcs and Proposed Construction at the 124 FW Installation**

Chapter 3, Section 3.5.1.1 details F-35A composite material characteristics and potential exposure risks. Under the Proposed Action, firefighters would continue to be fully trained and appropriately equipped for crash and rescue response involving advanced aerospace composite materials and the proposed 124 FW F-35A beddown would not change these abilities. Additionally, 124 FW would keep local firefighting departments informed about any new information or firefighting techniques associated with composite materials should an accident occur. Based on current information on the characteristics of burning composite materials, standard firefighting equipment, including self-contained breathing apparatus, should be adequate to protect firefighters (Air Force Research Laboratory 2015; Naval Air Warfare Center 2003). No special extinguishing agents are needed for composite materials and typical aircraft firefighting agents, such as water or aqueous film forming foam, are adequate to control burning composite materials during an aircraft mishap. In the event of a crash of an aircraft containing composite materials, the USAF would follow the guidance contained in the *Mishap Response Checklist for Advanced Aerospace Materials/Composites* (USAF Advanced Composites Program Office 1993).

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. All aspects of ground and flight safety would be expected to remain as described under affected environment in Section ID3.4.1.1. Therefore, there would be no significant impacts to safety under the No Action Alternative.

### **ID3.4.2     Airspace**

#### ID3.4.2.1    Affected Environment

The airspace directly associated with the Proposed Action as it relates to the 124 FW includes Restricted Areas, MOAs, and ATCAAs (see Figure ID2.2-1), known collectively as the MHRC. The volume of airspace encompassed by the combination of airspace elements constitutes the affected environment for airspace safety. MHRC training airspace includes the Jarbidge North and South MOAs/ATCAAs, Owyhee North and South MOAs/ATCAAs, Paradise North and South MOAs/ATCAAs, Saddle MOAs/ATCAAs, R-3202, and R-3204. These training areas allow military flight operations to occur and minimize exposure to civil aviation users, military aircrews, or the general public to hazards associated with military training and operations. This section describes the existing safety procedures within the training airspace units and evaluates changes that would occur with the introduction of the F-35A.

### *Flight Safety Procedures*

Aircraft flight operations from Boise Airport and in the MHRC are governed by standard flight rules. Specific safety requirements are contained in standard operating procedures that must be followed by all aircrews operating from the airfield (Air Force Instruction [AFI] 11-2A-10CV3, *A-10 Operations Procedures*, USAF 2013a) to ensure flight safety.

### *Aircraft Mishaps*

A-10 aircraft have flown more than 5,652,298 hours since the aircraft entered the USAF inventory in 1972. Over that period, 106 Class A mishaps have occurred and 106 aircraft have been destroyed. This results in a Class A mishap rate of 1.88 per 100,000 flight hours, and an aircraft destroyed rate of 188 per 100,000 flight hours (Air Force Safety Center [AFSEC] 2019a). The 124 FW has not experienced a Class A mishap in the past 5 years (124 FW 2017a).

### *Bird/Wildlife Aircraft Strike Hazard*

The USAF Bird/Wildlife Aircraft Strike Hazard (BASH) Team maintains a database that documents all reported bird/wildlife aircraft strikes. Historic information for the past 43 years indicates that for the entire USAF, 16 USAF aircraft have been destroyed and 29 fatalities have occurred from bird/wildlife aircraft strikes (AFSEC 2017a).

The 124 FW of the IDANG has an ongoing BASH program through which information and assistance is freely shared between airfield users, the Boise Airport staff, and the local air traffic controllers. Serious BASH-related accidents within the immediate Boise Airport area and the MHRC are unusual and have never resulted in a Class A mishap (124 FW 2017a). The 124 FW has recorded 41 minor BASH incidents from 2012 to 2017 (124 FW 2017a).

### *Fuel Jettison*

For use in emergency situations, certain aircraft have the capability to jettison fuel and reduce aircraft gross weight for flight safety. When circumstances require, fuel jettisoning is permitted above 5,000 feet AGL, over unpopulated areas, and is generally over water for applicable bases. AFIs cover the fuel jettison procedures, and local operating policies define specific fuel ejection areas for each base. The A-10 aircraft does not have fuel jettison capability.

## ID3.4.2.2 Environmental Consequences

### *Proposed Action*

The F-35A is a new aircraft and historical trends show that mishaps of all types decrease the longer an aircraft is operational as flight crews and maintenance personnel learn more about the aircraft's capabilities and limitations. As the F-35A becomes more operationally mature, the aircraft mishap

rate is expected to become comparable with a similarly sized aircraft with a similar mission. F-35A has improved electronics and maintenance; thus, they are expected to result in long-term Class A accident rate comparable to that of the similarly sized F-16 aircraft (3.35 lifetime) (AFSEC 2019b).

Through Fiscal Year (FY) 2019, the F-35A has amassed 96,313 flying hours with three Class A mishaps resulting in no injuries and a Class A mishap rate of 3.11 lifetime, and for the last 5 years of 2.17 (AFSEC 2019c). These statistics are updated annually. Because the F-35A has not yet reached 100,000 hours by the end of FY 2019, this rate is not directly comparable to other aircraft with more flying hours. However, this rate does provide some indication of the overall safety of the F-35A aircraft. For example, this rate is much lower than the 18.65 rate that the F-16 had in the past after a comparable amount of hours.

In order to provide a broader perspective on the potential mishap rate for a new technology like the F-35A, the following discussion refers to the mishap rates for the introduction of the F-22A (Raptor), the latest jet fighter in the Department of Defense (DoD) inventory. The F-22A was introduced in 2002, and provided the USAF with the most current engine and stealth capabilities. This new technology is akin to the F-35A in that it is a new airframe with similar flight capabilities. With that in mind, it is possible that projected mishap rates for the F-35A may be comparable to the historical rates of the F-22A. The Class A mishap rates for the F-22A from squadron operational status to September 2019 are provided in Table ID3.4-1.

**Table ID3.4-1. F-22A Class A Flight Mishap History**

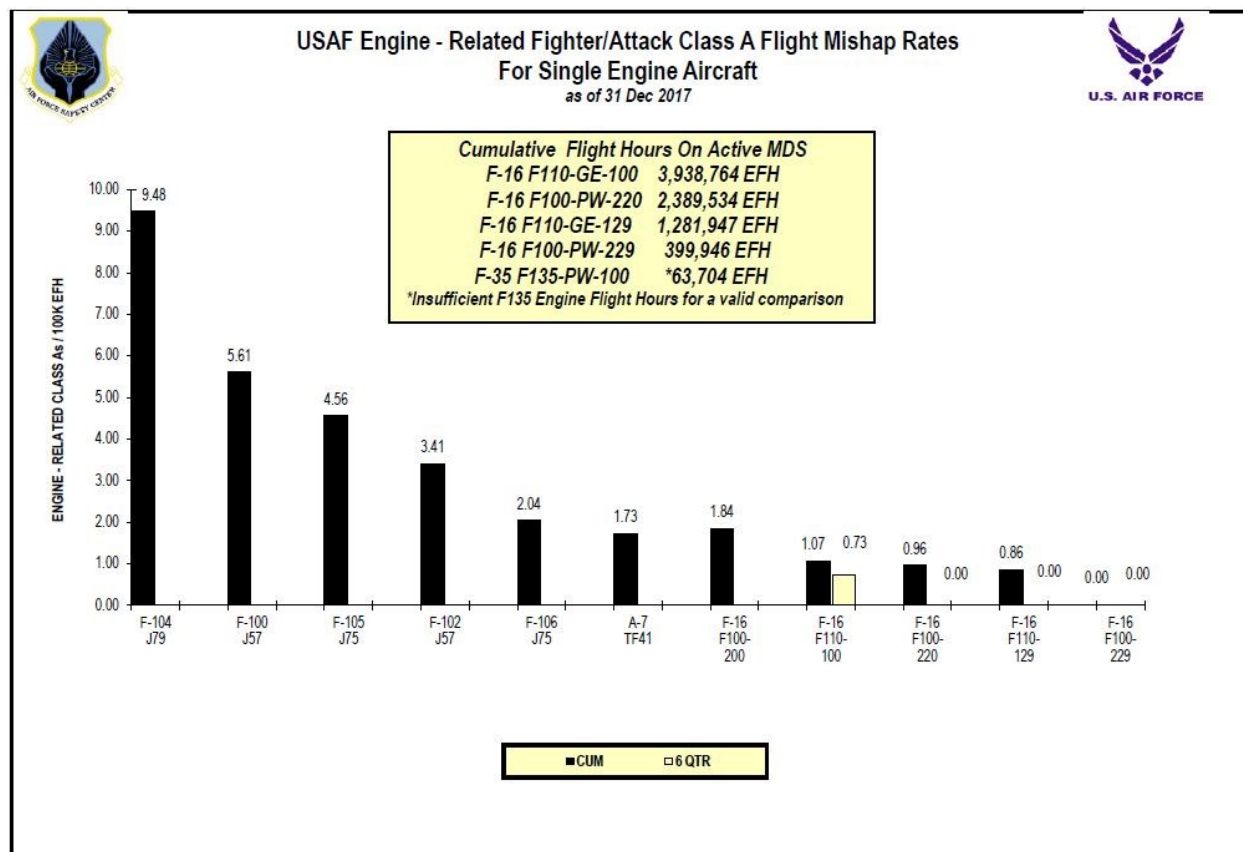
| <i>Year</i>     | <i>Class A Number of Mishaps</i> | <i>Class A Rate<sup>1</sup></i> | <i>Destroyed A/C</i> | <i>Destroyed Rate</i> | <i>Fatal Pilot</i> | <i>Fatal All</i> | <i>Hours Flown per Year</i> | <i>Cumulative Flight Hours</i> |
|-----------------|----------------------------------|---------------------------------|----------------------|-----------------------|--------------------|------------------|-----------------------------|--------------------------------|
| FY02            | 1                                | 0.00                            | 0                    | 0.00                  | 0                  | 0                | 0                           | 0                              |
| FY03            | 0                                | 0.00                            | 0                    | 0.00                  | 0                  | 0                | 133                         | 133                            |
| FY04            | 1                                | 32.12                           | 0                    | 0.00                  | 0                  | 0                | 3,113                       | 3,246                          |
| FY05            | 1                                | 24.90                           | 1                    | 24.90                 | 0                  | 0                | 4,016                       | 7,262                          |
| FY06            | 1                                | 11.10                           | 0                    | 0.00                  | 0                  | 0                | 9,012                       | 16,274                         |
| FY07            | 0                                | 0.00                            | 0                    | 0.00                  | 0                  | 0                | 14,487                      | 30,761                         |
| FY08            | 1                                | 5.56                            | 0                    | 0.00                  | 0                  | 0                | 17,977                      | 48,738                         |
| FY09            | 1                                | 4.76                            | 1                    | 4.76                  | 0                  | 1                | 20,988                      | 69,726                         |
| FY10            | 0                                | 0.00                            | 0                    | 0.00                  | 0                  | 0                | 24,675                      | 94,401                         |
| FY11            | 1                                | 6.54                            | 1                    | 6.54                  | 1                  | 1                | 15,289                      | 109,690                        |
| FY12            | 3                                | 11.32                           | 0                    | 0.00                  | 0                  | 0                | 26,506                      | 136,196                        |
| FY13            | 1                                | 3.82                            | 1                    | 3.82                  | 0                  | 0                | 26,184                      | 162,380                        |
| FY14            | 1                                | 3.34                            | 0                    | 0.00                  | 0                  | 0                | 29,939                      | 192,319                        |
| FY15            | 1                                | 3.13                            | 0                    | 0.00                  | 0                  | 0                | 31,993                      | 224,312                        |
| FY16            | 1                                | 3.24                            | 0                    | 0.00                  | 0                  | 0                | 30,889                      | 255,201                        |
| FY17            | 1                                | 2.96                            | 0                    | 0.00                  | 0                  | 0                | 33,834                      | 289,035                        |
| FY18            | 5                                | 13.01                           | 0                    | 0.00                  | 0                  | 0                | 38,424                      | 327,458                        |
| FY19            | 6                                | 21.48                           | 0                    | 0.00                  | 0                  | 0                | 27,932                      | 355,390                        |
| <b>Lifetime</b> | <b>26</b>                        | <b>7.32</b>                     | <b>4</b>             | <b>1.13</b>           | <b>1</b>           | <b>2</b>         | <b>-</b>                    | <b>355,390</b>                 |

*Note:* <sup>1</sup>Mishap rate is based on 100,000 hours of flight.

*Legend:* A/C = aircraft; FY = Fiscal Year.

*Source:* AFSEC 2019d.

Since introduction of the single jet engine fighter or attack aircraft in the 1950s, technological advances have continually driven down the engine failure rate and associated aircraft mishaps (Figure ID3.4-4) (AFSEC 2017b).



**Figure ID3.4-4. USAF Engine-Related Mishap Rates**

*Note:* “Engine-related” excludes mishaps caused by foreign object damage, BASH, or failure of support systems external to the engine (e.g., fuel starvation).

*Source:* AFSEC 2017b.

Although the F-35A is a new aircraft, the single engine that powers it is a composite product of 30 years of engineering, lessons learned from previous single aircraft engines with a similar core, and tens of thousands of hours during operational use of legacy aircraft. The propulsion system design for the F-35A includes a dedicated system safety program with an acceptable risk level that was more stringent than legacy engines. The engine safety program focused on the major contributors of what previously caused the loss of an aircraft and provided redundancies in case of control system failures; additionally, the program allowed for safe recovery of the aircraft even with system failures. Throughout the design and testing process, safety initiatives took previous best practices for single engine safety and built upon them to promote flight safety progress. Examples of design characteristics that are damage tolerant and enhance safety include a dual wall engine liner, a fan blade containment shell, and a shaft monitor for vibration, torque, and alignment.

Additionally, pilots flying the F-35A would use simulators extensively. Simulator training includes all facets of flight operations and comprehensive emergency procedures. The sophistication and fidelity of current simulators and related computer programs are commensurate with the advancements made in aircraft technology. These factors should minimize risk associated with mishaps due to pilot error.

Due to the addition of the F-35A aircraft under the Proposed Action at the 124 FW installation, there would be an increase of approximately 1 percent in total Boise Airport airfield operations compared to the affected environment. The minimal increase in take-offs, landings, proficiency training, and other flights would result in a negligible change of safety risk to aircrews and personnel. Current airfield safety procedures discussed previously would continue to be implemented and additional airfield flight operations would adhere to established safety procedures.

The F-35A would operate in the same airspace environment as the 124 FW A-10 aircraft. As such, the overall potential for bird-aircraft strikes is not anticipated to be statistically different following the beddown of the F-35A. However, the F-35A is considered to be more vulnerable to a catastrophic wildlife strike due to the Electro-Optical Targeting System (EOTS) Window Assembly than the legacy aircraft. Damage to the EOTS due to a wildlife strike could damage the engine, which could result in the catastrophic loss of the aircraft. It is anticipated that BASH potential would be somewhat lessened because the F-35A attains altitude more rapidly and would spend less time than A-10 aircraft at lower altitudes where species generally fly. In addition, F-35A aircrews operating in the 124 FW associated training airspace would be required to follow applicable procedures outlined in the 124 FW BASH Plan; adherence to this program has minimized bird-aircraft strikes. When risk increases, limits are placed on low-altitude flights and some types of training (e.g., multiple approaches, closed pattern work). Furthermore, special briefings are provided to pilots whenever the potential exists for greater bird strike risks within the airspace; F-35A pilots would also be subject to these procedures.

Chapter 3, Section 3.5.1.1 details F-35A composite material characteristics and potential exposure risks. Under the Proposed Action, firefighters would continue to be fully trained and appropriately equipped for crash and rescue response involving advanced aerospace composite materials and the proposed 124 FW F-35A beddown would not change these abilities. Additionally, 124 FW would keep local firefighting departments informed about any new information or firefighting techniques associated with composite materials should an accident occur. Based on current information on the characteristics of burning composite materials, standard firefighting equipment, including self-contained breathing apparatus, should be adequate to protect firefighters (Air Force Research Laboratory 2015; Naval Air Warfare Center 2003). No special extinguishing agents are needed for composite materials and typical aircraft firefighting agents, such as water or aqueous film

forming foam, are adequate to control burning composite materials during an aircraft mishap. In the event of a crash of an aircraft containing composite materials, the USAF would follow the guidance contained in the *Mishap Response Checklist for Advanced Aerospace Materials/Composites* (USAF Advanced Composites Program Office 1993).

The only maintenance of the stealth coating (e.g., low observable material) that would be accomplished at the base would be done using a brush or roller to apply coatings, bonding materials, or applying tape. Depot-level maintenance of the low observable material (including spray capability) would be conducted off-site, and therefore the composite material for major repairs to the low observable material would not be stored on base.

The F-35A does have the capability to jettison fuel for emergency situations. When circumstances require, fuel jettisoning is permitted above 5,000 feet AGL, over unpopulated areas, and is generally over water for applicable bases. AFIs cover the fuel jettison procedures, and local operating policies define specific fuel ejection areas for each base. In 2001, the USEPA National Vehicle and Fuel Emissions Laboratory concluded, “Since fuel dumping is a rare event, and the fuel would likely be dispersed over a very large area, we believe its impact to the environment would not be serious” (USEPA 2001).

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation and no training activities by F-35A operational aircraft would be conducted in the airspace. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. All aspects of safety would remain as described in the affected environment in Section ID3.4.2.1. Therefore, there would be no significant impacts to safety as a result of the No Action Alternative.

### **ID3.4.3 Summary of Impacts**

Construction activities would not pose any unusual concerns, and standard construction safety procedures would be implemented. All new construction would implement AT/FP requirements. The QD arcs would not change from the affected environment, and while there are a few planned construction projects within the QD arcs, per Air Force Manual 91-201, *Explosive Safety Standards*, all PTRDs and IBDs meet specified NEWQD criteria. Though the F-35A is a relatively new fighter aircraft with fewer years in service, the expected mishap rate is not expected to be different than other fighter aircraft. The 124 FW has a robust BASH program, and BASH incidents could be expected to decline with the F-35A as described. The 124 FW would continue to use the same SUA that they currently use. Under the Proposed Action at the 124 FW installation, impacts to safety would not be significant.

**ID3.5 LAND USE**

**ID3.5.1 Installation**

The following section describes the affected environment and examines the extent to which the beddown of the F-35A at the 124 FW installation would be consistent with state, regional, and local conservation and development plans and zoning regulations. In order to provide a comparable data set between proposed siting alternatives at the five locations considered for the Proposed Action, local land use categories were consolidated and/or renamed. Table ID3.5-1 provides a cross-reference between the City of Boise classifications and those used in this analysis.

**Table ID3.5-1. Land Use Categories**

| <i>City of Boise Land Use Classification</i>                             | <i>EIS Land Use Classification</i> |
|--|------------------------------------|
| Neighborhoods: High Density, Compact, Suburban, Large Lot                | Residential                        |
| Commercial/Employment: Commercial, Office, Mixed Use, Downtown Mixed Use | Commercial                         |
| Industrial, Airport, Institutional                                       | Industrial                         |
| Public/Quasi-Public  | Public/Semi-Public                 |
| Planned Community  | Planned Development                |
| Parks/Open Space   | Parks/Open Space                   |
| Education  | School                             |

*Legend:* EIS = Environmental Impact Statement.

**ID3.5.1.1 Affected Environment**

The 124 FW of the IDANG is located in the southern half of the Boise Airport (also known as Gowen Field) in Idaho (see Figure ID1.0-1) on property owned by the airport that is leased by the federal government and then licensed back to the state of Idaho for use by the IDANG. The airport is about 3 miles south of downtown Boise in Ada County, in southwestern Idaho. The 124 FW installation comprises approximately 354 acres in the southern half of Boise Airport. The 124 FW boundary is completely within the Boise Airport boundary. The airport is served by two existing runways and the third runway is currently used by IDANG.

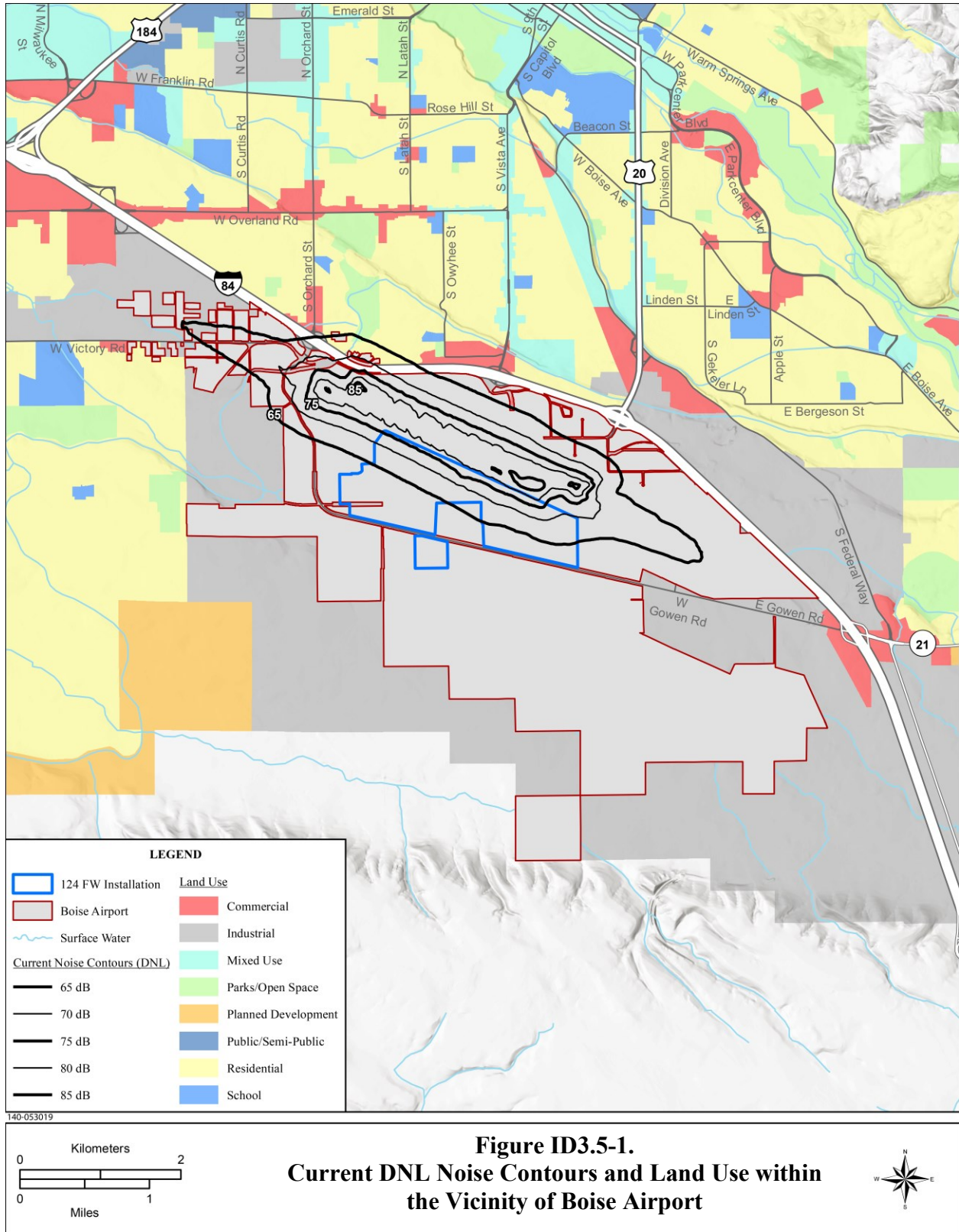
The City of Boise’s Comprehensive Plan, “Blueprint Boise,” was adopted November 2011 with the most recent update in March 2017. Land use planning in Boise is based on four objectives identified in Blueprint Boise: create a clear vision for the future; establish a strong linkage between land use, transportation, and urban design; provide clear guidance at the planning area level; and synchronize regulations with the community’s vision. Blueprint Boise has identified an “Airport Planning Area” that encompasses the Boise Municipal Airport and surrounding land. Land uses within the Airport Planning Area are primarily transportation-related or industrial in nature. Only a very small portion of Boise households live in the Airport Planning Area; however, a substantial portion of the city’s workforce is employed in the area. Policies associated with the Airport Planning Area have been identified to ensure all development within the Airport Influence Area

complies with noise standards and is compatible and complements airport operations (City of Boise 2017a).

As shown in Figure ID3.5-1, the airport is bisected by West Gowen Road, which forms the southern boundary of the majority of the 124 FW installation. Therefore, the airport is just north of the 124 FW, with additional airport property and industrial land use further south. The airport boundary runs along Interstate 84. Land use on the northern side of Interstate 84 is mostly residential, with parks/open space, commercial, mixed use, and schools dispersed throughout the area north of the airport.

Notably, there are two areas of commercial land use along South Orchard Street to the northwest, and Elder Street directly north of Boise Airport. While land use west of the 124 FW and the airport is predominantly residential, small areas of land use designated as commercial, parks/open space, and schools are also to the west of the 124 FW/airport. Lastly, a square parcel of planned development is southwest of both the 124 FW and airport boundary. Within Blueprint Boise, planned development land use is described with area-specific policies focused on coordinated development in addition to general design principles for neighborhoods, activity centers, and commercial as applicable (City of Boise 2017a).

Land use activities most sensitive to noise typically include residential and commercial use, public services, and areas associated with cultural and recreational uses such as parks/open space. Noise measurements related to aircraft operations that define the area of noise impact are expressed in terms of DNL. DNL represents the AAD community noise exposure from aircraft operations during a 24-hour period over a year. The DoD has established noise compatibility criteria for various land uses. According to these criteria, sound levels up to 65 dB DNL are compatible with land uses such as residences, transient lodging, and medical facilities. Currently, aircraft noise from Boise Airport exposes approximately 154 acres of off-airport areas of industrial, commercial, and residential land use to noise levels between 65 and 80 dB DNL. Section ID3.1, *Noise*, discusses existing noise levels at POIs such as schools and churches located within the 65 dB DNL off-airport noise contour areas. Figure ID3.5-1 shows existing noise contours and the land use in the vicinity of Boise Airport. The current noise contours only extend off-airport north of the installation where it overlaps with a small portion of residential land use just north of Interstate 84.



### ID3.5.1.2 Environmental Consequences

#### *Proposed Action*

All new construction would occur on previously disturbed land and would be totally within the boundary of the 124 FW installation. Additionally, there would be no change to the existing airfield-related RPZs and Clear Zones (CZs). Therefore, the focus of this analysis is on changes in off-airport noise conditions.

The land use analysis compares the proposed noise contours to current noise contours, which show the existing noise environment. The comparison of the proposed contours to the current contours shows potential change in noise conditions and land use compatibility (Table ID3.5-2 and Figure ID3.5-2).

The Proposed Action at Boise Airport would result in an overall increase in the off-airport area affected by noise levels between 65 and 80 dB DNL by approximately 446 acres. Residential land use acreage would increase 43 acres within the 65 to 70 dB DNL contour area; 27 acres within the 70 to 75 dB DNL contour; and 4 acres within the 75 to 80 dB DNL contour, rendering this acreage potentially incompatible for residential use (see Table ID3.5-2). This would be considered a significant impact. However, incompatibility does not constitute a federal determination that any land use is acceptable or unacceptable under federal, state, or local law, nor are they used to determine if a structure is habitable or uninhabitable.

#### *No Action Alternative*

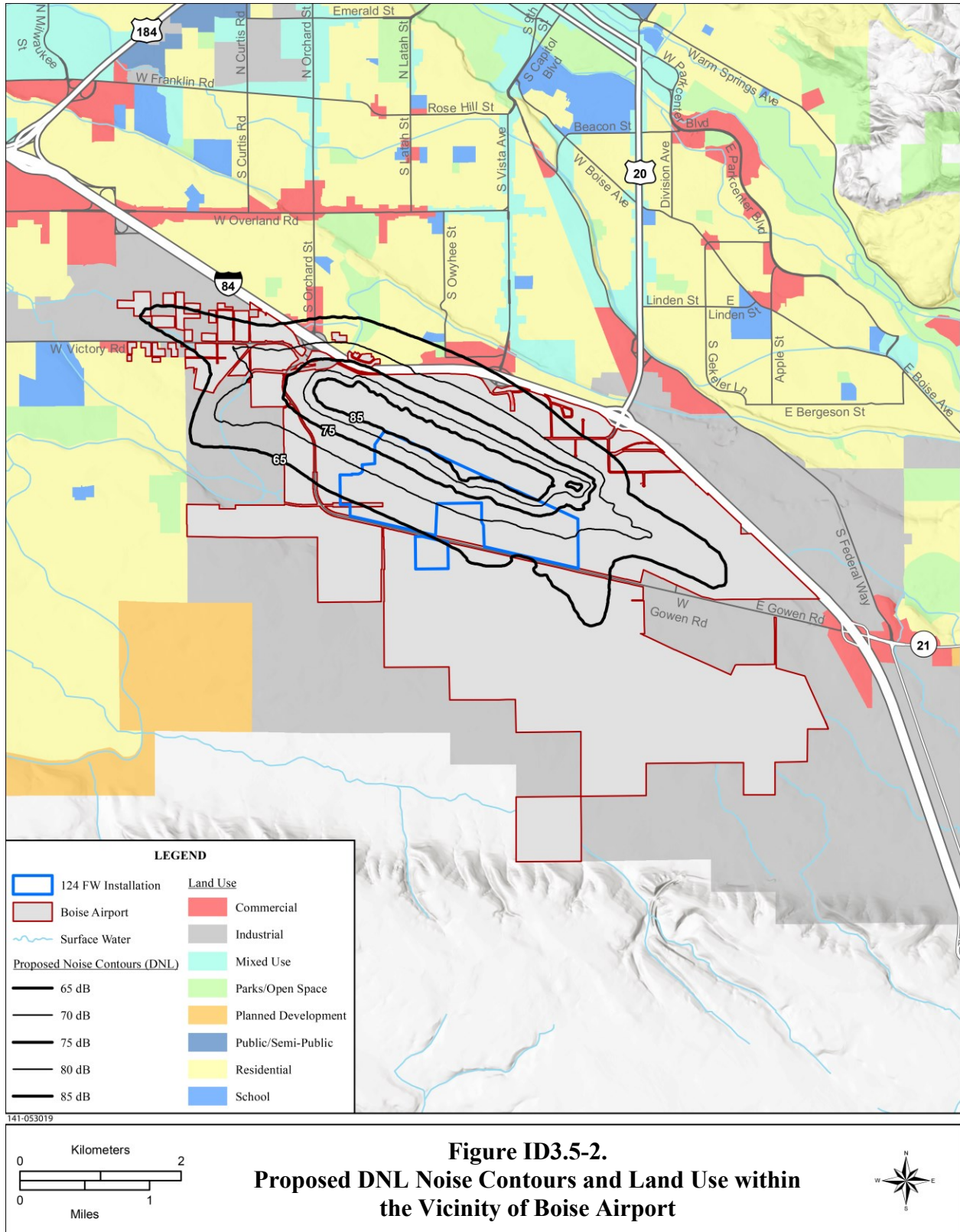
Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Land use would be expected to remain as described under affected environment in Section ID3.5.1.1. Therefore, there would be no significant impacts to land use under the No Action Alternative.

**Table ID3.5-2. Off-Airport Land Uses Affected by Noise Levels 65 dB DNL and Greater under Proposed Action**

| <i>Land Use Category</i> | <i>65-70 (C)</i> | <i>65-70 (P)</i> | <i>65-70 (AC)</i> | <i>70-75 (C)</i> | <i>70-75 (P)</i> | <i>70-75 (AC)</i> | <i>75-80 (C)</i> | <i>75-80 (P)</i> | <i>75-80 (AC)</i> | <i>80-85 (C)</i> | <i>80-85 (P)</i> | <i>80-85 (AC)</i> | <i>85+ (C)</i> | <i>85+ (P)</i> | <i>85+ (AC)</i> | <i>Totals (C)</i> | <i>Totals (P)</i> | <i>Totals (AC)</i> |
|--------------------------|------------------|------------------|-------------------|------------------|------------------|-------------------|------------------|------------------|-------------------|------------------|------------------|-------------------|----------------|----------------|-----------------|-------------------|-------------------|--------------------|
| Residential              | 50               | 93               | 43                | 7                | 34               | 27                | 0                | 4                | 4                 | 0                | 0                | 0                 | 0              | 0              | 0               | 57                | 131               | 74                 |
| Commercial               | 2                | 49               | 47                | 0                | 1                | 1                 | 0                | 0                | 0                 | 0                | 0                | 0                 | 0              | 0              | 0               | 2                 | 50                | 48                 |
| Industrial               | 72               | 281              | 209               | 20               | 100              | 79                | 1                | 19               | 18                | 0                | 0                | 0                 | 0              | 0              | 0               | 93                | 400               | 307                |
| Parks/Open Space         | 2                | 19               | 17                | 0                | 0                | 0                 | 0                | 0                | 0                 | 0                | 0                | 0                 | 0              | 0              | 0               | 2                 | 19                | 17                 |
| School                   | 0                | <1               | <1                | 0                | 0                | 0                 | 0                | 0                | 0                 | 0                | 0                | 0                 | 0              | 0              | 0               | 0                 | <1                | <1                 |
| <b>Total</b>             | <b>126</b>       | <b>443</b>       | <b>317</b>        | <b>27</b>        | <b>135</b>       | <b>107</b>        | <b>1</b>         | <b>23</b>        | <b>22</b>         | <b>0</b>         | <b>0</b>         | <b>0</b>          | <b>0</b>       | <b>0</b>       | <b>0</b>        | <b>154</b>        | <b>600</b>        | <b>446</b>         |

*Note:* Numbers may not add up due to rounding errors.

*Legend:* (C) = Current; (P) = Proposed; (AC) = Acres Change; dB = decibel; DNL = Day-Night Average Sound Level.



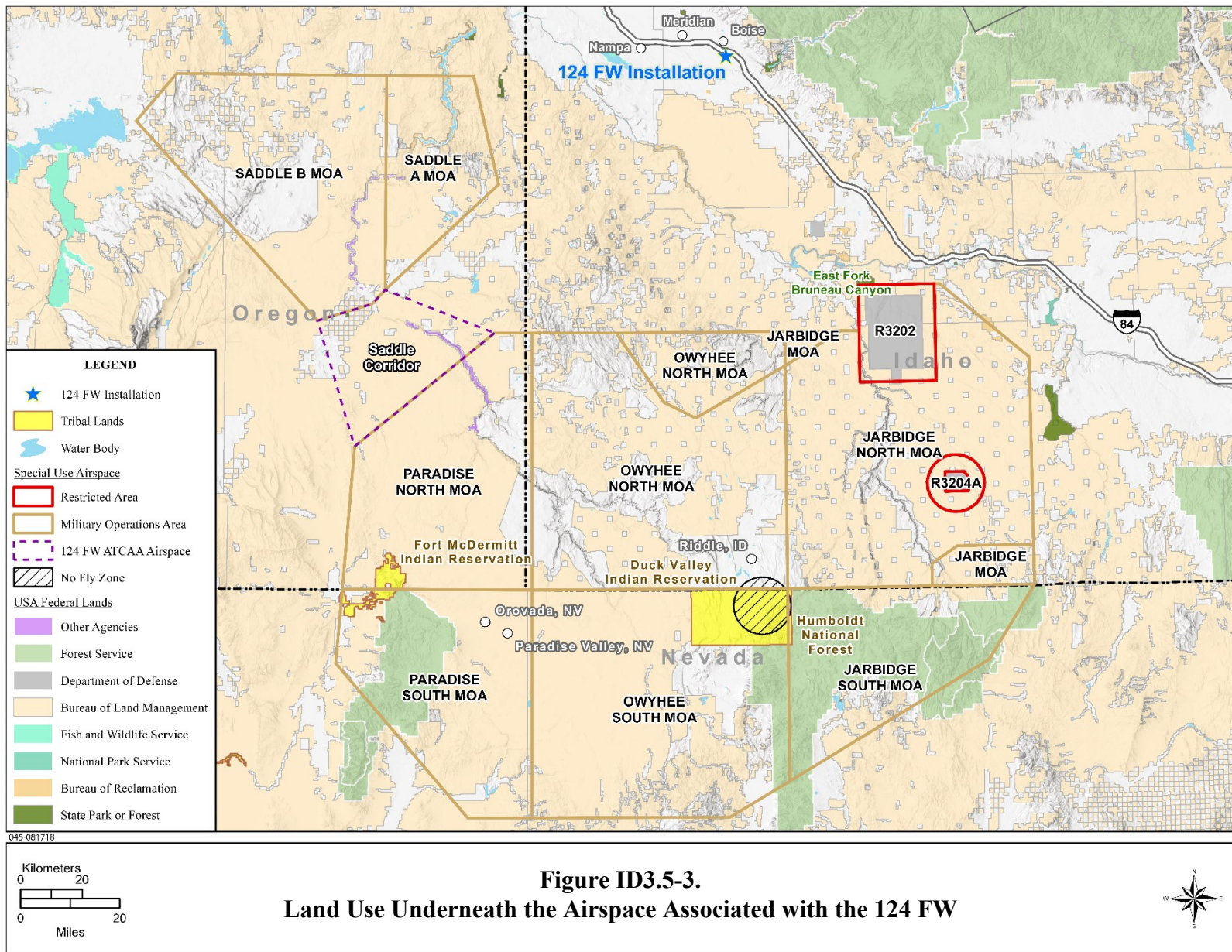
## **ID3.5.2      Airspace**

### **ID3.5.2.1    Affected Environment**

The training airspace associated with the 124 FW includes the Saddle A and B, Paradise North and South, Owyhee North and South, and Jarbidge North and South MOAs located over southeastern Oregon, northern Nevada, and southwestern Idaho. Land under the airspace is primarily federally owned, with the Bureau of Land Management as the primary land manager. Large portions of land under both the Paradise South and Jarbidge South MOAs are also managed by the U.S. Forest Service. Areas located under the airspace are primarily undeveloped with very few residential areas present; however, numerous dispersed ranches and several small communities occur, including Paradise Valley and Orovada in Nevada, and Riddle, Idaho (Figure ID3.5-3). Both the Fort McDermitt Indian Reservation and the Duck Valley Indian Reservation underlie the airspace. The Fort McDermitt Indian Reservation is located in Oregon and Nevada, with half in Paradise North and half in Paradise South. The floor for this airspace is 3,000 feet AGL or 10,000 feet MSL, whichever is higher. The northern half of the Duck Valley Indian Reservation is primarily ranches and dispersed homes and occurs in Nevada under Owyhee North and South MOAs. Numerous restrictions apply to overflights of this reservation, including no flights below 15,000 feet AGL. Supersonic operations and the use of chaff or flares are not authorized over any part of the reservation.

Under Jarbidge North, Juniper Butte Range underlies R-3204 in Owyhee County, approximately 60 miles south of 124 FW installation. The range encompasses approximately 12,112 acres and is bordered to the east by the East Fork Bruneau Canyon and on the south by Juniper Butte. The entire range is considered an impact area; however, targets are only permitted in a 662-acre fenced off area in the center of the range (USAF 2013b). Saylor Creek Range underlies R-3202 and is also located under Jarbidge North about 40 miles southeast of 124 FW installation. The range is composed of lands withdrawn from the public domain or leased land from the state. Within Saylor Creek Range's exclusive use area, land use consists solely of target areas and support facilities, with more than half the acreage consisting of open space (USAF 2013b).

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### ID3.5.2.2 Environmental Consequences

#### *Proposed Action*

All F-35A flight activities would take place in existing airspace, so no airspace modifications would be required. The beddown action would not require changes in SUA attributes, volume, or proximity; and it is expected the type and number of ordnance employed at the ranges would remain the same or decrease. Additionally, the 124 FW Proposed Action would not alter the structure, size, or operation of DoD lands, nor would the acquisition of new non-DoD lands be required. The 124 FW Proposed Action would not generate changes to the status or use of underlying lands, nor would it affect existing plans or policies implemented for land management. Standard flight rules require all pilots to avoid direct overflight of populated areas by 1,000 feet and structures by 500 feet. Furthermore, the FAA and DoD have identified and published avoidance criteria for specific aviation-related or noise-sensitive areas. F-35A aircraft (as do existing military aircraft) would adhere to all established floors and ceilings of airspace units as well as the procedures for their use. The USAF expects that the F-35A would operate in the airspace currently used by the 124 FW, with an increase in the number of operations in each airspace unit, but may operate somewhat differently than the A-10s now using that airspace. The differences in utilization of the existing airspace include use of higher altitudes overall, combined use of existing airspace, and generally higher altitudes for supersonic flights that occur. The F-35A would fly more of the time at higher altitudes than the A-10s (Table ID2.2-2), operating more than 90 percent of the time above 10,000 feet MSL. Thus, the F-35A aircraft would conduct most of their operations in the high altitude Jarbidge, Owyhee, and Paradise ATCAAs with some basic fighter maneuver training in the Saddle ATCAA. All airspace associated with the 124 FW lies within the typical flight distance available during a standard daily training flight for the F-35A. The F-35A would fly approximately 90-minute long missions, including take-off, transit to and from the training airspace, training activities, and landing. Depending upon the distance, speed, and type of training activity, the F-35A would spend approximately 30-60 minutes in the training airspace. On occasion during an exercise, the F-35A may spend up to 90 minutes in one or more airspace units. Changes in noise levels from the Proposed Action would not affect general land use patterns, land ownership, or management of lands or special use land areas, such as the American Indian Reservations, beneath the airspace. Impacts to land use under the SUA would not be significant.

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation, and no training activities by F-35A operational aircraft would be conducted in the airspace. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Land use would remain as described in the affected environment

in Section ID3.5.2.1. Therefore, there would be no significant impacts to land use as a result of the No Action Alternative.

### **ID3.5.3 Summary of Impacts**

Under the Proposed Action at the 124 FW installation, approximately 74 additional acres of residential land use would be included in the 65-80 dB DNL noise contour, rendering this acreage potentially incompatible for residential land, which would be considered a significant impact. There would be no anticipated changes to the status or use of lands under the SUA as a result of the Proposed Action; therefore, impacts to land use under the SUA would not be significant.

## **ID3.6 SOCIOECONOMICS**

### **ID3.6.1 Installation**

The 124 FW installation is located at Boise Airport in the city of Boise, within Ada County, Idaho.

#### **ID3.6.1.1 Affected Environment**

##### *Population*

Population information for the state of Idaho, Ada County, and the city of Boise is presented in Table ID3.6-1. The population of Boise increased by 19,884 people between 2000 and 2010 and then increased by an additional 13,006 between 2010 and 2016. This represents a 6.3 percent increase in the population since 2000. Ada County showed a slightly higher growth rate with an 8.5 percent increase, and Idaho as a whole showed a slower growth rate and increased by about 4.3 percent.

**Table ID3.6-1. Population, 2000, 2010, and 2016**

| <i>Area</i>   | <i>2000</i> | <i>2010</i> | <i>2016</i> | <i>Percent Change 2000-2016</i> | <i>Percent Change 2010-2016</i> |
|---------------|-------------|-------------|-------------|---------------------------------|---------------------------------|
| Idaho         | 1,293,953   | 1,567,582   | 1,635,483   | 26.4%                           | 4.3%                            |
| Ada County    | 300,904     | 392,365     | 425,798     | 41.5%                           | 8.5%                            |
| City of Boise | 185,787     | 205,671     | 218,677     | 17.7%                           | 6.3%                            |

*Source:* U.S. Census Bureau 2000, 2010, and 2016a.

##### *Employment and Income*

Table ID3.6-2 provides employment and income data for the state of Idaho, Ada County, and the city of Boise. Median household income in Boise in 2016 was lower than in Ada County, but per capita income was higher. Both median household income and per capita income in Boise were higher than the state of Idaho overall. The unemployment rate at the state and county level were

both low as of early 2018 and Ada County’s rate of 2.8 percent was lower than the rate for the state as a whole which was 3.4 percent.

**Table ID3.6-2. Employment and Income Statistics**

| <i>Area</i>   | <i>Median Household Income (2016)</i> | <i>Per Capita Income (2016)</i> | <i>Labor Force (2016)</i> | <i>Employed (2018)</i> | <i>Unemployed (2018)</i> | <i>Unemployment Rate (2018)</i> |
|---------------|---------------------------------------|---------------------------------|---------------------------|------------------------|--------------------------|---------------------------------|
| Idaho         | 49,174                                | 24,280                          | 845,047                   | 816,272                | 28,775                   | 3.4%                            |
| Ada County    | 58,099                                | 30,086                          | 240,228                   | 233,561                | 6,667                    | 2.8%                            |
| City of Boise | 52,249                                | 30,798                          | N/A                       | N/A                    | N/A                      | N/A                             |

*Note:* Employment data for the city of Boise is not available from the Bureau of Labor Statistics.

*Legend:* N/A = Not Applicable.

*Source:* U.S. Census Bureau 2016b; Bureau of Labor Statistics 2018a, 2018b.

### *Housing*

As shown in Table ID3.6-3, in 2016 there were an estimated 4,911 vacant housing units in the city of Boise and an estimated 7,341 vacant housing units in Ada County. The overall vacancy rate for housing was 5.3 percent in Boise and 4.4 percent in Ada County. Both rates were lower than the vacancy rate for Idaho, which was 13.1 percent.

**Table ID3.6-3. Housing Characteristics, 2016**

| <i>Area</i>   | <i>Housing Units</i> | <i>Vacant Housing Units</i> | <i>Housing Vacancy Rate</i> |
|---------------|----------------------|-----------------------------|-----------------------------|
| Idaho         | 686,013              | 89,906                      | 13.1%                       |
| Ada County    | 167,739              | 7,341                       | 4.4%                        |
| City of Boise | 93,172               | 4,911                       | 5.3%                        |

*Source:* U.S. Census Bureau 2016c.

#### ID3.6.1.2 Environmental Consequences

##### *Proposed Action*

Preliminary estimates of the construction required under this alternative place the cost of construction between \$90 and \$120 million. Additionally, there would be an anticipated increase in the number of operational personnel. As such, both construction and operational activities would impact socioeconomic conditions.

##### Population and Housing

Based on estimated construction spending and data from the 2012 Survey of Business Owners, which indicate an average of one construction worker for every \$285,520 in construction sales, construction for the Proposed Action would require a total of between 315 and 420 construction workers over the 2020 to 2023 period (U.S. Census Bureau 2012). No permanent population

increase would be anticipated as the construction would not be permanent, and the local construction workforce and journeymen could meet the labor demand.

During operations, an Active Duty Associate Unit of up to 50 personnel would be installed at the 124 FW installation. In addition, up to 35 new personnel would be added to provide security and contract oversight for FMS and the ALIS. In total, up to 85 additional personnel would be required. While it is likely that many of the additional personnel would already reside in the area, some population increase may occur. Under a maximum impact scenario, if all of the 85 new personnel relocated from outside the area and brought dependents, assuming an average household size of 2.6, the total population increase would be up to 221 people. This would be an increase of 0.1 percent of the population of the city of Boise. Assuming the 85 additional personnel (and their dependents) required one housing unit each, 85 additional housing units would be demanded, which could easily be absorbed by the area's vacant units, requiring 1.7 percent or 1.2 percent of the vacant housing units in the city of Boise or Ada County, respectively.

For both construction and operations, impacts related to population and housing would be negligible.

#### Employment and Income

Construction activities associated with the Proposed Action are estimated to sustain between 315 and 420 construction jobs. Based on 2017 construction industry salaries for Ada County (Bureau of Labor Statistics 2018a), those jobs would generate a total of between \$15.1 and \$20.0 million in income over the 2020 to 2023 period.

An additional 85 permanent personnel would be added for the operational phase of the Proposed Action. Based on 2017 transportation industry salaries (Bureau of Labor Statistics 2018a), those jobs would generate approximately \$4.3 million in income per year, for the life of the project.

The increases in employment and income would be beneficial but negligible.

#### Property Values and Property Taxes

Property values are a function of many different variables, including noise levels. The issue of the negative effect of airport noise on property values has been widely researched. A more full discussion of the impacts of noise levels on property values and resultant real estate taxes is contained in Appendix B, *Noise Modeling, Methodology, and Effects*. The property value to noise effects relationship is presented in the form of the Noise Depreciation Index (NDI), which reflects the estimated percent loss of property value per dB DNL (see Section 3.2.2). A review of several relevant studies (see Appendix B) concludes that noise may affect property values and related taxes in a NDI range of 0.2 to 2.0 percent per dB of noise increase, which correlates to an average

loss of 0.5 percent of the property value per dB. The value of the property is determined based on many individual variables which, when taken together, form the total price and requires detailed information on local housing markets and actual sales prices. Furthermore, price property value studies model relationships between city level income and population data, and the overall willingness to pay for noise abatement, which enables an estimate of noise impacts in locations where detailed housing data is not available. The cost of noise mitigation is less of a factor in regions that experience extreme temperatures. Many structural elements designed to improve energy conservation also improve the acoustic performance of homes. The way properties are used in hot or cold environs (such as not opening windows for ventilation) can add as much as 15 dB of noise mitigation. The anticipation of noise level increase may also influence property values before the noise increases actually occur.

The range of impacts provided in Appendix B of 0.2 to 2.0 percent per dB serve as a rough estimate of potential impacts. These impacts will vary from location to location depending on the many other factors that influence property value including local market conditions.

If an area does in fact suffer from lower property values associated with increased noise levels, this will result in lower property taxes collected. Over time, lower sales prices in these areas will result in lower appraised values.

Table ID3.6-4 shows estimates of total property values and taxes in the census block groups within the 65 dB DNL contour line. Conservative estimates are shown giving a range of potential property value loss due to increased noise levels and the resulting range of potential property tax losses. These estimates assume that houses in the block groups within the 65 dB DNL contour line are exposed to 4 dB DNL increase in noise. As shown in Table ID3.1-10, POIs surrounding Boise Airport would experience marginal noise increases ranging from 0 to 4 dB DNL.

**Table ID3.6-4. Property Values and Property Tax Loss, 2017**

| <i>Area*</i>            | <i>Housing Units</i> | <i>Estimated Total Value**</i> | <i>Potential Property Value Loss with 4 dB DNL of Noise Increase Low (0.2%)</i> | <i>Potential Property Value Loss with 4 dB DNL of Noise Increase High (2.0%)</i> | <i>Potential Annual Property Tax Loss (0.76% Property Tax Rate) Low</i> | <i>Potential Annual Property Tax Loss (0.76% Property Tax Rate) High</i> |
|-------------------------|----------------------|--------------------------------|---|--|---|--|
| Census Tract 16         |                      |                                |   |  |   |  |
| Block Group 2           | 1,080                | \$166,104,000                  | \$1,328,832   | \$13,288,320   | \$10,099  | \$100,991  |
| Census Tract 18         |                      |                                |   |  |   |  |
| Block Group 1           | 552                  | \$113,160,000                  | \$905,280   | \$9,052,800  | \$6,880   | \$68,801   |
| Block Group 2           | 608                  | \$126,707,200                  | \$1,013,658   | \$10,136,576   | \$7,704   | \$77,038   |
| Block Group 3           | 818                  | \$124,161,772                  | \$993,294   | \$9,932,942  | \$7,549   | \$75,490   |
| Census Tract 21         |                      |                                |   |  |   |  |
| Block Group 1           | 203                  | \$54,688,200                   | \$437,506   | \$4,375,056  | \$3,325   | \$33,250   |
| Block Group 2           | 683                  | \$127,174,600                  | \$1,017,397   | \$10,173,968   | \$7,732   | \$77,322   |
| <b>Ada County Total</b> | <b>172,399</b>       | <b>\$43,441,684,872</b>        | <b>\$5,695,966</b>  | <b>\$56,959,662</b>  | <b>\$43,289</b>   | <b>\$432,893</b>   |

Note: \*See Figure ID3.7-2 for block group locations.

\*\*Total value of housing units was estimated using Census data for aggregate housing value and median house value from the American Community Survey.

Legend: dB = decibel; DNL = Day-Night Average Sound Level.

Source: U.S. Census Bureau 2017, Tax-rates.org 2019.

Overall, the potential lost property value would represent between 0.01 and 0.13 percent of the tax base of Ada County.

### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Socioeconomics would be expected to remain as described under affected environment in Section ID3.6.1.1. Therefore, there would be no significant impacts to socioeconomics under the No Action Alternative.

### **ID3.6.2      Airspace**

Impacts to airspace are not considered for this resource because the ROI for socioeconomics was considered to consist only of the installations themselves. The socioeconomic aspect of potential impacts to lands underlying SUA was not evaluated because no construction or other ground disturbance would occur to generate economic activity.

### **ID3.6.3 Summary of Impacts**

Under the Proposed Action at the 124 FW installation, the population of Ada County could increase by less than 0.1 percent from the additional personnel associated with the day-to-day operations at the base. There would be slight permanent increases in employment (up to an estimated 85 jobs) and income (approximately \$4.3 million per year). There is sufficient housing in the county for the slight increase in permanent personnel at the base. While property values are a function of many local variables, studies have shown that noise increases have the potential to impact property values near airports from a low of approximately 0.2 percent to a high of approximately 2.0 percent. Noise increases, as the sole variable, have the potential to negatively impact individual homeowners' property values near Boise Airport from between a 0.2 to a 2.0 percent decrease, while other variables could drive a different result overall. Any potential parallel decline in property tax revenues would result in a minor impact. Impacts to socioeconomics associated with the F-35A beddown at the 124 FW installation would not be significant overall.

### **ID3.7 ENVIRONMENTAL JUSTICE AND THE PROTECTION OF CHILDREN**

#### **ID3.7.1 Installation**

##### **ID3.7.1.1 Affected Environment**

###### *Minority and Low-Income Populations*

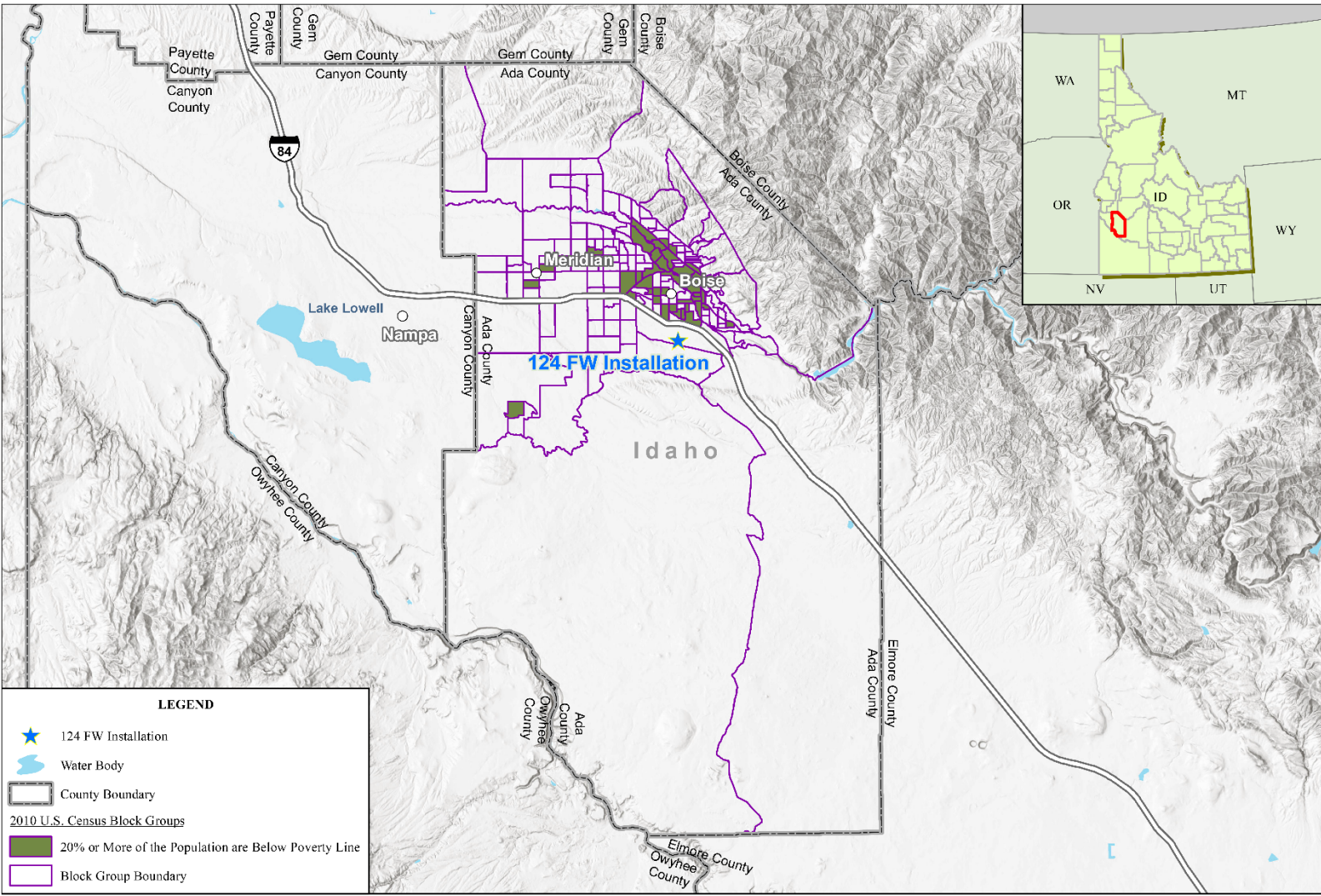
Figure ID3.7-1 highlights the Census block groups in Ada County that are considered environmental justice low-income or minority areas. Out of a total of 169 Census blocks in Ada County, none are classified as having minority populations and 39 are classified as having low-income populations (U.S. Census Bureau 2016d, 2016e).

###### *Protection of Children*

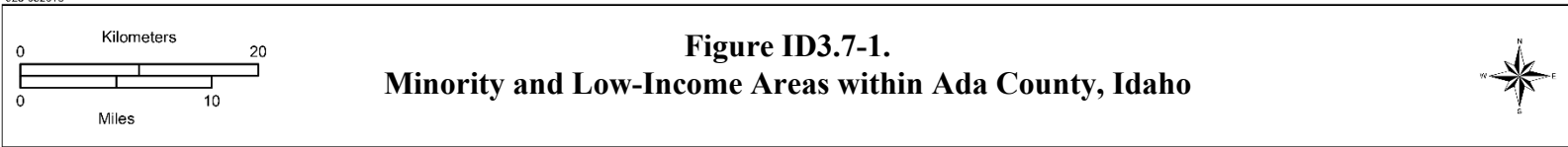
The city of Boise has an estimated 49,426 children under the age of 18, which is approximately 22.6 percent of the population (U.S. Census Bureau 2016a). This rate is lower than the rate for both Ada County (25.1 percent) and the state of Idaho (26.4 percent), which have 106,720 and 431,320 children under the age of 18, respectively. According to the National Center for Education Statistics (2016), there are a total of 133 schools in Ada County with a total of 73,537 students.

###### *Elderly Populations*

An estimated 28,851 people in Boise, or 13.1 percent of the population, are 65 years of age or older and considered elderly (U.S. Census Bureau 2017). In Ada County, 13.0 percent of the population is elderly (56,491 people) and in the state of Idaho it is 14.6 percent (242,449 people).



**Figure ID3.7-1.**  
**Minority and Low-Income Areas within Ada County, Idaho**



ID3.7.1.2 Environmental Consequences

*Proposed Action*

Minority and Low-Income Populations

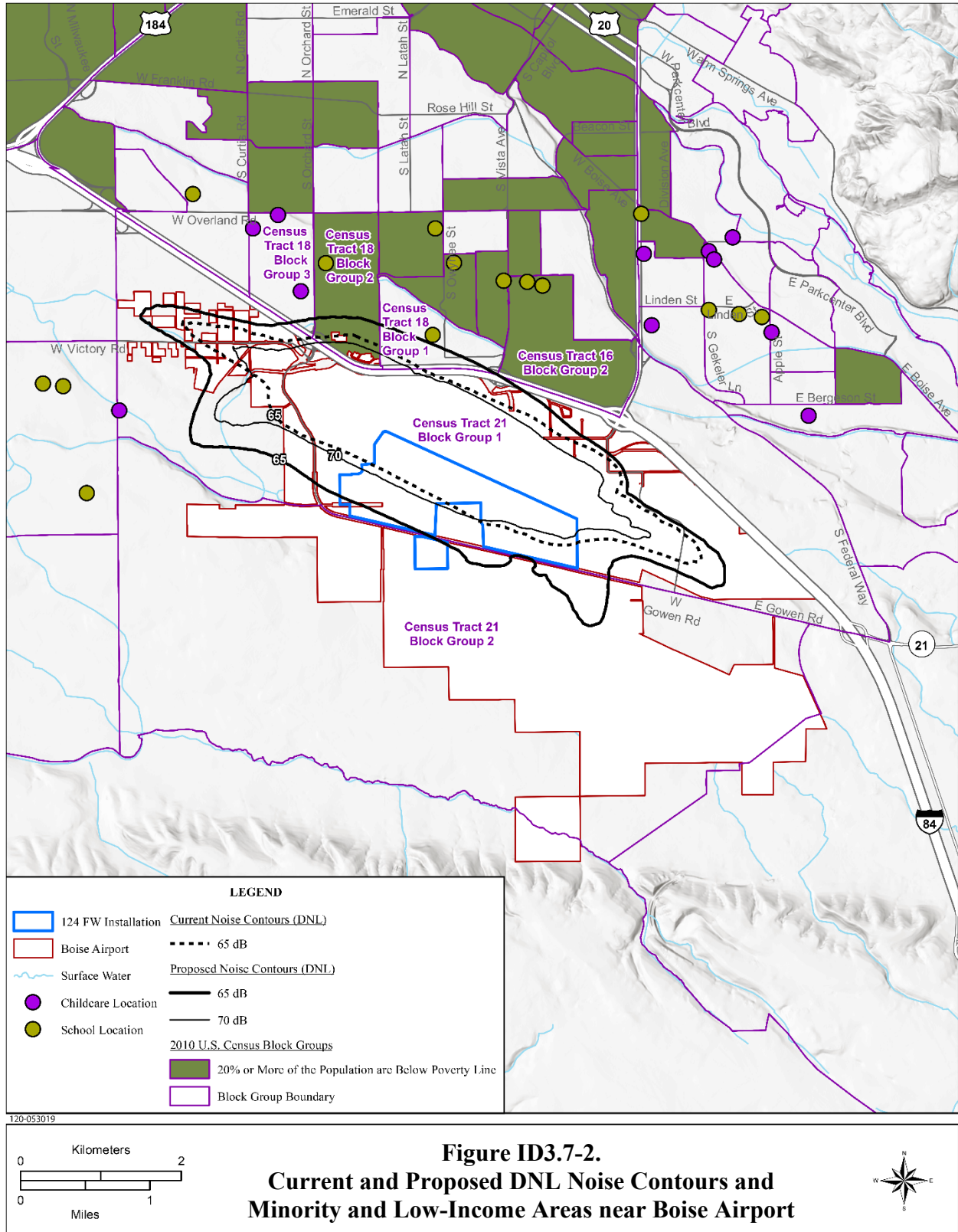
The primary concern under this Proposed Action for impacts on minority and low-income populations is the potential for increased noise exposure. Figure ID3.7-2 shows the Census block groups with minority and low-income populations around Boise Airport that would be exposed to current and proposed noise levels of 65 dB DNL or higher. Table ID3.7-1 lists the Census block groups exposed to noise levels between 65 and 75 dB DNL under current or Proposed Action noise levels. Although the boundaries of the 65 dB DNL contour and Census tract 16, block group 2 overlap, the contour does not extend into the block group or any populated areas. The southern third of Census tract 18, block group 2, is considered a low-income community and would be exposed to noise levels between 65 and 70 dB DNL. None of the other affected block groups are considered low-income or minority communities. As described in Section ID3.1, the change in the noise environment associated with the Proposed Action would be considered significant in the area surrounding the airfield, but the impacts on low-income and minority communities are not expected to be disproportionate. Impacts to environmental justice communities would not be significant.

**Table ID3.7-1. Census Block Groups Exposed to 65 dB DNL Noise Levels or Higher Under Current and Proposed Action Conditions**

| <i>Area</i>                | <i>Minority Population</i> | <i>Poverty Rate</i> | <i>Population under the age of 18</i> | <i>Elderly Population (Aged 65 years or older)</i> | <i>Newly Exposed to Proposed Contours</i> |
|----------------------------|----------------------------|---------------------|---------------------------------------|--|---|
| Idaho                      | 17.1%                      | 14.4%               | 26.4%                                 | 14.6%  | N/A                                       |
| Ada County                 | 14.5%                      | 10.8%               | 25.1%                                 | 13.0%  | N/A                                       |
| City of Boise              | 17.3%                      | 14.1%               | 22.6%                                 | 13.1%  | N/A                                       |
| <b>Census Block Groups</b> |                            |                     |                                       |  |   |
| Census Tract 16            |                            |                     |                                       |  |   |
| Block Group 2              | 25.6%                      | 26.4%               | 23.6%                                 | 12.5%  | Yes                                       |
| Census Tract 18            |                            |                     |                                       |  |   |
| Block Group 1              | 8.8%                       | 16.0%               | 21.1%                                 | 18.7%  | No  |
| Block Group 2              | 3.8%                       | 22.0%               | 21.1%                                 | 34.7%  | No  |
| Block Group 3              | 22.5%                      | 17.9%               | 17.7%                                 | 8.2%   | Yes                                       |
| Census Tract 21            |                            |                     |                                       |  |   |
| Block Group 1              | 2.5%                       | 8.9%                | 10.7%                                 | 20.3%  | No  |
| Block Group 2              | 9.3%                       | 3.2%                | 21.1%                                 | 20.3%  | Yes                                       |

*Note:* \*See Figure ID3.7-2 for block group locations.

*Source:* U.S. Census Bureau 2016a, 2016b, 2017.



### Protection of Children

As discussed in Section ID3.1, under the Proposed Action Alternative, six out of the seven POIs would experience an increase of 3 to 5 dBs  $L_{eq}$ . Owyhee-Harbor Elementary School would be exposed to exterior  $L_{eq}$  of 65 dB, which would equate to 50 and 45 dB for interior levels with windows open and windows closed, respectively. The number of speech-interfering events at Owyhee-Harbor would remain at up to seven per hour with windows open due primarily to civil aircraft with an average daily duration of time above 50 dB of 3 minutes. No other schools or childcare facilities would experience DNL greater than 65 dB. The USAF does not anticipate it would be necessary to close any schools as a result of a basing decision. Interference with classroom speech is discussed in detail in Chapter 4, Section ID3.1.1.2. It is important to note also that most permanent structures, including school buildings, can be effectively insulated from any distracting, exterior noise. Such mitigation is available from the FAA's noise mitigation programs and other sources.

None of the six block groups that would experience noise levels of 65 dB DNL or above have a higher proportion of children than Ada County as a whole. So, while the Proposed Action could impact the ability of students (including low-income and minority students) to learn, which could constitute an adverse impact to children, the marginal increases in noise in the areas would not disproportionately impact children.

### Elderly Populations

Older adults have been identified as sensitive receptors to potential adverse impacts due to physiological and behavioral changes that come with age (Air Force Civil Engineer Center [AFCEC] 2014). Table ID3.7-1 shows the percent of the populations of the block groups that are elderly. Four of the seven block groups that would be exposed to noise levels of 65 dB DNL or higher have a higher percentage of elderly people than Ada County as a whole.

A review of nursing homes and assisted care facilities found that there would be no such facilities within the 65 dB DNL contour (Homeland Infrastructure Foundation-Level Data 2019). Because just over half of the impacted block groups contain a higher proportion of elderly residents than the surrounding region, but there are no nursing homes or assisted living facilities for the elderly in the impacted areas, impacts to the elderly would be disproportionate.

### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft.

Environmental justice and the protection of children would be expected to remain as described under affected environment in Section ID3.7.1.1. Therefore, there would be no significant disproportionate impacts to children or low-income or minority populations under the No Action Alternative.

### **ID3.7.2      Airspace**

Impacts to airspace are not considered for this resource because the ROI for environmental justice was considered to consist only of the installations themselves. Environmental justice and potential effects to children in communities under the SUA were not evaluated because the only anticipated impacts would be due to aircraft noise, but any changes in noise levels in these areas are anticipated to be minor and would not impact human populations.

### **ID3.7.3      Summary of Impacts**

Census blocks associated with the expected changes in off-installation noise contours associated with the proposed F-35A beddown at the 124 FW installation are not considered to be disproportionately low-income or minority areas. Further, none of these Census blocks indicate that there is a higher population of children within them. One school would experience noise levels above 65 dB and one childcare facility would experience noise levels above 65 dB. The Proposed Action could impact the ability of students (including low-income and minority students) to learn, which could constitute an adverse impact to children, to include low-income and minority children. However, impacts to environmental justice communities or children associated with the Proposed Action are not considered to be significant or disproportionate. Elderly populations would be disproportionately impacted.

## **ID3.8      INFRASTRUCTURE**

### **ID3.8.1      Installation**

#### **ID3.8.1.1      Affected Environment**

##### *Potable Water*

Potable water for the 124 FW installation is provided by Suez. Approximately 70 percent of Boise's potable water in the area is supplied from 80 groundwater wells located throughout the Boise area. The remaining 30 percent comes from two surface water treatment plants (Suez 2017). Suez pumps an average of approximately 41.6 million gallons of water per year to its customers (Suez 2017). In calendar year (CY) 2017, 6,966,234 gallons of potable water were supplied to the 124 FW installation (124 FW 2017b).

### *Wastewater*

The 124 FW installation generates wastewater from sanitary, stormwater, and industrial processes, including oil/water separator (OWS) discharge, wash rack discharge, floor wash-down, latrines, sinks, and showers. Wastewater generated within the 124 FW installation is conveyed into the municipal sewage system to the City of Boise Department of Public Works. The City owns two wastewater treatment plants, the Lander Street Wastewater Treatment Plant and the West Boise Wastewater Treatment Plant, which have a combined capacity to treat 30.4 million gallons of wastewater daily (City of Boise 2017b).

### *Stormwater*

A high percentage of the active administrative and industrial areas of the installation are paved or roofed, resulting in high runoff rates during precipitation events. As described in the 124 FW SWPPP (124 FW 2015a), the 124 FW installation has a stormwater drainage conveyance system typified by over land flow to catch basins, inlets, surface drains, underground pipes, culverts, ditches, and swales that discharge to receiving waters (see Section ID3.10, *Water Resources*) or other municipal separate storm sewer systems. The stormwater drainage system has been designed to safely collect and transport surface water runoff from storm events to prevent flooding within the installation and is a separate system from the wastewater (sewage) system. The state of Idaho is not a delegated NPDES state and does not have general permitting authority; therefore, USEPA Region 10 has established final stormwater permits for industrial dischargers in Idaho under the NPDES program. The Boise Air Terminal (a civilian airport with commercial air carrier service terminal and facilities, general aviation facilities, aprons, taxiways, and runways) is covered by USEPA's NPDES MSGP IDR050000 (124 FW 2015a).

### *Electrical and Natural Gas Systems*

Electricity is supplied to the 124 FW installation by Idaho Power, and natural gas is supplied by Intermountain Gas Company. Electricity consumption for CY2017 at the 124 FW installation was 3,900,159 kilowatt-hours. Natural gas consumption for CY2017 at the 124 FW installation was 104,755 hundred cubic feet (124 FW 2017b).

### *Solid Waste Management*

Municipal solid waste at the 124 FW installation is managed in accordance with the 124 FW Solid Waste Management Plan (124 FW 2015b) and guidelines specified in AFI 32-7042, *Waste Management* (2017). In general, AFI 32-7042 establishes the requirement for installations to have a solid waste management program that incorporates the following: a solid waste management plan; procedures for recycling, diversion, handling, storage, collection, and disposal of solid waste; recordkeeping and reporting; and pollution prevention.

The 124 FW installation generates solid waste in the form of office trash, nonhazardous industrial wastes, normal municipal waste, and construction debris. These nonhazardous solid wastes are collected in dumpsters located throughout the 124 FW installation and transported by contractor to the Ada County Landfill.

### *Transportation*

Regional access to the 124 FW installation is provided by Interstate 84 which runs east-west and is located just north of the airport. The installation's main gate can be accessed from Gowen Road from the east and Orchard Street from the west. Gowen Road runs east-west and outlines the majority of the southern boundary of the airport. Orchard Street runs north-south and largely forms the western boundary of the airport.

### ID3.8.1.2 Environmental Consequences

#### *Proposed Action*

#### Potable Water

Water consumption would be expected to increase slightly under the Proposed Action as a result of the small increase in personnel; however, an increase of up to approximately 85 personnel on the installation would not be expected to impact regional water supply. Additionally, the demand for water could also increase during demolition and construction phases (e.g., if used to control dust). However, this increase would be temporary and intermittent and would not be expected to impact regional water supply.

#### Wastewater

Wastewater generation would be expected to increase slightly as a result of the increase of up to approximately 85 personnel on the installation. However, there have been no deficiencies identified with the existing system, and it is expected that the existing sanitary sewer system is generally adequate to serve the facilities proposed under this alternative.

#### Stormwater

Under the Proposed Action, there would be up to 249,232 SF (5.7 acres) of temporary soil disturbance, including up to 25,000 SF (0.6 acre) of new impervious surface as a result of proposed construction. In accordance with the EISA Section 438, any temporary increase in surface water runoff as a result of the proposed construction would be attenuated through the use of temporary and/or permanent drainage management features. The proposed construction activities could temporarily impact the quality of stormwater runoff (see Section ID3.10, *Water Resources*).

However, implementation of appropriate standard construction practices (as described previously), preventative maintenance, and periodic inspections and sampling to detect risk to stormwater, especially during active construction activity, would minimize these potential impacts. Therefore, impacts to the existing stormwater drainage system as a result of the proposed construction would not be significant.

#### Electrical and Natural Gas Systems

Demand for electricity and natural gas would be expected to increase slightly as a result of the increase in personnel, and the building space and facilities to be constructed would require additional electricity. However, any new facilities and additions associated with the Proposed Action would be implemented with more energy-efficient design standards and utility systems than are currently in place. In addition, construction projects would incorporate Leadership in Energy and Environmental Design and sustainable development concepts to achieve optimum resource efficiency, sustainability, and energy conservation. Therefore, average energy consumption would be expected to stay the same or decrease compared to energy consumption associated with existing facilities.

Construction activity associated with the Proposed Action could result in some temporary interruption of utility services during construction. These impacts would be temporary, occurring briefly during active construction periods. In addition, the demand for energy (primarily electricity) could increase slightly during demolition and construction phases. The energy supply at the installation and in the region is adequate and would not be affected by this temporary increase in demand.

#### Solid Waste Management

The building space and facilities to be constructed would generate construction and demolition debris requiring landfill disposal. Proposed increases in personnel and equipment use would also contribute to an increase in solid waste generation. However, impacts to local landfills would not be expected to exceed the permitted throughput or contribute significantly to the remaining capacity.

Off-installation contractors completing construction and demolition projects at the 124 FW installation would be responsible for disposing of waste generated from these activities. Contractors would be required to comply with federal, state, and local regulations for the collection and disposal of municipal solid waste from the installation. Much of this material can be recycled or reused, or otherwise diverted from landfills. All non-recyclable construction and demolition waste would be collected in a dumpster until removal. Construction and demolition waste

contaminated with hazardous waste, ACM, LBP, or other undesirable components would be managed in accordance with AFI 32-7042, *Waste Management* (2017).

### Transportation

Construction equipment would be driven to proposed construction areas and would be kept on-site for the duration of the respective activity. Construction workers would drive daily in their personal vehicles to and from the construction site. In general, construction traffic would result in increases in the use of on-installation roadways during construction activities; however, increases would be temporary and intermittent, occurring only during active construction periods.

The number of authorized personnel on the installation would increase by up to approximately 85 under the Proposed Action (see Section ID2.1.4). The increase in personnel would create a potential of 85 additional one-way vehicle trips to and from the installation during morning and evening peak periods for these additional personnel. Assuming that each person makes two, one-way trips per day, the implementation of the Proposed Action would add an additional 170 trips onto the existing roadway network after the construction phase is complete. However, regional roads used to access the installation, as well as those located on the installation, have sufficient capacity to manage this increase in traffic without substantial impacts to circulation. Therefore, impacts to transportation infrastructure would not be significant under the Proposed Action.

### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Infrastructure would be expected to remain as described under affected environment in Section ID3.8.1.1. Therefore, there would be no significant impacts to infrastructure under the No Action Alternative.

### **ID3.8.2      Airspace**

Impacts to airspace are not considered for this resource because the ROI for infrastructure was considered to consist only of the installations themselves. The ROI does not include land beneath the SUA since no ground disturbance, construction, or changes in infrastructure would occur.

### **ID3.8.3      Summary of Impacts**

Under the Proposed Action there would be no substantial changes expected to potable water, wastewater systems, stormwater management, energy supply systems, solid waste management,

or transportation routes. Impacts to infrastructure at the 124 FW installation as a result of the proposed F-35A beddown would not be significant.

### **ID3.9 EARTH RESOURCES**

#### **ID3.9.1 Installation**

##### **ID3.9.1.1 Affected Environment**

###### *Geology*

The 124 FW is located within the western Snake River Plain, which consists of a large basaltic plateau covered by lake sediments and Pleistocene alluvium (124 FW 2000). Most of southern Idaho is located within the arid Columbia Plateau province characterized by thick basaltic plateaus made of many series of lava flows.

To the north of the 124 FW installation is the mountainous terrain of central Idaho, which developed in response to regional uplift of the Earth's crust approximately 10 million years ago. To the south of the northern mountains, crustal downwarp referred to as the Snake River Downwarp occurred coincident with the northern uplift. The Snake River Downwarp forms a U-shaped arc that is approximately 400 miles long and 50 to 120 miles wide across where the downwarp coincides with the Snake River. After the development of the Snake River Downwarp, extrusions of lava were deposited in the downwarp interbedded with eroded sediments from the northern mountains. The extrusions of lava created lava dams that frequently altered surface drainage patterns and formed large lakes where layers of lacustrine sediment were deposited. Following the Pleistocene glaciation, melt waters deposited subangular, crystalline terrace gravel from the northern mountains to the Snake River Plain.

The 124 FW installation is underlain by the Pleistocene-aged terrace gravel, which consists of unconsolidated silt, sand, and well-sorted gravel beds. The elevated bluffs to the south of the 124 FW installation consist of the Snake River Group basalt (124 FW 2018a).

###### *Topography*

The 124 FW installation is located in the Boise River Valley with relatively flat topography that slopes down east to west and an average elevation of 2,800 feet MSL. The mountains to the south and north of the 124 FW installation rise sharply to elevations of up to 8,500 feet MSL. The Snake River Canyon, approximately 25 miles to the south, provides the only significant relief in the area at an elevation of approximately 2,260 feet MSL (124 FW 2000).

### *Soils*

Soil in the region surrounding the 124 FW installation is characterized as the Colthorp-Elijah-Purdam series. Soils present within the installation are primarily composed of the Elijah silt loam with parent material of loess (wind-blown sediments) and alluvium (consisting of gravel, sand, silt, and clay). The Elijah silt loam is well drained, moderately deep, and contains a hardpan, which is common in arid to semi-arid environments where high rates of soil moisture evaporation causes the precipitation of salt within the subsoil. The depth to the hardpan ranges from 20 to 40 inches below ground surface and the permeability through the hardpan is very low. Migration of fluid through the hardpan is controlled by fractures. Interbedded, unconsolidated sand and gravel underlies the hardpan (124 FW 2018a).

The Natural Resources Conservation Service (NRCS) Soil Survey for Ada County, Idaho identifies the following five soil types at the 124 FW installation:

- Bowns-Rock outcrop complex, silty alluvium and/or loess over basalt bedrock, 0-15 percent slope,
- Chilcott-Seabee complex, bedrock substratum, volcanic ash and/or mixed alluvium and/or loess over basalt bedrock, 2-4 percent slope,
- Elijah silt loam, lacustrine deposits and/or loess and/or alluvium, 0-2 percent slope,
- Elijah-Urban land complex, 25 percent Urban fill, lacustrine deposits and/or loess and/or alluvium, 0-2 percent slope, and
- McCain silt loam, silty alluvium and/or loess over basalt bedrock, 2-4 percent slope (U.S. Department of Agriculture 2017).

#### ID3.9.1.2 Environmental Consequences

##### *Proposed Action*

Under this alternative, new construction would consist of 14 separate projects resulting in up to 249,232 SF (5.7 acres) of new construction footprint, including up to 25,000 SF (0.6 acre) of new impervious surface. The total construction footprint analyzed represents the largest possible footprint of each of the options (Table ID2.1-2). These proposed construction projects would meet all criteria specified in ANG Handbook 32-1084, *Facility Space Standards*.

##### Geology and Topography

Proposed construction under this alternative would occur within the footprint of the developed 124 FW installation and surrounding lands would not be impacted by any construction-related clearing and grading. As such, impacts to geology and topography would be negligible under the Proposed Action at the 124 FW.

## Soils

Proposed construction under this alternative would occur on five soil types, including Bowns-Rock outcrop (0-15 percent slope), Chilcott-Sebree (2-4 percent slope), Elijah silt loam (0-2 percent), Elijah-Urban land complex (0-2 percent slope), and McCain silt loam (2-4 percent slope). The majority of the proposed construction is on the Elijah silt loam and Elijah-Urban land complex. Both the Elijah silt loam and Elijah-Urban land complex are rated by the NRCS Web Soil Survey as somewhat limited due to high shrink swell potentials. The ANG will enforce appropriate engineering practices necessary in order to construct on these types of soils. In addition, under the Farmland Protection Policy Act (FPPA), the Elijah silt loam is designated as prime farmland. However, the proposed construction is for national defense purposes and the surrounding land is already in urban development. Pursuant to the FPPA, the USAF determined that the land is not subject to the FPPA; therefore, the FPPA does not apply to this alternative.

To minimize potential impacts to soil associated with erosion, runoff, and sedimentation during construction activity, standard construction practices as described in the IDANG 124 FW installation SWPPP (124 FW 2015a) would be implemented during and following the construction period. Such practices could include using well-maintained silt fences or straw wattles, minimizing surficial areas disturbed, stabilizing cut/fill slopes, minimizing earth-moving activities during wet weather, and covering of soil stockpiles, as appropriate. A site-specific and detailed SWPPP that coordinates the timing of soil disturbing activities with the installation of soil erosion and runoff controls is an effective way of controlling erosion while soil is exposed and subject to construction activity. A Notice of Intent (NOI) must be filed with the state of Idaho to obtain coverage under the General Permit for Stormwater Runoff from construction activities prior to implementation of individual projects. Construction activities subject to this permit include clearing, grading, and disturbances to the ground such as stockpiling or excavation. Implementation of these measures, as necessary and appropriate, would ensure that impacts to earth resources under the Proposed Action at the 124 FW installation would not be significant.

### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Earth resources would be expected to remain as described under affected environment in Section ID3.9.1.1. Therefore, there would be no significant impacts to earth resources under the No Action Alternative.

### **ID3.9.2      Airspace**

Impacts to airspace are not considered for this resource because the ROI for earth resources was considered to consist only of the installations themselves. The ROI does not include land beneath the SUA since no ground disturbance would occur.

### **ID3.9.3      Summary of Impacts**

Under the Proposed Action at the 124 FW installation, proposed construction would result in up to 249,232 SF (5.7 acres) of new construction footprint, including up to 25,000 SF (0.6 acre) of new impervious surface. Site-specific SWPPPs would be prepared for each construction project to ensure that runoff would be contained on-site. Impacts to earth resources as a result of the proposed beddown of the F-35A at the 124 FW installation would not be significant.

## **ID3.10      WATER RESOURCES**

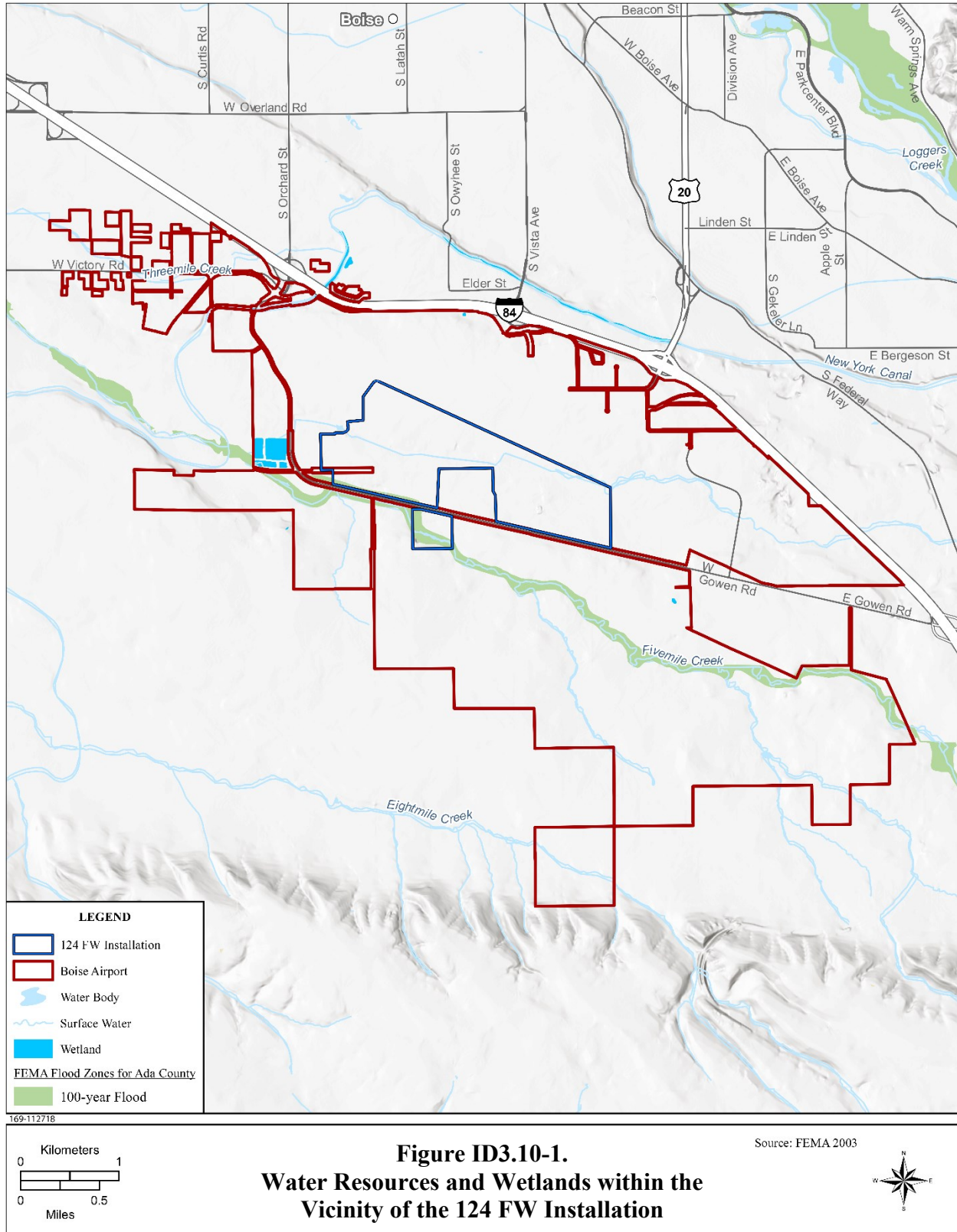
### **ID3.10.1     Installation**

#### **ID3.10.1.1   Affected Environment**

##### *Surface Water*

The 124 FW installation at the Boise Airport, is located within the Boise River drainage basin. The Boise River flows through the city of Boise about 3 miles northeast of the 124 FW installation. Fivemile Creek is an ephemeral stream that flows in a westerly direction and crosses the 124 FW installation parcel that includes the firing range (Figure ID3.10-1). Another ephemeral drainage ditch traverses the Boise Airport and the 124 FW installation in a westerly direction. There are no other surface water features at the 124 FW installation. The reach of Fivemile Creek that traverses the 124 FW installation is a CWA Section 303(d) listed water. The creek is impaired due to nutrients, a toxic substance (chlorpyrifos), sedimentation/siltation, and *Escherichia coli* (Idaho DEQ 2017).

The 124 FW installation has industrial area stormwater discharges with the potential to enter waters of the U.S.; therefore, the facility is covered under a NPDES stormwater permit. USEPA Region 10 has primacy over the NPDES program in the state of Idaho and the facility is covered under the NPDES 2015 MSGP (USEPA 2015). A SWPPP has been prepared per requirements of the 2015 MSGP. The SWPPP is an engineering and management strategy prepared specifically for the 124 FW installation to improve the quality of the stormwater runoff and thereby improve the quality of receiving waters (124 FW 2015a).



### *Groundwater*

The 124 FW installation is located in the lower Boise River Basin, which contains the Treasure Valley aquifer system. The Treasure Valley aquifer system is made up of a complex series of interbedded, tilted, faulted, and eroded sediments extending to depths of over 6,000 feet (Idaho Department of Water Resources 2004). These sedimentary aquifers contain shallow, local flow systems, and a deep, regional flow system (Idaho Department of Water Resources 2004). Recharge to shallow aquifers is from seepage of the canal system and infiltration associated with irrigated agriculture. The deeper aquifer is recharged in the eastern portion of the valley and along the Boise Front. Groundwater discharge is primarily to the Boise River and/or Snake River. Wells in the Boise River basin generally extend less than 1,200 feet below ground surface (Idaho Department of Water Resources 2004).

### *Floodplains*

Per the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Ada County, Idaho, Panels 286H and 2887H (Map Numbers 16001C0286H and 16001C0287H, Effective February 19, 2003), portions of the 124 FW installation firing range area have been identified as being located within an area subject to inundation by 1-percent-annual-chance of flooding (i.e., 100-year floodplain of Fivemile Creek designated as Zone A) (FEMA 2003). However, this area is not located within the 100-year floodplain of the Boise River. The extent of the 100-year floodplain on the 124 FW installation is shown in Figure ID3.10-1.

### *Wetlands*

No wetlands have been identified on the 124 FW installation and no National Wetland Inventory wetlands occur on the installation (U.S. Fish and Wildlife Service [USFWS] 2018a).

#### ID3.10.1.2 Environmental Consequences

### *Proposed Action*

#### Surface Water

Under the Proposed Action at the 124 FW installation, construction and modification projects to support beddown of the F-35A would have the potential to impact surface water resources. As identified in Table ID2.1-2, new construction would consist of 14 infrastructure improvement projects resulting in up to 249,232 SF (5.7 acres) of new construction footprint, including up to 25,000 SF (0.6 acre) new impervious surface. Several of the projects have more than one option but only one option would be selected for each project. The total construction footprint analyzed represents the largest possible footprint of each of the options (Table ID2.1-2). These proposed

construction projects would meet all criteria specified in ANG Handbook 32-1084, *Facility Space Standards*.

The collective area impacted by the proposed construction activity would exceed 1 acre in size and therefore requires coverage by a general permit for stormwater discharges from construction sites. The provisions outlined in the permit would be followed to comply with the requirements of the NPDES stormwater regulations. In compliance with coverage under this permit, a site-specific SWPPP would be developed and the construction manager would document the erosion, sediment, and pollution controls used, inspect the controls periodically, and maintain the controls throughout the life of the project.

The sources of impacts from construction would be limited to the area of ground disturbance at any one time and the duration of construction at each distinct project site, and runoff would only be likely to occur during and following a precipitation event. The site-specific SWPPP would include measures to minimize potential impacts associated with stormwater runoff during construction, including BMPs and standard erosion control measures. These measures include straw bales, sandbags, silt fencing, earthen berms, tarps or water spraying, soil stabilization, temporary sedimentation basins, and re-vegetation with native plant species, where possible, to decrease erosion and sedimentation. Implementation of BMPs would reduce the potential for sediment impacts, particularly adjacent to Fivemile Creek, which is on the State list of waterbodies that are impaired due to sedimentation (Idaho DEQ 2017).

In accordance with UFC 3-210-10, *Low Impact Development (LID)* (as amended, 2016) and EISA Section 438, any temporary increase in surface water runoff as a result of the proposed construction would be attenuated through the use of temporary and/or permanent drainage management features. Under these requirements, federal facility projects with over 5,000 SF of new impervious surface must maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.

In addition, the existing SWPPP (124 FW 2015a) for the 124 FW installation is in compliance with the NPDES 2015 MSGP and would be amended as necessary to reflect post-construction operations and potentially new BMPs. This SWPPP provides a management and engineering strategy to improve the quality of stormwater runoff from the 124 FW installation and thereby improve the quality of the receiving waters. Although there would be a small increase in runoff volumes and rates associated with the additional impervious areas under the 124 FW installation alternative, the stormwater management system would be designed in compliance with applicable stormwater regulations. In addition, the 124 FW installation is currently in compliance with its NPDES 2015 MSGP and proposed facility designs would follow the NPDES 2015 MSGP conditions such that no significant adverse impacts to water quality would result.

Implementation of these measures, as necessary and appropriate, would ensure that impacts to surface water under the Proposed Action at the 124 FW installation would not be significant.

#### Groundwater

Construction activities and operations under the Proposed Action at the 124 FW installation would include stormwater runoff protection measures that would also serve to protect groundwater quality. By adhering to the provisions of the general permit for stormwater discharges from construction sites; implementing BMPs; and amending the existing SWPPP, there would be a reduction in stormwater pollutant loading potential and thus a reduction in pollution loading potential to the underlying groundwater basins. Site grading and construction activities would also not reach depths at which groundwater would be affected. Personnel numbers would increase by approximately 85 at the 124 FW installation under this alternative, so there would be a minor increase in demand on potable water supplies.

Implementation of stormwater runoff protection measures, as necessary and appropriate, would ensure that impacts to groundwater under the Proposed Action at the 124 FW installation would not be significant.

#### Floodplains

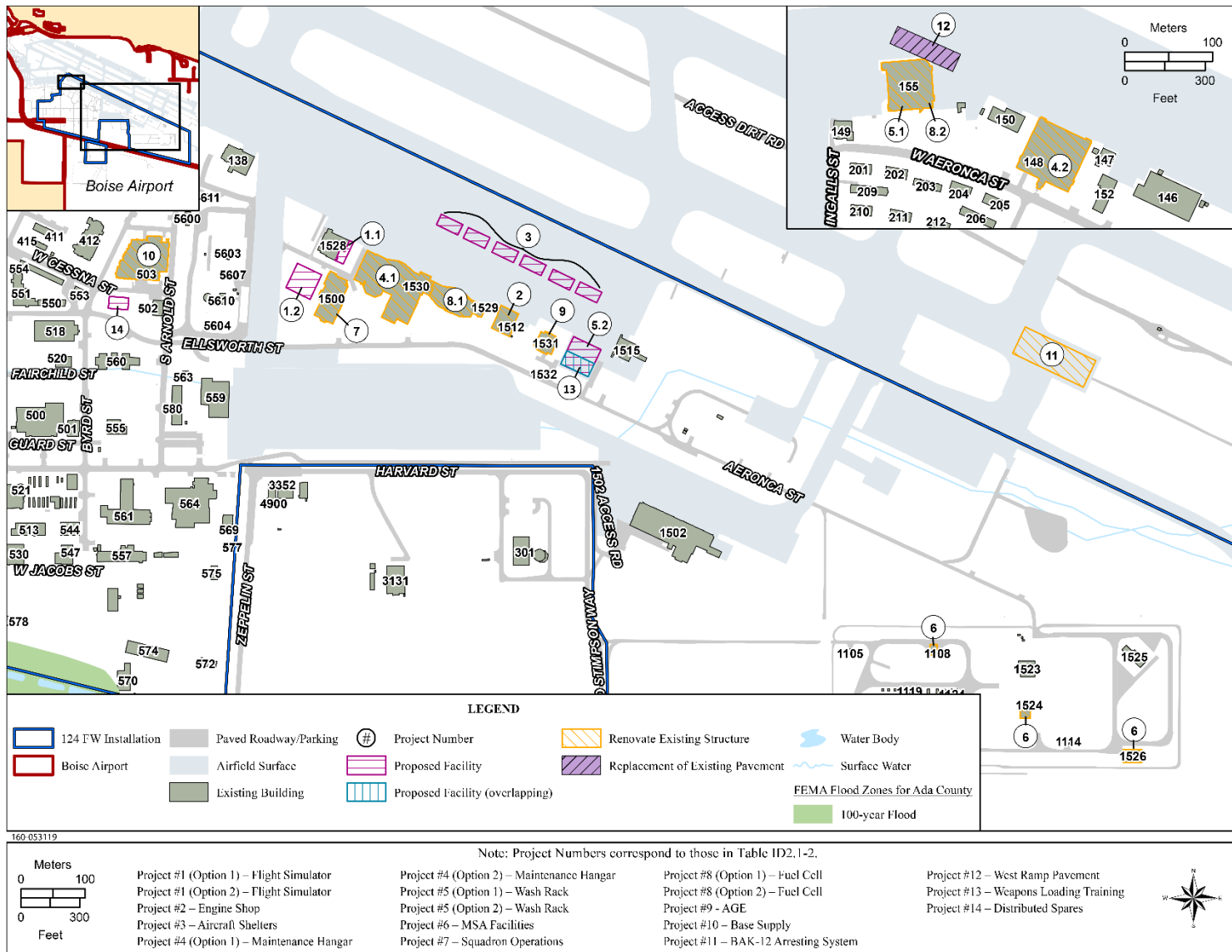
The proposed projects would not occur within a 100-year floodplain zone (FEMA 2003) (Figure 3.10-2). As discussed under surface water, predevelopment hydrology would be maintained through compliance with LID and EISA and there would be no substantial increase in stormwater runoff. Therefore, impacts to flooding that would result from construction activities or operations associated with the Proposed Action at the 124 FW installation would not be significant.

#### Wetlands

No wetlands have been identified on the 124 FW installation and no National Wetland Inventory wetlands occur on the installation (USFWS 2018a). Therefore, construction activities would have no impact on wetlands.

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Water resources would be expected to remain as described under affected environment in Section ID3.10.1.1. Therefore, there would be no significant impacts to water resources under the No Action Alternative.



**Figure ID3.10-2.**  
**Water Resources and Wetlands within the Vicinity of the Proposed Construction**  
**at the 124 FW Installation**

### **ID3.10.2     Airspace**

Impacts to airspace are not considered for this resource because the ROI for water resources was considered to consist only of the installations themselves. The ROI does not include land beneath the SUA since no ground disturbance or construction would occur.

### **ID3.10.3     Summary of Impacts**

Under the Proposed Action at the 124 FW installation, proposed construction would result in up to 249,232 SF (5.7 acres) of new construction footprint, including up to 25,000 SF (0.6 acre) of new impervious surface. Site-specific SWPPPs would be prepared for each construction project to ensure that runoff would be contained on-site. Predevelopment hydrology would be maintained through compliance with LID and EISA. BMPs would continue to be implemented to minimize impacts to both surface water and groundwater. The proposed construction projects would not be located within the 100-year floodplains. None of the construction activities are associated with wetlands. Impacts to water resources as a result of the proposed beddown of the F-35A at the 124 FW installation would not be significant.

## **ID3.11       BIOLOGICAL RESOURCES**

### **ID3.11.1     Installation**

#### **ID3.11.1.1   Affected Environment**

##### *Vegetation*

The majority of the installation is comprised of developed and landscaped areas such as lawns, ornamental trees, or maintained open fields of grass. Small portions of the installation consist of unmanaged vegetation areas dominated by sagebrush or rabbitbrush with an understory composed primarily of nonnative annual grasses and noxious weeds (Idaho Army National Guard 2016; 124 FW 2018b).

##### *Wildlife*

The majority of the wildlife present at the airport and the 124 FW installation consists of species that are highly adapted to developed and disturbed areas and are typical of disturbed shrub habitats. Examples of common bird species that were observed on the installation during a 2018 fauna survey include the Canada goose (*Branta canadensis*), ring-billed gull (*Larus delawarensis*), house sparrow (*Passer domesticus*), western meadowlark (*Sturnella neglecta*), common raven (*Corvus corax*), red-tailed hawk (*Buteo jamaicensis*), Brewer's blackbird (*Euphagus cyanocephalus*), European starling (*Sturnus vulgaris*), American kestrel (*Falco sparverius*), and

American robin (*Turdus migratorius*). Common mammals observed in the past on the installation include ground squirrels (*Sciuridae*), American badger (*Taxidea taxus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), and the black-tailed jackrabbit (*Lepus californicus*). Common reptiles and amphibians observed during the 2018 survey include the gopher snake (*Pituophis catenifer*) and the western fence lizard (*Sceloporus occidentalis*) (124 FW 2018b).

*Threatened, Endangered, and Special Status Species*

Table ID3.11-1 lists federally threatened, endangered, candidate, and state-listed species observed or potentially occurring in the vicinity of the 124 FW installation. No federally-listed species are known to occur on the 124 FW installation. However, one federally-listed species, slickspot peppergrass (*Lepidium papilliferum*), has been observed in the past on the 124 FW installation in 2006, but has not been documented since, including during 2014, 2015, and 2018 surveys (Kinter and Miller 2016; 124 FW 2018b). This observation in 2006 is thought to have been a mapping error (Kinter and Miller 2016). Slickspot peppergrass is known to occur on airport property, south of the 124 FW installation. Slickspot peppergrass was listed as federally threatened in 2009 and grows in microsites, called slickspots, which consist of soils high in sodium and clay, and covered in cryptogammic crust and algae. There are currently five known occurrences of the slickspot peppergrass present on airport property south of the 124 FW installation (Kinter and Miller 2016). Critical habitat proposed for slickspot peppergrass on May 10, 2011 (Federal Register 2011) includes an undeveloped portion of this airport property.

**Table ID3.11-1. Federally- and State-Listed Species Potentially Occurring within the 124 FW Installation and Under the Airspace  
(Page 1 of 3)**

| <i>Common Name</i>            | <i>Scientific Name</i>                      | <i>Status</i> | <i>Potential Occurrence on the 124 FW Installation</i> | <i>Potential Occurrence Under the Airspace</i> |
|-------------------------------|---|---------------|--|--|
| <b>Birds</b>                  |   |               |  |  |
| American white pelican        | <i>Pelecanus erythrorhynchos</i>            | IDS1          | P  | P  |
| Bald eagle                    | <i>Haliaeetus leucocephalus</i>             | NVS1          | P  | P  |
| Black-billed cuckoo           | <i>Coccyzus erythrophthalmus</i>            | IDS1          | U  | U  |
| Black-crowned night-Heron     | <i>Nycticorax</i>                           | IDS2          | P  | P  |
| Black tern                    | <i>Histrionicus</i>                         | IDS1          | U  | P  |
| Black-throated sparrow        | <i>Amphispiza bilineata</i>                 | IDS2          | P  | P  |
| Blue grosbeak                 | <i>Guiraca caerulea</i>                     | IDS2          | U  | U  |
| California gull               | <i>Larus californicus</i>                   | IDS2          | P  | P  |
| Caspian tern                  | <i>Sterna caspia</i>                        | IDS2          | P  | P  |
| Cattle egret                  | <i>Bubulcus ibis</i>                        | IDS2          | P  | P  |
| Clark’s grebe                 | <i>Aechmophorus clarkia</i>                 | IDS2          | P  | P  |
| Columbian sharp-tailed grouse | <i>Tympanuchus phasianellus columbianus</i> | IDS1          | -  | P  |
| Common grackle                | <i>Quiscalus quiscula</i>                   | IDS2          | P  | P  |

**Table ID3.11-1. Federally- and State-Listed Species Potentially Occurring within the 124  
FW Installation and Under the Airspace  
(Page 2 of 3)**

| <i>Common Name</i>       | <i>Scientific Name</i>            | <i>Status</i> | <i>Potential Occurrence on the 124 FW Installation</i> | <i>Potential Occurrence Under the Airspace</i> |
|--------------------------|-----------------------------------|---------------|--|--|
| Common loon              | <i>Gavia immer</i>                | IDS1          | U  | U  |
| Common tern              | <i>Sterna hirundo</i>             | IDS1          | P  | P  |
| Double-crested cormorant | <i>Phalacrocorax auritus</i>      | IDS2          | P  | P  |
| Forster's tern           | <i>Sterna forsteri</i>            | IDS1          | P  | P  |
| Franklin's gull          | <i>Larus pipixcan</i>             | IDS2          | P  | P  |
| Gray flycatcher          | <i>Empidonax wrightii</i>         | IDS2          | U  | P  |
| Great egret              | <i>Ardea alba</i>                 | IDS1          | P  | P  |
| Greater-sage grouse      | <i>Centrocercus urophasianus</i>  | IDS1          | P  | P  |
| Greater yellowlegs       | <i>Tringa melanoleuca</i>         | IDS2          | P  | P  |
| Harlequin duck           | <i>Histrionicus histrionicus</i>  | IDS1          | U  | U  |
| Herring gull             | <i>Larus argentatus</i>           | IDS2          | U  | P  |
| Hooded merganser         | <i>Lophodytes cucullatus</i>      | IDS2          | P  | P  |
| Lesser goldfinch         | <i>Carduelis psaltria</i>         | IDS2          | P  | P  |
| Least sandpiper          | <i>Calidris minutilla</i>         | IDS2          | P  | P  |
| Lesser yellowlegs        | <i>Tringa flavipes</i>            | IDS2          | P  | P  |
| Long-billed curlew       | <i>Numenius americanus</i>        | IDS2          | P  | P  |
| Long-billed dowitcher    | <i>Limnodromus scolopaceus</i>    | IDS2          | P  | P  |
| Marbled godwit           | <i>Limosa fedoa</i>               | IDS2          | P  | P  |
| Merlin                   | <i>Falco columbarius</i>          | IDS2          | P  | P  |
| Mountain quail           | <i>Oreortyx pictus</i>            | IDS1          | U  | U  |
| Northern mockingbird     | <i>Mimus polyglottos</i>          | IDS1          | P  | P  |
| Peregrine falcon         | <i>Falco peregrinus anatum</i>    | IDS2,<br>NVS2 | P  | P  |
| Pinyon jay               | <i>Gymnorhinus cyanocephalus</i>  | IDS1          | U  | P  |
| Purple martin            | <i>Progne subis</i>               | IDS2          | U  | U  |
| Ring-billed gull         | <i>Larus delawarensis</i>         | IDS2          | P  | P  |
| Snowy egret              | <i>Egretta thula</i>              | IDS2          | P  | P  |
| Three-toed woodpecker    | <i>Picoides dorsalis</i>          | IDS2          | U  | U  |
| Trumpeter swan           | <i>Cygnus buccinator</i>          | IDS1          | U  | P  |
| Western grebe            | <i>Aechmophorus occidentalis</i>  | IDS2          | P  | P  |
| Western sandpiper        | <i>Calidris mauri</i>             | IDS2          | P  | P  |
| White-faced ibis         | <i>Plegadis chihi</i>             | IDS2          | P  | P  |
| White-headed Woodpecker  | <i>Picoides albolarvatus</i>      | IDS2          | U  | U  |
| White-winged crossbill   | <i>Loxia leucoptera</i>           | IDS1          | U  | U  |
| Yellow-billed cuckoo     | <i>Coccyzus americanus</i>        | T, IDS2       | U  | U  |
| <b>Mammals</b>           |                                   |               |  |  |
| California myotis        | <i>Myotis californicus</i>        | IDS2          | -  | P  |
| Cliff chipmunk           | <i>Neotamias dorsalis</i>         | IDS1          | -  | P  |
| Dark kangaroo mouse      | <i>Microdipodops megacephalus</i> | IDS1          | -  | P  |
| Dwarf shrew              | <i>Sorex nanus</i>                | IDS2          | -  | P  |
| Fisher                   | <i>Martes pennanti</i>            | IDS1          | U  | P  |
| Western pipistrelle      | <i>Pipistrellus hesperus</i>      | IDS2          | -  | P  |
| Fringed myotis           | <i>Myotis thysanodes</i>          | IDS2          | -  | P  |
| Red fox                  | <i>Vulpes vulpes</i>              | IDS1          | P  | P  |

**Table ID3.11-1. Federally- and State-Listed Species Potentially Occurring within the 124  
FW Installation and Under the Airspace  
(Page 3 of 3)**

| <i>Common Name</i>                  | <i>Scientific Name</i>                            | <i>Status</i> | <i>Potential Occurrence on the 124 FW Installation</i> | <i>Potential Occurrence Under the Airspace</i> |
|-------------------------------------|---|---------------|--|--|
| Little pocket mouse                 | <i>Perognathus longimembris</i>                   | IDS1          | -  | P  |
| Pinon mouse                         | <i>Peromyscus truei</i>                           | IDS1          | -  | P  |
| Canada lynx                         | <i>Lynx canadensis</i>                            | IDS1          | U  | U  |
| Merriam’s ground squirrel           | <i>Spermophilus canus</i>                         | IDS1          | -  | P  |
| Merriam’s shrew                     | <i>Sorex merriami</i>                             | IDS2          | P  | P  |
| North American wolverine            | <i>Gulo luscus</i>                                | IDS2          | U  | U  |
| Pallid bat                          | <i>Antrozous pallidus</i>                         | IDS2          | P  | P  |
| Piute ground squirrel               | <i>Spermophilus mollis</i>                        | IDS2          | P  | P  |
| Pygmy rabbit                        | <i>Brachylagus idahoensis</i>                     | IDS2          | P  | P  |
| Spotted bat                         | <i>Euderma maculatum</i>                          | NVS1          | -  | P  |
| Townsend’s pocket gopher            | <i>Thomomys townsendii</i>                        | IDS2          | P  | P  |
| <b>Reptiles and Amphibians</b>      |   |               |  |  |
| Columbia spotted frog - great basin | <i>Rana luteiventris (Great Basin Population)</i> | IDS2          | U  | P  |
| Ground snake                        | <i>Sonora semiannulata</i>                        | IDS2          | P  | P  |
| Longnose snake                      | <i>Rhinocheilus lecontei</i>                      | IDS2          | P  | P  |
| Mojave black-collared lizard        | <i>Crotaphytus bicinctores</i>                    | IDS1          | U  | P  |
| Northern leopard frog               | <i>Rana pipiens</i>                               | IDS2          | P  | P  |
| Ringneck snake                      | <i>Diadophis punctatus</i>                        | IDS2          | U  | P  |
| Woodhouse’s toad                    | <i>Bufo woodhousii</i>                            | IDS2          | P  | P  |
| <b>Invertebrates</b>                |   |               |  |  |
| Green river pebblesnail             | <i>Fluminicola coloradoensis</i>                  | IDS2          | U  | P  |
| Western ridged mussel               | <i>Gonidea angulata</i>                           | IDS2          | U  | P  |
| Stonefly                            | <i>Utacapnia nedia</i>                            | IDS1          | U  | N/A  |
| <b>Plants</b>                       |   |               |  |  |
| Desert pincushion                   | <i>Chaenactis stevioides</i>                      | IDS2          | P  | N/A  |
| Mulford’s milkvetch                 | <i>Astragalus mulfordiae</i>                      | IDS2          | P  | N/A  |
| American wood sage                  | <i>Teucrium canadense var. occidentale</i>        | IDS2          | P  | P  |
| Packard’s buckwheat                 | <i>Eriogonum shockleyi var. packardiae</i>        | IDS2          | P  | N/A  |
| Slickspot peppergrass               | <i>Lepidium papilliferum</i>                      | T             | P  | N/A  |
| Spreading gilia                     | <i>Ipomopsis polycladon</i>                       | IDS2          | P  | N/A  |

Notes: 124 FW = 124<sup>th</sup> Fighter Wing; E = Federally Endangered; IDS1 = ranked by the state of Idaho as critically imperiled; IDS2 = ranked by the state of Idaho as imperiled; N/A =not applicable; NVS1 = ranked by the State of Nevada as critically imperiled; NVS2 = ranked by the state of Nevada as imperiled; O = Observed; ORT = Oregon State Threatened; P = Potential; T= Federally Threatened; U = Unlikely.

Source: USFWS 2017, 2018b; Idaho Department of Game and Fish 2018; Nevada Natural Heritage Program 2018; Oregon Biodiversity Information Center 2016.

A flora and fauna survey was conducted in the spring of 2018 on the installation, and no other federally- or state-listed species have been observed at the 124 FW installation and there is little to no habitat for these species within the airport or the installation boundaries (124 FW 2018b). However, 4 federally-listed or candidate species (2 birds, 1 invertebrate, and 1 plant), and an additional 45 state-listed species (29 birds, 6 mammals, 5 reptiles/amphibians, 1 invertebrate, and 4 plants) have been observed within the vicinity of the 124 FW installation. In addition, 37 migratory birds that occur on the USFWS Birds of Conservation Concern list have the potential to occur on the 124 FW installation (see Table ID3.11-2).

**Table ID3.11-2. Migratory Birds that Could Potentially Occur within the 124 FW Installation and Under the Airspace  
(Page 1 of 2)**

| <i>Common Name</i>        | <i>Scientific Name</i>           | <i>Season</i> | <i>Potential Occurrence on 124 FW Installation</i> | <i>Potential Occurrence Under the Airspace</i> |
|---------------------------|----------------------------------|---------------|--|--|
| American kestrel          | <i>Falco sparverius</i>          | Year Round    | O  | -  |
| American robin            | <i>Tamiasciurus hudsonicus</i>   | Year Round    | O  | -  |
| Bald eagle                | <i>Haliaeetus leucocephalus</i>  | Year Round    | P  | P  |
| Barn swallow              | <i>Hirundo rustica</i>           | Breeding      | O  | -  |
| Black-billed magpie       | <i>Pica hudsonia</i>             | Year Round    | O  | -  |
| Black rosy-finch          | <i>Leucosticte atrata</i>        | Breeding      | P  | P  |
| Black swift               | <i>Cypseloides niger</i>         | Breeding      | U  | P  |
| Brewer's blackbird        | <i>Euphagus cyanocephalus</i>    | Year Round    | O  | -  |
| Brewer's sparrow          | <i>Spizella breweri</i>          | Breeding      | P  | P  |
| Canada goose              | <i>Branta canadensis</i>         | Year Round    | O  | -  |
| Clark's grebe             | <i>Aechmophorus clarkia</i>      | Breeding      | P  | P  |
| Common raven              | <i>Corvus corax</i>              | Year Round    | O  | -  |
| Eastern kingbird          | <i>Tyrannus tyrannus</i>         | Breeding      | O  | -  |
| Golden eagle              | <i>Aquila chrysaetos</i>         | Breeding      | P  | P  |
| Great blue heron          | <i>Ardea herodias</i>            | Year Round    | O  | -  |
| Green-tailed towhee       | <i>Pipilo chlorurus</i>          | Breeding      | P  | P  |
| Horned lark               | <i>Eremophila alpestris</i>      | Year Round    | O  | -  |
| Killdeer                  | <i>Charadrius vociferus</i>      | Breeding      | O  | -  |
| Lesser yellowlegs         | <i>Tringa flavipes</i>           | Winter        | P  | P  |
| Lewis's woodpecker        | <i>Melanerpes lewis</i>          | Breeding      | P  | P  |
| Long-billed curlew        | <i>Numenius americanus</i>       | Breeding      | P  | P  |
| Marbled godwit            | <i>Limosa fedoa</i>              | Winter        | P  | P  |
| Mourning dove             | <i>Zenaidura macroura</i>        | Year Round    | O  | -  |
| Olive-sided flycatcher    | <i>Contopus cooperi</i>          | Breeding      | P  | P  |
| Pinyon jay                | <i>Gymnorhinus cyanocephalus</i> | Breeding      | U  | P  |
| Red shouldered hawk       | <i>Buteo lineatus</i>            | Summer        | O  | -  |
| Red-tailed hawk           | <i>Buteo jamaicensis</i>         | Year Round    | O  | -  |
| Ring-billed gull          | <i>Larus delawarensis</i>        | Breeding      | O  | -  |
| Ruby-throated hummingbird | <i>Archilochus colubris</i>      | Summer        | O  | -  |
| Sage thrasher             | <i>Oreoscoptes montanus</i>      | Breeding      | P  | P  |
| Sagebrush sparrow         | <i>Artemisiospiz nevadensis</i>  | Breeding      | P  | P  |
| Tree swallow              | <i>Tachycineta bicolor</i>       | Breeding      | O  | -  |
| Western kingbird          | <i>Tyrannus verticalis</i>       | Breeding      | O  | -  |
| White-headed woodpecker   | <i>Picoides albolarvatus</i>     | Breeding      | U  | U  |

**Table ID3.11-2. Migratory Birds that Could Potentially Occur within the 124 FW Installation and Under the Airspace  
 (Page 2 of 2)**

| <i>Common Name</i>     | <i>Scientific Name</i>        | <i>Season</i> | <i>Potential Occurrence on 124 FW Installation</i> | <i>Potential Occurrence Under the Airspace</i> |
|------------------------|-------------------------------|---------------|--|--|
| Willet                 | <i>Tringa semipalmata</i>     | Breeding      | P  | P  |
| Williamson’s sapsucker | <i>Sphyrapicus thyroideus</i> | Breeding      | U  | U  |
| Willow flycatcher      | <i>Empidonax traillii</i>     | Breeding      | P  | P  |

Notes: O = Observed; P = Potential; U = Unlikely; - = No Potential.

Source: USFWS 2016, 2017, 2018b; Nevada Natural Heritage Program 2018; 124 FW 2018a.

### ID3.11.1.2 Environmental Consequences

#### *Proposed Action*

#### Vegetation

Construction of new facilities under this Proposed Action at the 124 FW installation would occur primarily on currently paved areas or actively managed (i.e., mowed and landscaped) areas, and would result in a maximum increase of 25,000 SF (0.6 acre) of impervious surfaces. Impacts to the vegetation at the installation would not be significant due to the lack of sensitive vegetation in the project area.

#### Wildlife

Noise associated with construction may cause wildlife to temporarily avoid the area, including those that are protected under the Migratory Bird Treaty Act (MBTA). Noise associated with construction activities, as well as an increase in general industrial activity and human presence, could evoke reactions in birds. Disturbed nests in the immediate vicinity of construction activity would be susceptible to abandonment and depredation. Additional analysis for noise impacts to biological resources can be found in Appendix B, *Noise Modeling, Methodology, and Effects*. However, bird and wildlife populations in the vicinity of the airport where project components would occur are accustomed to elevated noise associated with aircraft and general military industrial use. As a result, indirect impacts from construction noise would not be significant because the ambient noise levels within the vicinity are high under the affected environment and would be unlikely to substantially increase by the relatively minor and temporary nature of the proposed construction and modifications. Under the Proposed Action at the 124 FW installation, impacts to wildlife due to construction would not be significant.

Operational noise levels under the Proposed Action at the 124 FW installation would be expected to increase from current levels with the conversion to the F-35A aircraft. Under the Proposed Action at the 124 FW installation, only the number of aircraft operations would change; there

would be no change in where or when individual aircraft operate. Total annual airfield operations at the 124 FW installation are proposed to increase by 1,122 operations (1.0 percent). An additional 446 acres of land off the airport property would be exposed to DNL greater than 65 dB. The majority of this area would be residential and commercial areas. Changes in operational noise are not expected to impact terrestrial species in the area because species on and near the installation are likely accustomed to elevated noise levels associated with aircraft and military operations.

An increase in airfield operations may result in a slight increased opportunity for bird/wildlife aircraft strikes to occur. Adherence to the existing BASH program would minimize the risk of bird/wildlife aircraft strikes (see Section ID3.4, *Safety*). The 124 FW has developed procedures designed to minimize the occurrence of bird/wildlife aircraft strikes, and has documented detailed procedures to monitor and react to heightened risk of bird/wildlife aircraft strikes. When risk increases, limits are placed on low-altitude flights and some types of training (e.g., multiple approaches, closed pattern work) in the airport environment. Special briefings are provided to pilots whenever the potential exists for increased bird/wildlife aircraft strikes within the airspace.

#### Threatened, Endangered, and Special Status Species

Impacts to potentially occurring federally- or state-listed species on the 124 FW installation would be similar to those described under wildlife. That is, studies indicate that wildlife species, whether they are common or protected species, already occupying lands exposed to airfield noise are generally not affected by slight to moderate increases in ambient noise levels, as they have already habituated to periodic to frequent loud overflight noise. Annual airfield operations at Boise Airport are projected to increase and there would be an increase in acreage of land off the airport property exposed to DNL greater than 65 dB. In addition, there would be some temporary noise associated with construction. No federally- or state-listed species are known to occur on the installation. As a result, there would be no impacts to listed species from implementation of the Proposed Action. Military readiness operations are exempt from the prohibitions of the MBTA, provided they do not result in a significant adverse effect on population of migratory bird species. Regardless, migratory birds occurring on the installation would not be expected to be impacted by the Proposed Action Alternative since they would already be habituated to aircraft noise from existing operations. An increase in airfield operations may result in a slight increased opportunity for bird/wildlife aircraft strikes to occur, including those with migratory birds. However, adherence to the existing BASH program would minimize the risk of bird/wildlife aircraft strikes (see Section ID3.4, *Safety*).

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation, no F-35A personnel changes or construction would be performed, and no training

activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Biological resources would remain as described in the affected environment in Section ID3.11.1.1. Therefore, there would be no significant impacts to biological resources as a result of the No Action Alternative.

## **ID3.11.2    Airspace**

### **ID3.11.2.1   Affected Environment**

Due to the nature of the actions proposed within the airspace, plant species were excluded from extensive review and analysis because the proposed activities would not result in new ground disturbance, and ordnance delivery and chaff and flare use would not exceed current levels and would occur in locations already used and authorized for those purposes. In addition, marine species, invertebrates, and fish were excluded from review and analysis as they, too, would not likely be impacted by the Proposed Action.

#### *Wildlife*

The airspace associated with 124 FW operations covers over 14,784 square miles of land within Idaho, Oregon, and Nevada. Wildlife habitat within these areas are generally dominated by Wyoming big sagebrush as well as antelope bitterbrush, shadscale, fourwing saltbush, rubber rabbitbrush, spiny hopsage, horsebrush, and short-statured Gambel oak (Bailey 1995). Common wildlife species found within this habitat under the training airspace include mule deer (*Odocoileus hemionus*), mountain lion (*Felis concolor*), bobcat (*Lynx rufus*), American badger, pronghorn (*Antilocapra americana*), whitetail prairie dog (*Cynomys leucurus*), ground squirrels, bighorn sheep (*Ovis canadensis*), jackrabbits (*Lepus* sp.), dark kangaroo mouse (*Microdipodops megacephalus*), wood rats (*Neotoma* spp.), red foxes (*Vulpes vulpes*), sage sparrow (*Amphispiza belli*), sage thrasher (*Oreoscoptes montanus*), American kestrel, golden eagle (*Aquila chrysaetos*), and ferruginous hawk (*Buteo regalis*) (Bailey 1995).

#### *Threatened, Endangered, and Special Status Species*

Table ID3.11-1 lists federally threatened, endangered, candidate, and state-listed species observed or potentially occurring under the proposed airspace. One federally-listed species (yellow-billed cuckoo), and an additional 65 state-listed species (37 birds, 17 mammals, and 11 reptiles/amphibians) have been observed or potentially occur under the proposed airspace. There is no critical habitat for these species under the airspace. In addition, 18 migratory birds that occur on the USFWS Birds of Conservation Concern list have the potential to occur under the airspace (see Table ID3.11-2).

### ID3.11.2.2 Environmental Consequences

#### *Proposed Action*

##### Wildlife

No construction would occur beneath the training airspace; however, inert ordnance would be deployed in ranges authorized for their use. Existing range management procedures and vegetation removal guidelines would be adhered to and vegetation management measures currently in place would persist. Impacts to wildlife habitat would be negligible. Defensive countermeasures that would be employed by the F-35A with the potential to affect wildlife habitat include chaff and flares. Chaff and flare deployment would be expected to be similar to current levels conducted by A-10 aircraft and would occur within the same approved training areas as the proposed F-35A. Current limitations on the amount or altitude of chaff and flare use would continue to apply. As a result, chaff and flare deployment associated with the Proposed Action would have no significant impact on wildlife habitat.

Impacts to migratory birds protected under the MBTA would be negligible. In general, animal responses to aircraft noise appear to be somewhat dependent on, or influenced by, the size, shape, speed, proximity (vertical and horizontal), engine noise, color, and flight profile of planes. Some studies showed that animals that had been previously exposed to jet aircraft noise exhibited greater degrees of alarm and disturbance to other objects creating noise, such as boats, people, and objects blowing across the landscape. Other factors influencing response to jet aircraft noise may include wind direction, speed, and local air turbulence; landscape structures (i.e., amount and type of vegetative cover); and, in the case of bird species, whether the animals are in the incubation/nesting phase. Additional analysis for noise impacts to biological resources can be found in Appendix B, *Noise Modeling, Methodology, and Effects*. Noise modeling results suggest subsonic noise levels would increase from 0 to 8 dB within the airspace and would be up to 59 L<sub>dnmr</sub>; well below the 112 dB shown to elicit major biological responses. Long-term impacts to migratory birds would not be significant.

Section ID3.4, *Safety*, established that bird-aircraft strikes are currently rare in the airspace and would not be expected to increase substantially under the Proposed Action Alternative. The F-35A would fly predominantly above 5,000 feet AGL, which is above where 95 percent of strikes occur. Adherence to the BASH Plan would further reduce the likelihood of bird strike in training airspace.

Overall, impacts to wildlife from proposed changes in subsonic and supersonic operations would not be significant for the following reasons: 1) the probability of an animal or nest experiencing overflights more than once per day would be low due to the random nature of flight within the airspace and the large area of land overflown; 2) generally speaking, the F-35A would fly at higher

altitudes than F-16 aircraft—the majority (98 percent) of the F-35A operations would occur above 5,000 feet AGL; 3) supersonic flight would only occur above 15,000 feet MSL in the airspace, with 90 percent of these supersonic events above 30,000 feet MSL; and 4) although the total number of supersonic flights and sonic booms occurring would increase from current levels under this alternative, there would only be an increase in dB CDNL ranging from 0 to 5 across airspace units, with a maximum level at 45 dBC CDNL. In addition, studies of supersonic noise on birds and mammals indicate that animals tend to habituate to sonic booms and long-term effects are not adverse.

#### Threatened, Endangered, and Special Status Species

Impacts to potentially occurring federally- or state-listed species underlying the 124 FW airspace would be similar to those described within the wildlife section. Under the Proposed Action Alternative for the 124 FW, the amount of time the 124 FW would conduct operations in the associated airspace would be approximately the same as the affected environment. Additionally, the F-35As would fly higher than A-10s, which would further reduce potential impacts to species.

Overall, impacts to the federally- and state-listed species from the proposed change in subsonic and supersonic operations would not be adverse for the following reasons: 1) the probability of an animal or nest experiencing overflights more than once per day would be low due to the random nature of flight within the airspace and the large area of land overflow; 2) generally speaking, the F-35A would fly at higher altitudes than F-16 aircraft—the majority (98 percent) of the F-35A operations would occur above 5,000 feet AGL; 3) supersonic flight would only occur above 15,000 feet MSL in the airspace, with 90 percent of these supersonic events above 30,000 feet MSL; and 4) although the total number of supersonic flights and sonic booms occurring would increase from current levels under this alternative, there would only be an increase in dB CDNL ranging from 0 to 5 across airspace units, with a maximum level at 45 dBC CDNL. In addition, studies of supersonic noise on birds and mammals indicate that animals tend to habituate to sonic booms and long-term effects are not adverse. Impacts to federally-listed species would not be significant.

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation and no training activities by F-35A operational aircraft would be conducted in the airspace. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Biological resources would remain as described in the affected environment in Section ID3.11.2.1. Therefore, there would be no significant impacts to biological resources as a result of the No Action Alternative.

### **ID3.11.3 Summary of Impacts**

No sensitive vegetation exists within the proposed construction footprints at the 124 FW installation. Noise associated with construction activities and/or aircraft operations would not affect wildlife or threatened and endangered species, as they are likely habituated to a relatively noisy environment already. Anticipated changes to use of the SUA would not be expected to impact biological resources. Impacts to biological resources as a result of the beddown of the F-35A at the 124 FW installation would not be significant.

## **ID3.12 CULTURAL RESOURCES**

### **ID3.12.1 Installation**

#### **ID3.12.1.1 Affected Environment**

##### *Archaeological Resources*

The 124 FW installation covers 354 acres and approximately 194 acres have been previously surveyed for archaeological resources. The remaining 160 acres that have not been surveyed are primarily part of the built environment, including paved and landscaped areas. However, all areas on the installation with a high sensitivity for archaeological resources have been surveyed. Three previously conducted surveys have been completed within these high sensitivity areas. A total of three historic sites and three prehistoric isolated artifacts were recorded. All of these archaeological resources were determined not eligible for listing in the National Register of Historic Places (NRHP) (NGB 2012). The 124 FW conducted a resurvey of archaeological resources to assess potential impacts of the proposed F-35A beddown on archaeological resources. The resurvey confirmed the previous determination that the six archaeological sites are not eligible for listing in the NRHP, and the Idaho SHPO concurred (Halitsky 2017).

##### *Architectural Resources*

The 124 FW installation includes approximately 68 buildings and structures. Several architectural surveys have been conducted of pre-1991 buildings and structures at the 124 FW installation to evaluate their NRHP eligibility (NGB 2012). Based on the results of these surveys, 16 structures were determined to be eligible for listing in the NRHP. These 16 properties include: Buildings 1105 and 1112 (storage igloos constructed in 1941), 1114 (storage igloo built in 1957), 1115 through 1125 (storage igloos built in 1968), 1524 (storage magazine built in 1958), and 2001 (aircraft firing range constructed in 1943) (NGB 2012).

An inventory and evaluation of post-1990 buildings and structures at the 124 FW installation was recently undertaken (NGB 2018). Eighteen post-1990 buildings and structures at the installation

were documented. Seven of the surveyed resources are administration, infrastructure, and storage facilities, and three resources are munitions storage and shops. The other surveyed resources include aerospace shops and aviation maintenance and training facilities. The current inventory and evaluation recommended that the surveyed architectural resources, either individually or collectively as a historic district, are not eligible for inclusion in the NRHP (NGB 2018). The survey also re-evaluated the NRHP eligibility of Building 2001 (aircraft gunnery range) within World War II and Cold War contexts. The survey concluded the firing range is not considered eligible for listing in the NRHP (NGB 2018). The NGB is consulting with the Idaho SHPO on the eligibility determinations.

### *Traditional Resources*

The 124 FW installation contains no known traditional resources; however, six federally-recognized Tribes that are historically, culturally, and linguistically affiliated with the area have been identified. These Tribes include the Confederated Tribes of the Warm Springs Reservation of Oregon, Shoshone-Paiute Tribes Duck Valley Reservation, Burns Paiute Tribe, Shoshone-Bannock Tribes of the Fort Hall Reservation, Paiute and Shoshone Tribes of the Fort McDermitt Indian Reservation, and Northwestern Band of Shoshone Nation.

#### ID3.12.1.2 Environmental Consequences

### *Proposed Action*

Potential direct impacts to cultural resources examined in this analysis include effects of ground-disturbing activities during construction or modification to existing buildings. Indirect impacts from an increase in personnel from 1,345 to 1,430 would be negligible as personnel would primarily be confined to the developed areas on the installation, which lack cultural resources.

### Archaeological Resources

The high sensitivity areas of the 124 FW installation have been intensively surveyed for archaeological resources, and no NRHP-eligible archaeological resources have been identified. It is not expected that undiscovered cultural resources would be found during implementation of the Proposed Action at the 124 FW installation; however, in the event of an inadvertent discovery during ground-disturbing operations, the following specific actions would occur. The project manager would cease work immediately and the discovery would be reported to the 124 FW environmental manager, who would secure the location with an adequate buffer and notify the Commander and the NGB cultural resources manager. The environmental manager would then continue to follow ANG Inadvertent Discovery protocol. If the environmental manager suspects human remains, then the state police would be notified as well as the Archaeological Assistance Division of the National Park Service, the Idaho SHPO, and the Tribes (NGB 2012). Under these

conditions, there would be no adverse effects to archaeological resources with implementation of this alternative.

### Architectural Resources

Twelve buildings and structures (Buildings 148, 155, 503, 1108, 1500, 1512, 1524, 1526, 1528, 1529, 1530, and 1531) at the 124 FW installation are proposed for additions, infrastructure improvements, and interior or exterior renovations. Seven of the buildings (Buildings 155, 1108, 1526, 1528, 1529, 1530, and 1531) were recently inventoried and evaluated (NGB 2018). The INGB determined the buildings are not eligible for listing in the NRHP and is consulting with the Idaho SHPO on its eligibility finding. Four buildings (Buildings 148, 503, 1500, and 1512) were inventoried and evaluated. The NGB determined the buildings were not eligible for listing in the NRHP (NGB 2012).

Building 1524 is an eligible storage magazine built in 1958. The proposed exterior renovations to Building 1524 include the installation of a canopy over the Munitions Assembly Conveyor pad, grounding, and lights. A Programmatic Agreement between the Advisory Council on Historic Preservation, National Council of SHPOs, and the DoD was signed in 2006 to provide the DoD with an alternative way to comply with Section 106 and to mitigate adverse effects on Ammunition Storage Facilities for World War II and Cold War Era (1939-1974). In accordance with 36 CFR 800.4(d) (1), the proposed undertaking would have an adverse effect on this resource; however, mitigation of the adverse effect of the renovation of ammunition storage magazines is covered under the Program Comment (Advisory Council on Historic Preservation 2006).

### Traditional Resources

No traditional resources have been identified at the 124 FW installation and the highly developed nature of the installation makes it unlikely to contain any such resources (NGB 2012). Government-to-government consultation between the NGB and each federally-recognized Tribe associated with the 124 FW installation is being conducted for this action in recognition of their status as sovereign nations, to provide information regarding Tribal concerns per Section 106 of the NRHP as well as information on traditional resources that may be present on or near the installation. An initial phone call to Tribal offices to verify contact information and current Senior-level Tribal Officials before any materials were mailed to the American Indian Tribe was completed in early November 2017. An initial government-to-government consultation letter was sent to six federally-recognized American Indian Tribes with ancestral ties to the 124 FW installation in February 2018. These six American Indian Tribes included the Confederated Tribes of the Warm Springs Reservation of Oregon, Shoshone-Paiute Tribes of Duck Valley Reservation, Burns Paiute Tribes, Shoshone-Bannock Tribes of the Fort Hall Reservation, Paiute and Shoshone Tribes of the Fort McDermitt Indian Reservation, and the Northwestern Band of Shoshone Nation.

After the initial government-to-government consultation letter was sent, NGB followed up with telephone calls and emails in an effort to increase accessibility and encourage communication in the event an American Indian Tribe would have any concerns regarding the Proposed Action or land below the affected airspace areas. Correspondence sent to the American Indian Tribes is located in Appendix A. To date, no responses have been received from the federally-recognized American Indian Tribes associated with the 124 FW.

### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Cultural resources would be expected to remain as described under affected environment in Section ID3.12.1.1. Therefore, there would be no significant impacts to cultural resources under the No Action Alternative.

## **ID3.12.2 Airspace**

### ID3.12.2.1 Affected Environment

Six NRHP-listed properties have been identified under the airspace used by the 124 FW: the Wickahoney Post Office and Stage Station, the Sheep Ranch Fortified House, Camp Three Forks, the Silver State Flour Mill, the Gold Creek Ranger Station, and the Birch Creek Ranch Historic Rural District (National Park Service 2014).

Two American Indian Reservations underlie associated airspace used by the 124 FW. The Fort McDermitt Indian Reservation lies under Paradise North and South in Nevada and Oregon. Duck Valley Indian Reservation underlies the Owyhee North and South MOAs. No formal traditional cultural properties have been identified under the airspace. However, in previous studies, representatives of the Shoshone-Paiute Tribes have expressed concern regarding the potential interference in Tribal ceremonies and rituals by noise and visual impacts of USAF overflights; disturbance to the solitude of certain areas; and the possible adverse effects of aircraft noise on wildlife resources in the region (USAF 2013b).

Government-to-government consultation between the NGB and each federally-recognized Tribe associated with the 124 FW installation is being conducted for this action in recognition of their status as sovereign nations, to provide information regarding Tribal concerns per Section 106 of the NRHP as well as information on traditional resources that may be present on or near the installation.

An initial phone call to Tribal offices to verify contact information and current Senior-level Tribal Officials before any materials were mailed to the American Indian Tribe was completed in early November 2017. An initial government-to-government consultation letter was sent to six federally-recognized American Indian Tribes with ancestral ties to the lands beneath the associated airspace in February 2018. These six American Indian Tribes included the Confederated Tribes of the Warm Springs Reservation of Oregon, Shoshone-Paiute Tribes of Duck Valley Reservation, Burns Paiute Tribes, Shoshone-Bannock Tribes of the Fort Hall Reservation, Paiute and Shoshone Tribes of the Fort McDermitt Indian Reservation, and the Northwestern Band of Shoshone Nation.

In addition to ancestral ties to the lands beneath the airspace, two American Indian Reservations underlie the associated airspace used by the 124 FW. The Fort McDermitt Indian Reservation lies under Paradise North and South in Nevada and Oregon. Duck Valley Indian Reservation underlies the Owyhee North and South MOAs. After the initial government-to-government consultation letter was sent, NGB followed up with telephone calls and emails in an effort to increase accessibility and encourage communication in the event an American Indian Tribe would have any concerns regarding the Proposed Action or land below the affected airspace areas. Correspondence sent to the American Indian Tribes is located in Appendix A. To date, no responses have been received from the federally-recognized American Indian Tribes associated with lands beneath the associated airspace for the 124 FW.

### ID3.12.2.2 Environmental Consequences

#### *Proposed Action*

Under the Proposed Action Alternative for the 124 FW, the amount of time the 124 FW would conduct operations in the associated airspace would increase by approximately 47 percent from the affected environment. However, the F-35As would fly higher than the A-10s, which would further reduce the potential to impact cultural resources. These changes would not result in a change in setting to any eligible or listed archaeological, architectural, or traditional cultural property.

Under the Proposed Action, changes in  $L_{dnmr}$  associated with subsonic operations in the SUA would be greatest in the Saddle MOAs and Saddle Corridor where an increase in  $L_{dnmr}$  of up to 8 dB would be experienced. Even with this increase, the overall  $L_{dnmr}$  would remain low at 43 dB. Within the MHRC, Paradise South would experience the greatest change in  $L_{dnmr}$  with an increase of 6 dB; changes in other areas would be less than 2 dB. Supersonic noise would increase up to 5 dBC, although the CDNL would remain low at 45 dBC. No damage to historic structures is anticipated because overpressures would not exceed current levels found with the F-15E/SGs using the airspace (2.5 pounds per square foot [psf]). Impacts to structures would not be significant at this level of psf (Battis 1988; Haber and Nakaki 1989).

Visual intrusions under the Proposed Action would be minimal and would not represent an increase sufficient to cause adverse impacts to the settings of cultural resources. Due to the high altitude of the overflights, small size of the aircraft, and the high speeds, the aircraft would not be readily visible to observers on the ground.

No additional ground disturbance would occur under the airspace due to the Proposed Action. Use of ordnance and defensive countermeasures would occur in areas already used for these activities. Flares deployed from the aircraft would not pose a visual intrusion either, as flares are small in size and burn only for a few seconds and the high relative altitude of the flights would make them virtually undetectable to people on the ground. Overall, flares are unlikely to adversely affect cultural resources. Therefore, the introduction of material to archaeological sites or standing structures from the use of flares would not have an adverse effect on these resources.

Proposed use of the airspace would be similar to ongoing training operations. Given the current use of the airspace and the nature of the proposed future use of the project area, there would be no adverse effects to NRHP-eligible or listed archaeological resources, architectural resources, or traditional cultural properties. The NGB is consulting with the Idaho, Nevada, and Oregon SHPOs on its finding of effect for the Proposed Action.

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation and no training activities by F-35A operational aircraft would be conducted in the airspace. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Cultural resources would remain as described in the affected environment in Section ID3.13.2.1. Therefore, there would be no significant impacts to cultural resources as a result of the No Action Alternative.

### **ID3.12.3 Summary of Impacts**

There are no archaeological sites within any of the proposed construction footprints at the 124 FW installation. In the event of an inadvertent discovery during ground-disturbing operations, work would cease and procedures would be implemented to manage the site prior to continuation of work. Building 1524 is an eligible storage magazine built in 1958. The proposed exterior renovations to Building 1524 include the installation of a canopy over the Munitions Assembly Conveyor pad, grounding, and lights. The proposed undertaking would have an adverse effect on this resource; however, mitigation of the adverse effect of the renovation of ammunition storage magazines is covered under the Program Comment. Government-to-government consultation with associated Tribes is ongoing and will continue throughout the EIAP. Use of the SUA under the

Proposed Action would be similar to ongoing operations. Impacts to cultural resources as a result of the proposed F-35A beddown at the 124 FW installation would not be significant.

### **ID3.13 HAZARDOUS MATERIALS AND WASTES, AND OTHER CONTAMINANTS**

#### **ID3.13.1 Installation**

##### **ID3.13.1.1 Affected Environment**

###### *Hazardous Materials*

Hazardous materials are used at the 124 FW installation for many functions, including fueling operations; vehicle, airplane, and helicopter maintenance; cleaning of offices, dining, and living quarters; and training operations. Types of hazardous substances found on the 124 FW installation include batteries, oils, lubricants, paints, thinners, fuels, and solvents (124 FW 2000).

There are currently 23 aboveground storage tanks (ASTs) on the 124 FW installation in 17 buildings, including Buildings 138, 148, 150, 152, 155, 400, 551, 669, 1512, 1515, 1529, 1530, 5600, 5601, 5603, 5604, and 5611.

- Six of the ASTs are used to store diesel fuel and range in capacity from 70 to 250 gallons. These ASTs are either double-walled or have a surrounding open top dike as secondary containment.
- Five of the ASTs are used to store used oil and range in capacity from 100 to 600 gallons. All ASTs are double-walled.
- Jet fuel is stored in four of the ASTs and range in capacity from 650 to 420,000 gallons. Secondary containment for these ASTs include one double-walled tank, one concrete dike, and two stormwater drains to a concrete retention pond.
- Three ASTs store aqueous film forming foam in Buildings 148, 155, and 1529. All ASTs have sloped concrete floor containment.
- One 110-gallon AST is used to store petroleum hydrocarbon solvent with a concrete floor with plugged drains acting as secondary containment.
- One 128-gallon AST is used to store hydraulic fluid in Building 669. In the event of a spill, hydraulic fluid would drain to an OWS.
- Two ASTs are used to store liquid oxygen in Building 5611 and are 2,000 and 3,000 gallons.
- The remaining AST is used to store deicing fluid and has a capacity of 25,000 gallons. It is contained by a concrete dike in the event of a spill.

There are currently two active double-walled, stainless steel 10,000-gallon underground storage tanks (USTs) located at Building 553 on the 124 FW installation, which were both installed in 1992. One of the USTs is used for motor vehicle gasoline storage and the other is used for diesel fuel storage (124 FW 2016).

#### *Toxic Substances*

Regulated toxic substances typically associated with buildings and facilities include asbestos, LBP, and polychlorinated biphenyls (PCBs). ACM is known to occur in 19 buildings, including Buildings 146, 151, 203, 204, 215, 309, 513, 518, 555, 557, 561, 668, 669, 710, 712, 713, 917, 924, and 1512 (ANG 2013). Buildings 146 and 668 are property of the ANG, while the rest are owned by the Army National Guard. In September 2016, non-friable ACM (tile) was identified and removed from the Building 151 break room. All known friable asbestos has been removed from the installation (124 FW 2000).

A LBP survey has not been conducted at the 124 FW installation. Any of the 178 buildings on the installation constructed prior to 1978 are presumed to contain LBP and would be tested for LBP prior to demolition or renovation (124 FW 2000).

The installation is considered to be PCB-free and there are no PCB transformers on the installation. The existing pole-mounted transformers on the installation are owned by Idaho Power Company and have not been tested for PCB content (ANG 2014). Other potential PCB-contaminated equipment within the installation includes ballasts for light fixtures. All known PCBs and PCB-containing ballasts not specifically labeled as PCB-free are disposed of as PCB-containing material by the Environmental Management Office (United States Army Corp of Engineers [USACE] 2017).

#### *Hazardous Waste Management*

The 124 FW Oil and Hazardous Substances Spill Prevention and Response Plan contains the governing regulations for spill prevention and describes specific protocols for preventing and responding to releases, accidents, and spills involving oils and hazardous materials (124 FW 2016). The Final 124 FW Hazardous Waste Management Plan outlines procedures for controlling and managing hazardous wastes from the point where they are generated until they are disposed. It also includes guidance for compliance with all federal, state, and local regulations pertaining to hazardous waste. In addition, the Hazardous Waste Management Plan includes a section detailing pollution prevention at the installation with the goal of reducing the release and use of toxic and hazardous chemicals and materials (USACE 2017). The 124 FW Solid Waste Management Plan addresses waste minimization and pollution prevention (124 FW 2015b).

The 124 FW is regulated as a Small Quantity Generator (SQG) of hazardous waste and maintains USEPA Identification Number ID0570025874. A hazardous waste generator point is where the waste is initially created or generated. A satellite accumulation point (SAP) is an area where hazardous waste is initially accumulated at the point of generation that is under the control of the SAP manager. Hazardous wastes initially accumulated at a SAP are accumulated in appropriate containers before being transferred to the installation central accumulation point (CAP). A generator may accumulate as much as 55 gallons of hazardous waste or one quart of acute hazardous waste at each SAP without a permit. There are 21 SAPs (where a waste is initially accumulated) on the installation located in Buildings 143, 144, 148, 149, 150, 152, 155, 412, 503, 551, 1512, 1529, 1530, and 5600. The installation CAP is located in Building 503, where hazardous waste can be accumulated in containers for up to 180 days or 270 days if the receiving Treatment, Storage, and Disposal Facility is at a distance greater than 200 miles (USACE 2017).

OWSs are used to separate oils, fuels, sand, and grease from wastewater and to prevent contaminants from entering the sanitary sewer and stormwater drainage systems. Currently, there are seven OWSs on the 124 FW installation located at Buildings 150, 551, 552, 553, 1512, 1515, and 1530. The OWSs range in capacity from 550 to 3,000 gallons, six of the OWSs discharge into the sanitary sewer, and one of the OWSs discharges into the storm sewer. The OWSs are maintained by Civil Engineering and are serviced annually or as needed (124 FW 2016).

#### *Environmental Restoration Program*

Fifteen potentially contaminated ERP sites were identified at the 124 FW installation. The installation has been investigated under the ERP from 1985 to the present. One of the 15 ERP sites is located in an area of planned construction to support the proposed F-35A operations discussed in Section ID2.1.3.

Fourteen of the 15 sites have been recommended for no further action (NFA) with site closure. The Idaho DEQ concurred with all but one of the recommendations of NFA with site closure. Idaho DEQ did not concur with the closure of ERP Site 14; however, ANG closed the site in 2017. ERP Site 1 remains open with long-term monitoring until 2022 (124 FW 2013). One ERP site, Site 2 Former Training Area, is located in an area of planned construction and one ERP site, Site 8 Rocket Storage Shed Herbicide Application Site, is located adjacent to an area of planned construction to support the proposed F-35A operations discussed in Section ID2.1.3. Table ID3.13-1 provides details for the 15 ERP sites (ANG 2011) and Figure ID3.13-1 shows the location of the 15 ERP sites.

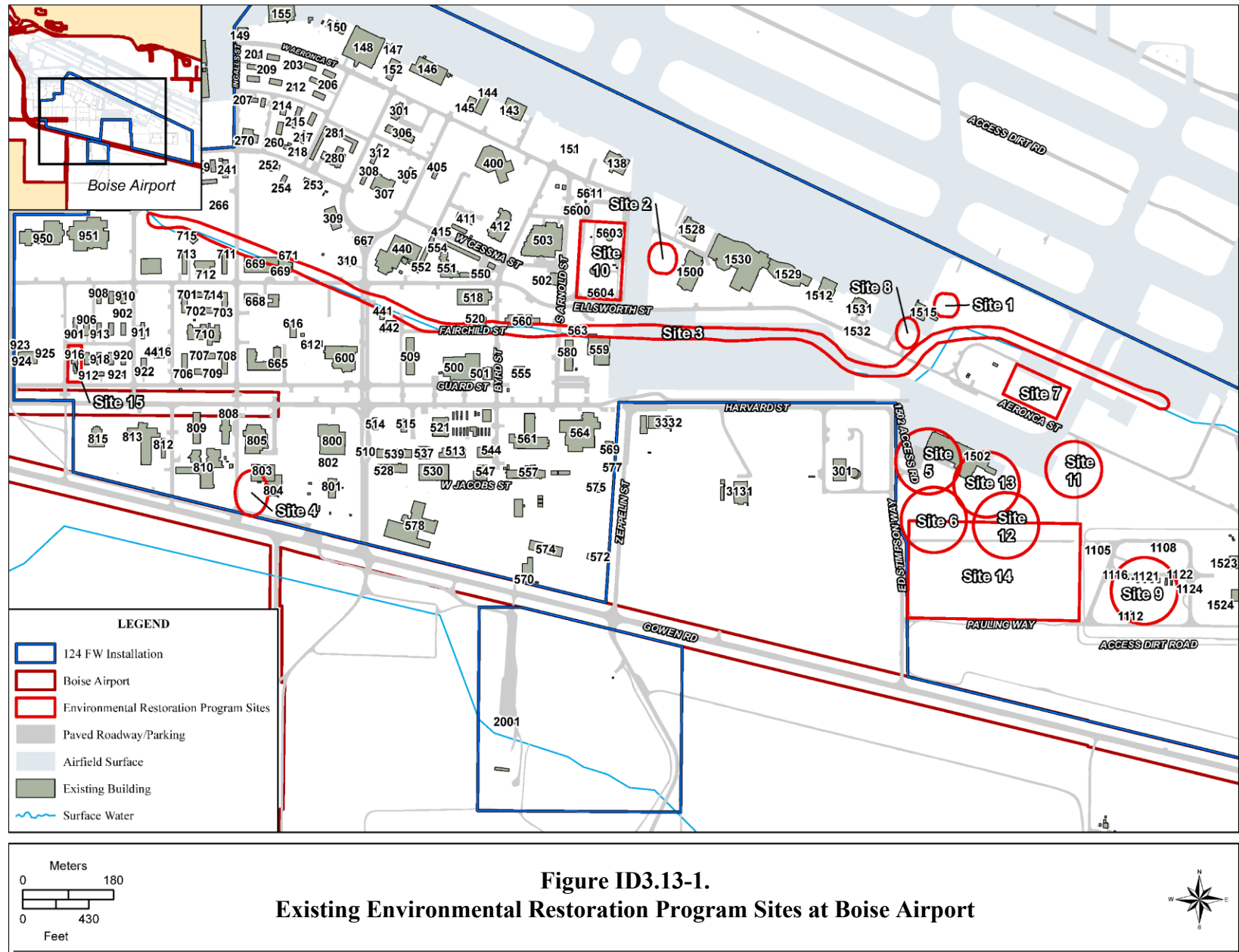
**Table ID3.13-1. ERP Sites within the 124 FW Installation  
(Page 1 of 2)**

| <i>ERP Site</i>                                    | <i>Materials of Concern</i>   | <i>Status</i>                    |
|--|---|----------------------------------|
| 1: Current Fire Training Area                      | This site was used as a fire training site from 1974 to 1989, where approximately 400,000 gallons of waste fuels were burned and a UST was located at the site. Site characterization occurred from 1987 through 2009. In 2012, the site was recommended for excavation of contaminated soil with offsite disposal and demolition of the Jet Engine Test Cell and removal of the concrete apron in the impacted areas. The remedial action was conducted in 2013 (124 FW 2013).   | Long-term groundwater monitoring |
| 2: Former Training Area                            | This site was used as a fire training site from 1953 to 1974, where an estimated 26,400 gallons of waste fuels, oil, mineral spirits, and halogenated solvents were burned. Two site studies were conducted in 1987 and 1990 and the site was recommended for NFA in 1994.  | NFA                              |
| 3: Central Drainage Ditch                          | This site encompasses the central drainage ditch on the installation where chronic and acute spills have occurred, including aviation fuels, burning fuel, chronic fuel spillage on the ramps and in hangars, and contaminated runoff after severe storms. Two site studies were conducted in 1987 and 1990. NFA was recommended for this site in 1994.   | NFA                              |
| 4: Oil Patch in Drainage Field                     | This site consisted of a 6-foot by 100-foot oil patch in a drainage field on the southwest portion of the installation. The soil in the oil patch was removed in 1986 and sampled in 1987 and 1992. The site was recommended for NFA in 1994 after the 1992 sampling.   | NFA                              |
| 5: Former Wood Preserving Operation                | This site consists of a former wood preservation operation area where an approximately 200-SF area of contaminated soil was found. Three drums containing varying amounts of a dark sludge resulting from the former treatment of fence posts with creosote were buried to the rim in the center of the site. The drums were removed prior to 1987. Due to a concrete parking lot being constructed over the contaminated soil and acting as a cap to prevent migration to groundwater, Idaho DEQ concurred with NFA in 1992. | NFA                              |
| 6: Tar Pit   | This site consists of a 100-foot by 200-foot, unlined, open tar pit with an estimated depth of 8 to 10 feet at an abandoned asphalt distribution facility where waste asphalt products were accumulated from 1947 to 1977. Two site studies were conducted in 1987 and 1990 with the results of the 1990 study indicating soil and groundwater did not threaten human health or the environment. Idaho DEQ concurred with NFA in 2006.  | NFA                              |
| 7: Alert Barn Herbicide Application Site           | This site consists of an alert barn where herbicides, including atrazine, simazine, and/or tebuthiuron were intensively applied from the late 1950s through the early 1970s. The Idaho DEQ concurred with NFA in 2004.  | NFA                              |
| 8: Rocket Storage Shed Herbicide Application Site  | This site consists of a rocket storage shed where herbicides, including atrazine, simazine, and/or tebuthiuron were intensively applied from the late 1950s through the early 1970s. The Idaho DEQ concurred with NFA in 2004.  | NFA                              |
| 9: Missile Storage Area Herbicide Application Site | This site consists of a missile storage area where herbicides, including atrazine, simazine, and/or tebuthiuron were intensively applied from the late 1950s through the early 1970s. The Idaho DEQ concurred with NFA in 2004.   | NFA                              |
| 10: POL Area Herbicide Application Site            | This site consists of a POL area where herbicides, including atrazine, simazine, and/or tebuthiuron were intensively applied from the late 1950s through the early 1970s. The Idaho DEQ concurred with NFA in 2004.   | NFA                              |
| 11: Abandoned Drum Disposal Site                   | This site consists of 10 to 15 abandoned drums that were discovered in a field on the installation. Most of the drums were empty, but at least one was filled and sealed and another contained a black flaky solid mass. The Idaho DEQ concurred with NFA in 2004.  | NFA                              |
| 12: Abandoned Fuel UST                             | This site consists of former UST that was suspected to contain fuel from the former asphalt company. The site was capped by a concrete parking lot and recommended for NFA. The Idaho DEQ concurred with NFA in 2008.   | NFA                              |

**Table ID3.13-1. ERP Sites within the 124 FW Installation  
(Page 2 of 2)**

| <i>ERP Site</i>                           | <i>Materials of Concern</i>  | <i>Status</i> |
|---|--|---------------|
| 13: Tar Patches at Former Asphalt Company | This site consists of numerous small tar patches found on the ground surface at the former asphalt company. This site was capped by a concrete parking lot and Idaho DEQ concurred with NFA in 2004 (ANG 2011).  | NFA           |
| 14: Old Munitions Storage Area (MU732)    | This site consisted of 13 ammunition igloos used for munitions storage, 10 of which have been demolished with 3 being incorporated into the active MSA. Disposal of munitions may have occurred at this site. A RI was conducted in 2012 and seven inert munitions related items were found. NFA for this site was proposed and the ANG concurred in 2017. Idaho DEQ did not concur with NFA; however, ANG maintains that the investigation was extensive and the site poses no unacceptable risk since no evidence of munitions were found. | NFA           |
| 15: Old Marine Corps Barracks (MU733)     | This site includes Building 916 and the immediately surrounding area. The site was a Marine Corps barracks building where munitions, including hand grenades were found buried around the building and cached in the rafters. A RI was conducted in 2012 and no munitions related items were found. NFA for this site was proposed and ANG and Idaho DEQ concurred in 2017.  | NFA           |

*Legend:* 124FW = 124<sup>th</sup> Fighter Wing; DEQ = Department of Environmental Quality; ERP = Environmental Restoration Program; MSA = Munitions Storage Area; NFA = No Further Action; POL = petroleum, oil, and lubricant; SF = square feet; UST = underground storage tank.



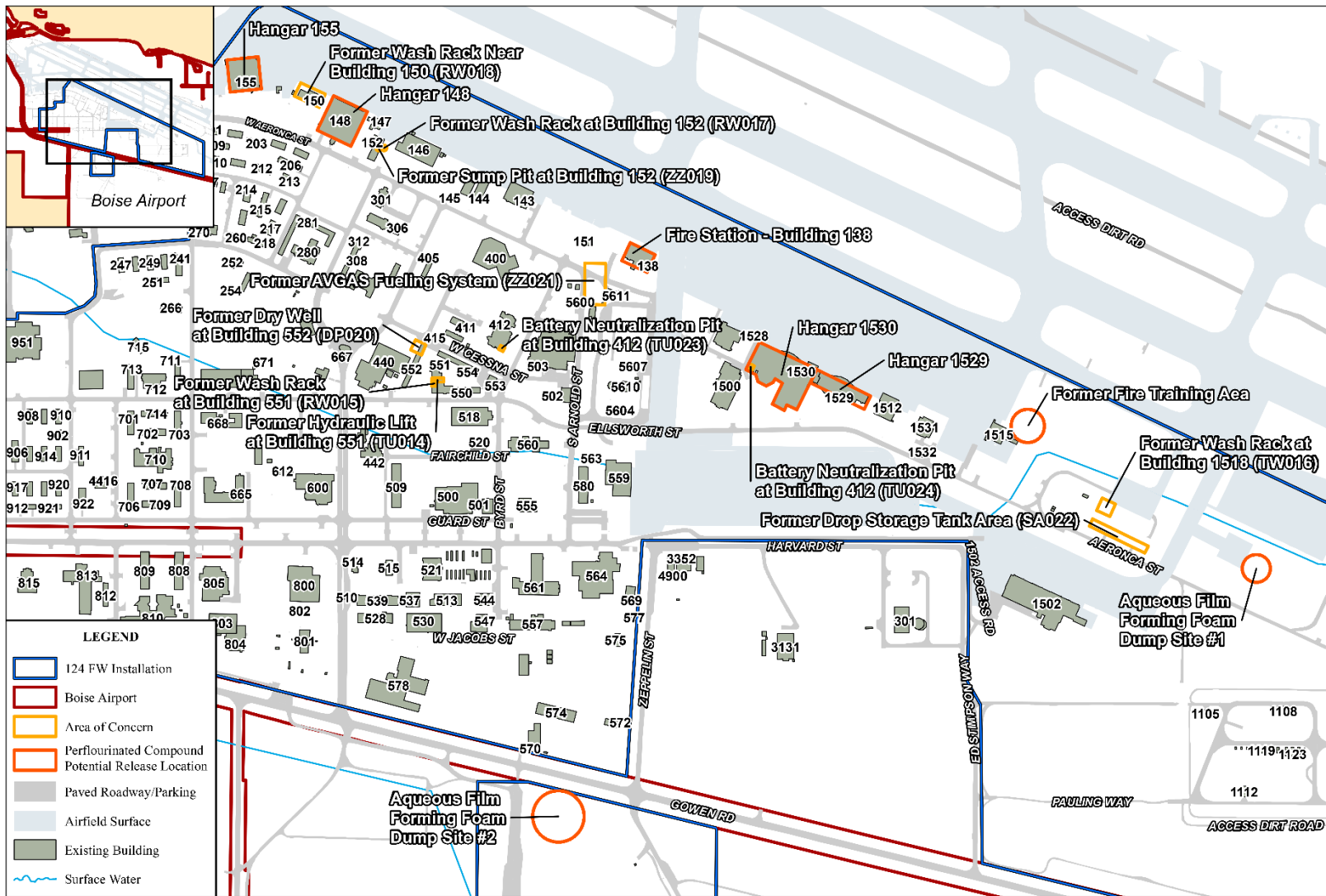
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Under the Compliance Restoration Site Program, 11 Areas of Concern (AOCs) were investigated in a Preliminary Assessment/Site Investigation in 2011. No further investigation or remedial action was recommended for all 11 AOCs. One AOC, Battery Neutralization Pit at Building 412 (TU012), is located in an area of planned construction to support the proposed operations. Figure ID3.13-2 shows the location of the 11 AOCs. The 11 AOCs are as follows:

- Former Hydraulic Lift at Building 551 (TU014),
- Former Wash Rack at Building 551 (RW015),
- Former Wash Rack at Building 1518 (RW016),
- Former Wash Rack at Building 152 (RW017),
- Former Wash Rack Near Building 150 (RW018),
- Former Sump Pit at Building 152 (ZZ019),
- Former Dry Well at Building 552 (DP020),
- Former Aviation Gasoline Fueling System (ZZ021),
- Former Drop Tank Storage Area (SA022),
- Battery Neutralization Pit at Building 412 (TU023), and
- Battery Neutralization Pit at Building 1530 (TU024) (NGB 2014).

The *Preliminary Assessment Report for Perfluorinated Compounds at Boise Air National Guard, Boise, Idaho* (NGB 2015) evaluated eight potential release areas and recommended three of the eight for further investigation. The *Review Summary for the PFC PA Site Visit Report for Boise, Idaho* (NGB 2016) modified the recommendations in the 2015 Preliminary Assessment Report, to include 11 potential release areas and recommended 8 of the 11 for further investigation under Site Investigation. Based on the Review Summary recommendations, there are eight potential AOCs including:

- Former Fire Training Area,
- Hangar 148,
- Hangar 1529,
- Hangar 1530,
- Hangar 155,
- Fire Station – Building 138,
- Aqueous Film Forming Foam Dump Site #1, and
- Aqueous Film Forming Foam Dump Site #2 (NGB 2016).



**Figure ID3.13-2.**  
**Existing Areas of Concern and Perfluorinated Compound Potential Release Location Sites at Boise Airport**

ID-123

Four of the eight potential release areas are located in areas of planned construction to support the proposed F-35A operations discussed in Section ID2.1.3. These four potential release areas include Hangar 148, Hangar 1529, Hangar 1530, and Hangar 155. Figure ID3.13-2 shows the location of the eight potential release areas. The highest concentrations of PFOS/PFOA in any single sample found during the Site Investigation in the four PRLs within the planned areas of construction are presented in Table ID3.13-2.

**Table ID3.13-2. PFOS/PFOA Potential Release Locations that Intersect Proposed Construction**

| <i>Building</i>     | <i>Max. Soil<br/>(PFOS/PFOA) mg/kg</i> | <i>Max. Sediment<br/>(PFOS/PFOA) mg/kg</i> | <i>Max. Surface<br/>Water<br/>(PFOS/PFOA) µg/l</i> |
|---------------------|--|--|--|
| Hangar 148 (PRL 3)  | 0.0050 J / 0.00067                     | 0.89 J / 0.24 J                            | 0.59 J / 0.13                                      |
| Hangar 155 (PRL 6)  | 0.0013 / 0.00040                       | 0.0016 J / 0.0027                          | NS   |
| Hangar 1529 (PRL 4) | NS                                     | 0.45 J / 0.0042 J                          | NS   |
| Hangar 1530 (PRL 5) | NS                                     | 0.0087 J / 0.0067                          | NS   |

*Notes:* 1 µg/l = 1 part per billion = 1,000 parts per trillion.

J = estimated concentration.

NS = Not Sampled.

*Legend:* µg/l = microgram per liter; mg/kg = milligram per kilogram; PFOA = Perfluorooctanoic Acid; PFOS = Perfluorooctane Sulfonate; PRL = Potential Release Location.

### ID3.13.1.2 Environmental Consequences

#### *Proposed Action*

#### Hazardous Materials

Training activities and other functions related to the current A-10 program would be expected to remain similar for the F-35A beddown. With computerized self-tests for all systems, the F-35As would be expected to reduce maintenance time and cost as well as reduce the need for maintenance since the F-35As are newer aircraft. This reduction in maintenance activities associated with the F-35As could result in a slight reduction of the amount of hazardous waste generated. The major differences would be the omission of cadmium fasteners, chrome plating, copper-beryllium bushings, and the use of a non-chromium primer instead of primers containing cadmium and hexavalent chromium currently used for fighter aircraft.

Under this alternative, the total number of airfield operations would increase from 6,152 A-10 operations to 7,274 annual F-35A operations which is an 18 percent increase in 124 FW annual operations and a less than 1 percent increase in total aircraft operations at the airfield. This slight increase in airfield operations would increase the throughput of petroleum substances (e.g., fuels, oils) used during F-35A operations a minimal amount. However, a short-term increase of fuels used during construction activities (e.g., diesel, gasoline) would be expected to fuel earth-moving equipment and power tools and provide electricity and lighting.

Procedures for hazardous material management established for the 124 FW would continue to be followed in future operations associated with the Proposed Action and as required during all construction and renovation activities.

### Toxic Substances

Under this alternative, 14 construction projects are proposed to accommodate the beddown of the F-35As, including interior modifications to Building 1512 and 1524. ACM is known to occur in both Buildings 1512 and 1524. A LBP survey has not been conducted for the 124 FW, though Buildings 1512 and 1524 were built before 1978 and may contain LBP. Buildings 1512 and 1524 would be inspected for ACM and LBP according to established ANG procedures prior to any construction. All ACM would be properly removed and disposed of prior to construction in accordance with 40 CFR 61.40 through 157. LBP would be managed and disposed of in accordance with Toxic Substances Control Act, OSHA regulations, Idaho requirements, and established ANG procedures. Materials suspected to be contaminated with PCBs (especially discarded oil products, light fixtures, and transformers) would be screened for PCB contamination prior to disposal.

### Hazardous Waste Management

The number of hazardous waste streams generated by F-35A operations would be expected to remain similar to those being generated by the existing A-10 aircraft. Additionally, the two aircraft require the same types of hazardous materials for their maintenance and operations (e.g., fuels, oils). Although, the amount of maintenance and associated hazardous materials would be likely to decrease with the F-35As.

Under this alternative, the total number of aircraft operations for the 124 FW would increase approximately 18 percent; therefore, hazardous waste generation would be expected to increase commensurately. Any slight change (increase or decrease) in the hazardous waste would be supported by the current infrastructure at the installation. Hazardous waste generation would continue to be managed in accordance with the installation's Hazardous Waste Management Plan and all applicable federal, state, and local regulations. Additionally, no changes to the installation's SQG status would be expected to occur due to any change in hazardous waste generation from aircraft operations.

### Environmental Restoration Program

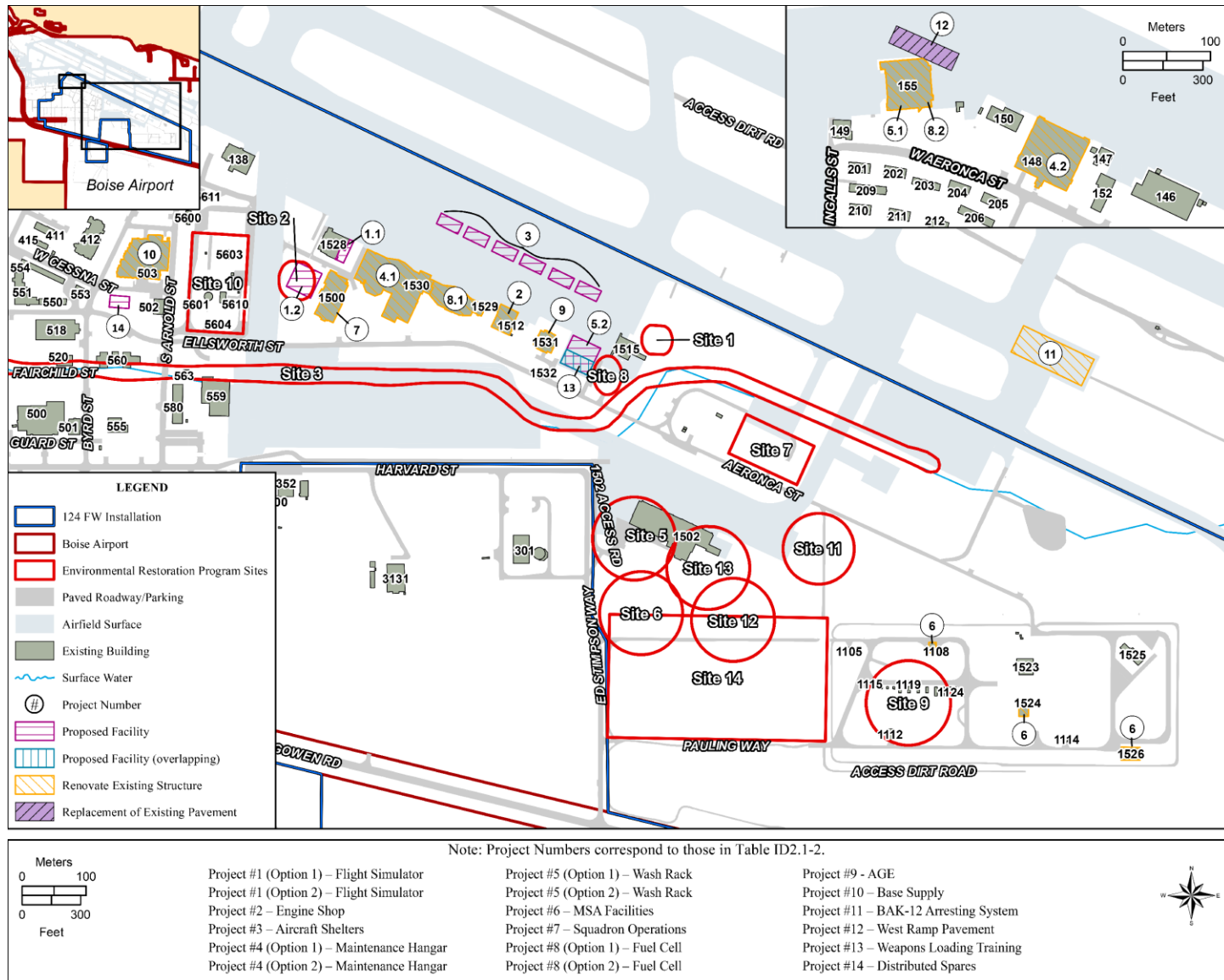
In accordance with AFI 32-7020, *The Environmental Restoration Program*, construction, modifications, and/or additions to existing buildings can occur on or in proximity to existing ERP sites. Accordingly, the appropriate organizations (e.g., installation planners, ERP managers, design engineers) must consider a compatible land use based on current site conditions and the

selected or projected remedial action alternatives. If the potential for uncharacterized ERP sites exist, the installation is responsible for identifying existing contamination at the proposed construction sites to avoid unknowingly locating construction projects in contaminated areas. The installation is responsible for performing necessary environmental baseline surveys, accomplishing EIAP requirements, and for otherwise being informed about existing site conditions and associated cost impacts in preparation for a construction project. When warranted by the site history, environmental restoration funds may be used to accomplish Resource Conservation and Recovery Act (RCRA) facility assessments, or preliminary assessments and site inspections undertaken in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process, or similar site investigations in accordance with applicable state laws for suspected releases. To the extent that a construction project generates actions to address contamination, or a need to change the timing of ERP-generated actions to address contamination, the costs of such actions are not Environmental Restoration Account-eligible and shall be funded as part of the construction project. This includes the handling, mitigation, and disposal or other disposition of contamination discovered before or during the construction activity.

The removal and disposal of unexpected contamination encountered within the construction project footprint would be undertaken as part of the construction project using project funds, which may include other military construction (MILCON) funds reprogrammed to a MILCON construction project. Construction contractor costs (such as direct delay costs and unabsorbed or extended overhead) incidental to discovery and removal of the contamination would be construction project funded to the extent that the government is responsible and liable for such costs.

Vapor intrusion should be evaluated when volatile chemicals are present in soil, soil gas, or groundwater that underlies existing structures or has the potential to underlie future buildings and there may be a complete human exposure pathway. Due to their physical properties, volatile chemicals can migrate through unsaturated soil and into the indoor air of buildings located near zones of subsurface contamination.

One ERP site (Site 2) overlaps with the proposed new facility adjacent to Building 1500 (Option 2 of Project #1 Flight Simulator) and one ERP site (Site 8) is adjacent to the planned construction to the east of Building 1531 including Option 2 of Project #1 Flight Simulator, Option 2 of Project #5 Wash Rack, and Project #13 Weapons Loading Training (Figure ID3.13-3). Both sites have been recommended for NFA with site closure. The Idaho DEQ concurred with all recommendations of NFA with site closure and the sites do not pose a threat to human health or the environment. One AOC, Battery Neutralization Pit at Building 412 (TU024), overlaps with the planned renovation at Hangar 1530. TU024 was recommended for no further investigation or remedial action and does not pose a threat to human health or the environment.



**Figure ID3.13-3.**  
**Environmental Restoration Program Sites within the Vicinity of**  
**the Proposed Construction at Boise Airport**

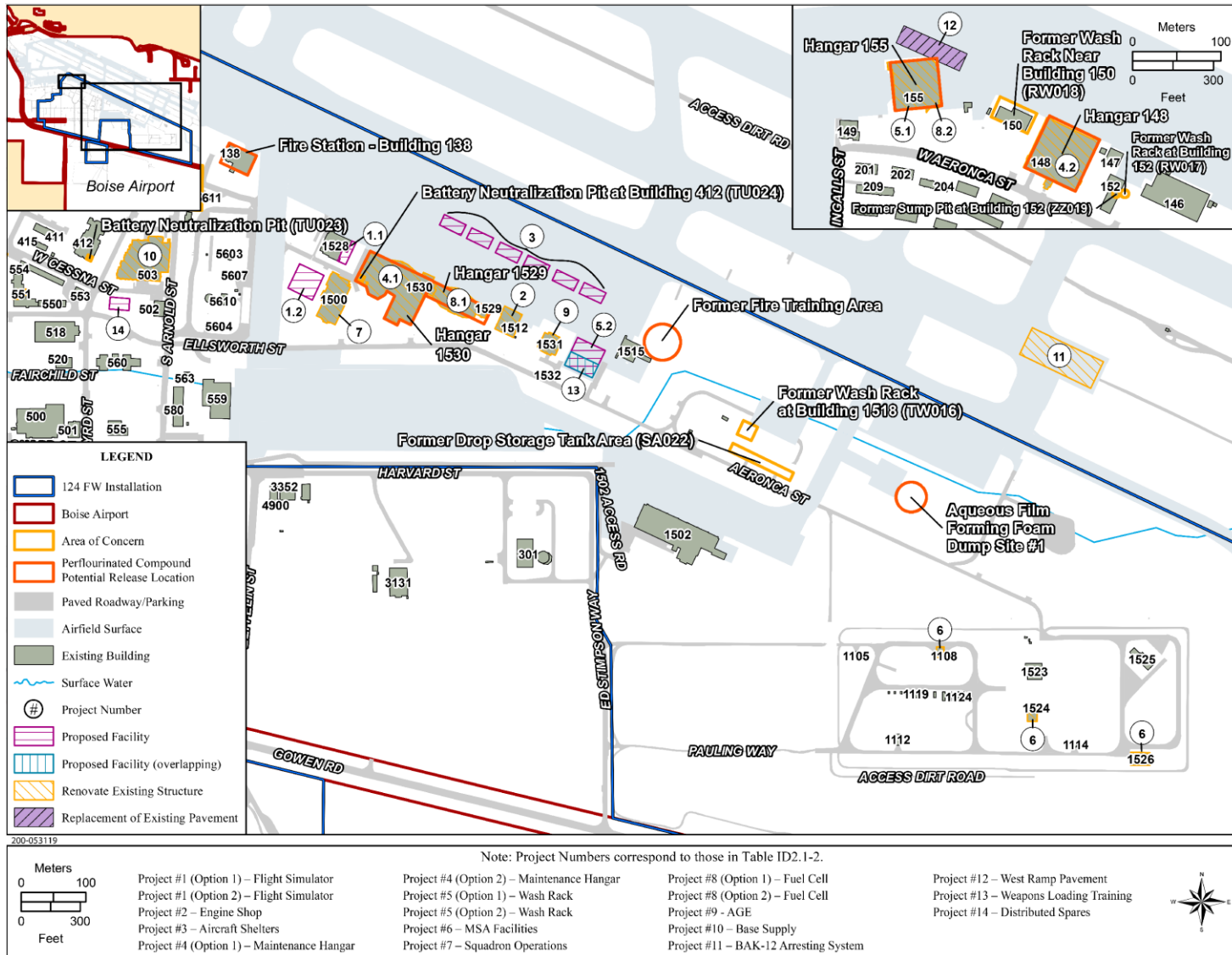
However, the proposed construction does overlap with four PFOS/PFOA PRLs, including Hangar 148, Hangar 1529, Hangar 1530, and Hangar 155 (Figure ID3.13-4). All four hangars are proposed to be renovated. The 124 FW will comply with Air Force Guidance Memorandum (AFGM2019-32-01) *AFFF-Related Waste Management Guidance* to manage waste streams containing PFOS/PFOA (USAF 2019). The AFGM will be updated as needed to address changes in regulatory requirements, DoD determinations of risk, or development of new technologies.

Per the Site Investigation Report, no soil or sediment samples exceeded the risk-based screening level for PFOS/PFOA within the planned construction area. The surface water samples from Hangar 148 (PRL 3) exceeded the 70 parts per trillion (ppt) PFOS/PFOA USEPA Lifetime Health Advisory for drinking water. The next step in the CERCLA process is the Remedial Investigation. During the Remedial Investigation, the agency will collect detailed information to characterize site conditions, determine the nature and extent of the contamination, and evaluate risks to human health and the environment posed by the site conditions by conducting a baseline ecological and human health risk assessment. The CERCLA process will continue regardless of any construction activities. Construction activities, to include the handling, mitigation, and disposal or other disposition of contamination discovered before or during the construction activity, will proceed in accordance with all applicable legal requirements. It is recommended that direct contact with groundwater and soil be limited during the renovations of Hangars 148, 1529, 1530, and 155.

If contaminated media (e.g., soil, vapor, groundwater) is encountered during the course of site preparation (e.g., clearing, grading) or site development (e.g., excavation for installation of building footers) for proposed construction activities, work would cease until 124 FW environmental manager establishes an appropriate course of action for the construction project to ensure that any applicable federal and state agency notification requirements are met, and to arrange for agency consultation as necessary if existing ERP sites are affected.

#### *No Action Alternative*

Under the No Action Alternative, no F-35A operational aircraft would be based at the 124 FW installation, no F-35A personnel changes or construction would be performed, and no training activities by F-35A operational aircraft would be conducted at the airfield. Under the No Action Alternative, the ANG would continue to conduct their current mission using existing aircraft. Hazardous materials and waste would be expected to remain as described under affected environment in Section ID3.13.1.1. Therefore, there would be no significant impacts to hazardous materials and waste under the No Action Alternative.



**Figure ID3.13-4.**  
**Areas of Concern and Perfluorinated Compound Potential Release Location Sites within the Vicinity of the Proposed Construction at Boise Airport**

### **ID3.13.2    Airspace**

Impacts to airspace are not considered for this resource because the ROI for hazardous materials and wastes was considered to consist only of the installations themselves. The ROI does not include land beneath the SUA since no ground disturbance or construction would occur.

### **ID3.13.3    Summary of Impacts**

Under the Proposed Action at the 124 FW installation, there would not be an increased risk of hazardous waste releases or exposure. Any LBP or ACM that may be found in buildings that are proposed for construction activities would be managed per applicable USAF regulations, and the installation's asbestos and LBP management plans. One ERP site (Site 2) overlaps with the proposed new facility adjacent to Building 1500 and one ERP site (Site 8) is adjacent to the planned construction to the east of Building 1531. Both sites have been recommended for NFA with site closure. The Idaho DEQ concurred with all recommendations of NFA with site closure and the sites do not pose a threat to human health or the environment. One AOC, Battery Neutralization Pit at Building 412 (TU024), overlaps with the planned renovation at Hangar 1530. TU024 was recommended for no further investigation or remedial action and does not pose a threat to human health or the environment. There is a potential of impact from PFOS/PFOA potential release sites Hangar 148, Hangar 1529, Hangar 1530, and Hangar 155 due to potential PFOS/PFOA contamination in soil and groundwater. The 124 FW will comply with Air Force Guidance Memorandum (AFGM2019-32-01) *AFFF-Related Waste Management Guidance* to manage waste streams containing PFOS/PFOA (USAF 2019). Impacts relative to hazardous materials and wastes would not be significant.

If additional contaminated media were encountered during the course of site preparation or site development, work would cease until the 124 FW environmental manager establishes an appropriate course of action for the construction project to ensure that applicable federal and state agency notification requirements are met. Impacts relative to hazardous materials and wastes would not be significant.

#### **ID4.0 CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

According to CEQ regulations, the cumulative effects analysis of an EIS should consider the potential environmental impacts resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7). Cumulative effects may occur when there is a relationship between a Proposed Action or alternative and other actions expected to occur in a similar location or during a similar timeframe. The effects may then be incremental and may result in cumulative impacts. Actions overlapping with or in close proximity to the Proposed Action or alternatives can reasonably be expected to have more potential for cumulative effects on “shared resources” than actions that may be geographically separated. Similarly, actions that coincide in the same timeframe tend to offer a higher potential for cumulative effects.

This EIS addresses cumulative impacts to assess the incremental contribution of the alternatives to impacts on affected resources from all factors. The ANG has made an effort to identify actions on or near the affected areas that are under consideration and in the planning stage at this time. These actions are included in the cumulative effects analysis, drawn from the level of detail that exists now. Although the level of detail available for those future actions varies, this approach provides the decision-maker with the most current information to evaluate the consequences of the Proposed Action alternatives.

#### **ID4.1 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS**

In this section, an effort was made to identify past and present actions in the region and those reasonably foreseeable actions that are in the planning phase at this time. Actions that have a potential to interact with the Proposed Action at the 124 FW installation are included in this cumulative analysis. This approach enables decision-makers to have the most current information available so that they can evaluate the environmental consequences of the beddown of the F-35A aircraft at the 124 FW installation and training in associated SUA.

The 124 FW is an active military installation that undergoes changes in mission and in training requirements in response to defense policies, current threats, and tactical and technological advances. The installation, like any other major institution (e.g., university, industrial complex), requires new construction, facility improvements, infrastructure upgrades, and maintenance and repairs. In addition, tenant organizations may occupy portions of the installation, conduct aircraft operations, and maintain facilities. All of these actions (i.e., mission changes, facility improvements, and tenant use) will continue regardless of which alternative is selected.

The projects, associated with this Proposed Action Alternative, were identified for their potential to have cumulative impacts on resources within the ROI and overlap in time; they are listed in Table ID4.1-1. Other ongoing maintenance and repair activities (e.g., repairing existing infrastructure and interior modifications) would not introduce any newly disturbed or impervious surfaces and are, therefore, not included herein.

**Table ID4.1-1. Current and Reasonably Foreseeable Actions at 124 FW Installation  
(Page 1 of 2)**

| <i>Year</i>                      | <i>Action</i>  | <i>Total Area of New Ground Disturbance (SF)</i> | <i>New Impervious Surface (SF)</i> |
|----------------------------------|--|--|------------------------------------|
| <b>Fuel Cell</b>                 |  |  |                                    |
| 2020                             | Internal renovations to B1529 in order to cover the hangar from C-130 to A-10 functions.   | 0  | 0                                  |
| <b>B1530 Renovations</b>         |  |  |                                    |
| 2020                             | Internal renovations to B1530 in order to cover the hangar from C-130 to A-10 functions.   | 0  | 0                                  |
| <b>Munitions Storage</b>         |  |  |                                    |
| 2020                             | Internal renovations to B1523 to change the function of the building to administration and to update HVAC.   | 0  | 0                                  |
| <b>MSA Igloos</b>                |  |  |                                    |
| 2020                             | Project would add a concrete cap to existing MSA Igloos (B1105, 1112, 1114, and 116-1124).   | 6,500  | 6,500                              |
| <b>Taxiway E</b>                 |  |  |                                    |
| 2022 or 2023                     | Project would include the repavement of the asphalt Taxiway E.   | 178,400  | 0                                  |
| <b>Repair Base Roads</b>         |  |  |                                    |
| 2022                             | All installation roads are in need of repair. There would be no footprint expansion. All roads would be either repaired or repaved.  | 26,400   | 0                                  |
| <b>Aircraft Shelters</b>         |  |  |                                    |
| 2022                             | This project would add six new A-10 aircraft shelters.   | 67,500   | 0                                  |
| <b>Medical Training Facility</b> |  |  |                                    |
| 2022                             | Construct a new 10,550 SF facility on an existing parking area. In addition, a dirt area south of B405 and a grassy field east of B400 would be converted to parking. B405 (recruiting), B411 (IEMS), and B415 (public affairs) would be demolished. | 88,000   | 29,400                             |
| <b>Apron Maintenance</b>         |  |  |                                    |
| 2024                             | Replacement of concrete for the entire apron east of Taxiway E.  | 902,000  | 0                                  |
| <b>Main Gate Complex</b>         |  |  |                                    |
| 2023                             | A new main gate would be constructed and would include a visitor center, entrance and exit lanes, pop-up barrier system, and gate house.   | 61,600   | 51,600                             |

**Table ID4.1-1. Current and Reasonably Foreseeable Actions at 124 FW Installation  
(Page 2 of 2)**

| <i>Year</i>                      | <i>Action</i>  | <i>Total Area of New Ground Disturbance (SF)</i> | <i>New Impervious Surface (SF)</i> |
|----------------------------------|--|--|------------------------------------|
| <b>Equipment Storage and Gym</b> |  |  |                                    |
| 2021                             | Construction of a new 10,000 SF facility on an existing dirt lot and would house equipment storage and a new gymnasium.  | 10,000   | 10,000                             |
| <b>Weapons Release</b>           |  |  |                                    |
| 2023                             | Interior renovations to B143 to include updates to the HVAC and fire suppression systems.  | 0  | 0                                  |
| <b>Warehouse/Supply</b>          |  |  |                                    |
| 2023                             | Interior renovations to B503 to include updates to the fire suppression system.  | 0  | 0                                  |
| <b>Operations and Training</b>   |  |  |                                    |
| 2023                             | This project would include a 5,000 SF addition to B400 for operations and training space.  | 5,000  | 5,000                              |
| <b>Roof Repair of B301</b>       |  |  |                                    |
| 2023                             | This project would include the repair of the roof of B301.   | 0  | 0                                  |
| <b>Civil Engineering</b>         |  |  |                                    |
| 2024                             | This project would include internal renovations to B412 to include updates to the HVAC and fire suppression systems.   | 0  | 0                                  |
| <b>B1528 Renovation</b>          |  |  |                                    |
| 2024                             | This project would include interior renovations to B1528 to include room for A-10 simulators, maintenance functions, and HVAC system. A 500 SF addition would also be added to the west side of B1528 for an air conditioner and boiler. | 500  | 300                                |
| <b>Base Defense Operations</b>   |  |  |                                    |
| 2022                             | This project would include interior renovations to B400 and B144.  | 0  | 0                                  |
| <b>Parking</b>                   |  |  |                                    |
| 2022                             | This project would include the construction of a new parking lot near B1500 on an existing dirt lot.   | 59,400   | 59,400                             |
| <b>Replacement of Waterline</b>  |  |  |                                    |
| 2022                             | This project would include the replacement of the existing 12-inch waterline with a 16-inch water line.  | 21,600   | 0                                  |

*Legend:* HVAC = heating, ventilation, and air conditioning; MSA = Munitions Storage Area; SF = square foot/feet.

In addition to construction projects on the installation, the projects listed in Table ID4.1-2 could interact with beddown of the F-35A at the 124 FW installation.

**Table ID4.1-2. Past, Present, and Reasonably Foreseeable Actions**

| <i>Proponent</i>   | <i>Project Name</i>   | <i>Anticipated Year for Implementation</i> |
|--------------------|---|--|
| Army               | 13,300 SF of addition to multiple buildings.  | 2018-2022                                  |
| Army               | 3,300 square yards of new construction of parking lots, motor pool, and concrete fuel pad.  | 2018-2022                                  |
| Army               | Energy upgrades.  | 2018-2022                                  |
| Army               | Xeriscaping.  | 2018-2022                                  |
| Airport            | Expansion of Concourse A.   | 2018-2027                                  |
| Airport            | Construct cell phone lot.   | 2018-2027                                  |
| Airport            | Construct employee and rental car garage and expand public parking garage.                  | 2018-2027                                  |
| Airport            | Expand Aircraft Rescue and Firefighting Station.  | 2018-2027                                  |
| Airport            | Expand deice apron.   | 2018-2027                                  |
| Airport            | Taxiway rehabilitation.   | 2018-2027                                  |
| Airport            | Construction of 121,000 SF.   | 2018-2027                                  |
| Airport            | Taxiway extension.  | 2018-2027                                  |
| Airport            | Cargo apron extension.  | 2018-2027                                  |
| Airport            | Construct hangar facility.  | 2018-2027                                  |
| Airport            | Construct heliport.   | 2018-2027                                  |
| Airport            | Construct FAA storage building.   | 2018-2027                                  |
| Airport            | Construct aircraft maintenance facility.  | 2018-2027                                  |
| Airport            | Convert employee parking lot to long-term parking and expand economy lot.                   | 2018-2027                                  |
| Airport            | Rehabilitation of Taxiway B asphalt.  | 2018-2027                                  |
| Airport            | Extension of Taxiway G, W, and B.   | 2018-2027                                  |
| Airport            | Relocate Taxiway E and D.   | 2018-2027                                  |
| Airport            | Widen and Extend Taxiway S.   | 2018-2027                                  |
| Airport            | Remove Taxiway J and portion of Taxiway H and F.  | 2018-2027                                  |
| Airport            | Extend Runway 28L.  | 2018-2027                                  |
| Airport            | Relocate military flightline to east military apron.  | 2018-2027                                  |
| Airport            | Begin construction of Runway 9-27.  | 2018-2027                                  |
| USAF               | Modification of MHRC, to include lowering the MOA floors and permitting supersonic flights. | NA   |
| Other Non-military | 65,000 SF Office/Warehouse/Storage on Gowen Road.   | NA   |
| Other Non-military | 9,600 SF Warehouse on Targee Street.  | NA   |
| Other Non-military | 235,000 SF Distribution Warehouse on Elite Drive.   | NA   |
| Other Non-military | 17,700 SF Office/Warehouse on Liberty Road.   | NA   |
| Other Non-military | 75,100 SF 4-story hotel on Elder Street.  | NA   |
| Other Non-military | 14,200 SF, 2-story Credit Union on Vista Avenue.  | NA   |
| Other Non-military | 14,200 SF Storage Building on Phillippi Street.   | NA   |

*Legend: FAA = Federal Aviation Administration; MOA = Military Operations Area; SF = square foot/feet.*

## **ID4.2 ANALYSIS OF CUMULATIVE EFFECTS**

The following analysis considers how the impacts of these other actions might affect or be affected by those resulting from the Proposed Action at the 124 FW installation and whether such a relationship would result in potentially additive impacts. Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the resources, quantifiable data are not available and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made based on an understanding of the nature of the project regarding cumulative impacts related to this EIS.

Past implementation of force structure changes at the 124 FW are integrated into the affected environment and analyzed under the No Action Alternative. Additionally, all aircraft operations are incorporated and analyzed in the relevant resource categories for the proposed F-35A beddown.

### **ID4.2.1 Noise**

Under the Proposed Action at the 124 FW installation, 446 more acres would be exposed to noise levels equal to or greater than 65 dB DNL, which would be a significant impact. The addition of those projects listed in Table ID4.1-1 and in the list of non-installation related projects would not be expected to substantially add to the noise impacts; however, given that impacts from the Proposed Action would be significant, cumulative impacts would be similarly significant. All of the non-installation projects, are short-term construction projects and would occur in the airport environ or in areas identified as industrial. Noise associated with the construction projects would not affect sensitive receptors, disturb sleep, interrupt speech, or cause classroom disruptions in the long term. Noise from implementation of these actions would be short-term and localized, and would not be expected to increase the overall DNL noise contours. Refer to Section ID4.2.5 for discussion of land use compatibilities.

Noise generated in the reconfigured airspace should not perceptibly change in the MHRC when considered along with the F-35A beddown. There would be no changes in the number of flights operating in the airspace, other than the addition of F-35A aircraft and subtraction of A-10A aircraft out of the 124 FW. Fighter jet-generated noise would continue to dominate sound levels in the training airspace. Cumulative impacts that are anticipated when considered with the Proposed Action for the 124 FW installation would not be significant.

### **ID4.2.2 Airspace**

At the Boise Airport, airfield airspace operations would not be impacted by any reasonably foreseeable actions; therefore, only negligible effects would occur when considered along with the F-35A beddown. Cumulatively, MHRC airspace would be reconfigured. However, it is anticipated that this action, along with the F-35A beddown, would not create significant

cumulative impacts within the airspace. Military aircraft would continue to operate under existing flight rules designed to separate aircraft activities. ANG and FAA positive control and management would continue to guide operations within the airspace. The existing number of operations would not change; however, the magnitude of impacts would not be significant and would be the same as those described in Section ID3.2.2.2.

### **ID4.2.3 Air Quality**

Based on the ACAM calculations, the criteria pollutant emissions associated with the ANG projects listed in Table ID4.1-1 would not exceed the *de minimis* thresholds for CO and PM<sub>10</sub>. Because the emission results do not exceed the thresholds, the General Conformity Applicability Analysis for these ANG construction projects is complete and the construction activities as described are exempt from the General Conformity Regulations, as indicated in the *Environmental Assessment for Construction and Demolition Projects at the 124<sup>th</sup> Fighter Wing Installation, Boise Airport, Idaho* (NGB 2019). Additionally, all of the remaining criteria pollutant/precursor emissions (VOC, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>2.5</sub>) associated with these ANG projects are below the comparative indicator values. Based on information on these projects, and in combination with the decrease in annual criteria pollutant emissions from the proposed F-35A beddown, it is unlikely that significant cumulative impacts to air quality from all of the projects that are listed in Table ID4.1-1, such as impedance of progress to achieve attainment for CO and PM<sub>10</sub>, would result. It is more likely that the overall level of criteria pollutant emissions would increase temporarily during construction periods, but at a level that would generate few, if any, impacts.

GHG emissions would modestly increase due to implementing the F-35A beddown, as identified in ID3.3.1.2. All of the projects listed in Table ID4.1-1 and in the bulleted text would generate GHGs. Nearly all of the listed projects involve construction, which is of temporary duration. Some long-term benefits may offset the GHGs emitted during construction (for example, energy-efficient buildings). While quantification of GHG emissions for all of these projects is not possible, it can generally be assumed that an overall small increase in GHG emissions, compared to the current levels, would occur, primarily as a result of the beddown, which would be an ongoing activity compared to construction projects that have limited timeframes.

Climate change, by definition, is a cumulative impact that results from the incremental addition of GHG emissions from millions of individual sources that collectively have a large impact on a global scale. Impacts of climate change on the region will include increasing drought and wildfires, which could produce negative impacts on mission activities and installation infrastructure.

#### **ID4.2.4 Safety**

Risk of a catastrophic event occurring during construction activities under this alternative or those activities described in Table ID4.1-1 is considered low, and strict adherence to all applicable occupational safety requirements further minimize the relatively low risk associated with described construction activities. Providing new and renovated facilities for the 124 FW installation that support operational requirements of the F-35A, and are properly sited with adequate space and a modernized supporting infrastructure would generally enhance ground and flight safety during required operations, training, maintenance and support procedures, security functions, and other activities conducted by the 124 FW. Proposed renovation and infrastructure improvement projects listed in Table ID4.1-1 would not impact aircraft take-off and landings or penetrate any RPZs. New building construction is not proposed within RPZs; therefore, construction activity would not result in any greater safety risk or obstructions to navigation. While there are some planned construction projects within the proposed QD arcs, per Air Force Manual 91-201, *Explosive Safety Standards*, all PTRDs and IBDs meet specified NEWQD criteria. No explosives would be handled during construction or demolition activities. Therefore, no additional risk would be expected as a result of implementation of this alternative. AT/FP have also been addressed in all facility construction projects. The fire and crash response capability currently provided by the 124 FW installation is sufficient to meet all requirements. Cumulative impacts to ground or flight safety would be negligible at the airfield. Within the SUA, ANG and FAA positive control and management would continue to ensure safe operations within the airspace. In summary, implementing the Proposed Action at the 124 FW installation would not result in significant cumulative airspace or airfield safety risks when considered with past, present, and reasonably foreseeable future actions.

#### **ID4.2.5 Land Use**

Under the Proposed Action at the 124 FW installation, acreage off-base property experiencing noise levels greater than 65 dB DNL would increase by approximately 446 acres, which would be a significant impact. As mentioned in Section ID4.2.1, construction projects outside of the airport boundaries would introduce short-term noise increases during construction that would not generate noise levels to cumulatively affect or change the noise contours or land use compatibilities. However, given that impacts to land use from the Proposed Action would be significant, cumulative impacts would similarly be considered significant.

#### **ID4.2.6 Socioeconomics**

Economic activity associated with proposed construction activities described as a component of this alternative and those shown in Table ID4.1-1, such as employment and materials purchasing, would provide short-term economic benefits to the local economy. Additionally, there would be

a permanent increase in up to 85 personnel positions. However, short-term cumulative beneficial impacts resulting from construction payrolls and materials purchased as a result of implementation of the Proposed Action at the 124 FW installation and those projects listed in Table ID4.1-1 would not be significant on a regional scale.

#### **ID4.2.7 Environmental Justice and the Protection of Children**

Under the Proposed Action at the 124 FW installation, when considered with projects listed in Table ID4.1-1, residential populations, including minority or low-income populations and children, would be located within the 65 dB DNL noise contour in the vicinity of the airport, though not on a disproportionate basis. No other projects listed in Table ID4.1-1 would be expected to impact environmental justice communities or children. Therefore, cumulative impacts to the health or safety of environmental justice populations or children would not be significant under the Proposed Action at the 124 FW installation.

#### **ID4.2.8 Infrastructure**

For purposes of this analysis, infrastructure includes potable, waste, and stormwater; electrical and natural gas systems; solid waste management; and transportation. Under the Proposed Action at the 124 FW installation, short- and long-term demand for all services would increase by a minor degree when considered regionally. The Proposed Action and other projects would increase demand for potable water, increase production of wastewater, and create more impervious surfaces to increase stormwater runoff. However, cumulative effects are anticipated to not be significant, because there is current and long-term capacity to meet increased demand for drinking water and disposal of wastewater. For stormwater, BMPs such as silt fencing, vegetation management, and berms would minimize erosion and sedimentation during the short-term construction phases; retention and detention pond systems would avoid excessive runoff due to increases in impervious surfaces in the long term.

Demand for electricity and natural gas would be expected to increase in the short-term due to construction activities and in the long term due to increases in personnel. In the short-term, existing energy systems have the ability to meet increased demand. In the long term, there is capacity to meet the demands of the minor increase in personnel at the installation and the short-term increases of visitors in the planned hotel. It is assumed that the warehouses and other businesses being built in the adjacent community would draw from the existing labor pool and would not appreciably increase electricity and natural gas demand. Further, any new facilities and additions associated with the federal projects would incorporate Leadership in Energy and Environmental Design and sustainable development concepts to achieve optimum resource efficiency, sustainability, and energy conservation when compared to facilities currently in place.

Under the Proposed Action at the 124 FW installation, it is anticipated that there would be both short- and long-term increases in solid waste generation. During demolition and construction phases, all materials would be disposed of in permitted facilities, which have the capacity to accept these materials. In the long term, solid waste generated by the regionally minor increase in personnel could be handled by existing solid waste management systems.

In terms of transportation, the local traffic network has the ability to meet the short-term increases in traffic during construction activities. In the long term, the transportation network would be able to meet the needs of the minor increase in personnel. In summary, cumulative impacts to infrastructure due to the Proposed Action at the 124 FW installation and reasonably foreseeable future projects would not be significant.

#### **ID4.2.9 Earth Resources**

Total acreage disturbed by the F-35A beddown would be up to 249,232 SF (5.7 acres) of new construction footprint, including up to 25,000 SF (0.6 acre) new impervious surface such as roofs and paved areas. New construction associated with projects listed in Table ID4.1-1 would result in up to 1,426,900 SF (32.8 acres) of new construction footprint, including up to 162,200 SF (3.7 acres) of new impervious surface. Proposed construction under this alternative would occur within the developed 124 FW installation. As such, no significant impacts to geology or topography are expected under the Proposed Action at the 124 FW installation.

The CWA considers stormwater from a construction site as a point source of pollution regulated by the NPDES permit. Therefore, those projects described in Table ID4.1-1 larger than 1 acre are required to have a site-specific and detailed SWPPP that coordinates the timing of soil disturbing activities with the installation of soil erosion and runoff controls in an effort to reduce the impacts to the local watershed; this is an effective way of controlling erosion while soil is exposed and subject to construction activity. Implementation of standard construction practices would be used to limit or eliminate soil movement, stabilize erosion, and control sedimentation. These standard construction practices would include the use of: velocity dissipation devices; well-maintained silt fences; minimizing surficial area disturbed; stabilization of cut/fill slopes; minimization of earth-moving activities during wet weather; and use of temporary detention ponds. Following construction, disturbed areas not covered with impervious surfaces would be reestablished with appropriate vegetation and managed to minimize future erosion potential. Given the use of engineering practices that would minimize potential erosion, cumulative impacts to earth resources would be expected to be minor.

The FPPA is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. Neither the Proposed Action at the 124 FW nor the present and reasonably foreseeable projects are located on lands subject to the

FPPA. In summary, implementing the Proposed Action at Boise, along with other anticipated projects, would not result in significant cumulative impacts to earth resources.

#### **ID4.2.10 Water Resources**

**Surface Water.** Those projects that exceed 1 acre in size under the Proposed Action at the 124 FW installation or other projects, would require coverage under Idaho’s Construction General Permit. In compliance with coverage under this permit, a Construction BMP Plan (CBMPP) would be implemented and prepared to maintain effective erosion and sediment controls. The CBMPP includes the erosion, sediment, and pollution controls used, identifies periodic compliance inspections, and prescribes maintenance measures for the controls identified, throughout the life of the construction projects. Through compliance with Idaho’s Construction General Permit, cumulative effects would not be significant when considering the Proposed Action at the 124 FW installation and other projects listed in Table ID4.1-1.

**Groundwater.** Construction and demolition impacts to groundwater under the Proposed Action at the 124 FW installation, when considered with present and reasonably foreseeable projects, would not extend below ground surface to a depth that would affect the underlying aquifer. Although fuel or other chemicals could be spilled during construction, demolition, and renovation activities, implementation of the required Spill Prevention Control and Countermeasures Plan and immediate cleanup of any spills would prevent any infiltration into groundwater resources. Therefore, cumulative impacts to groundwater resources would not be significant at the 124 FW installation.

**Stormwater.** Construction and demolition activities associated with the Proposed Action at the 124 FW installation, when considered with present and reasonably foreseeable projects, could result in a temporary, cumulative increase in surface water turbidity; however, BMPs associated with the SWPPP are designed to minimize these impacts. These BMPs include practices such as wetting of soils and installing silt fencing, as well as adherence to federal and state erosion and stormwater management practices, to contain soil and runoff on the project areas. All other present and foreseeable projects would be required to follow the same state and federal guidelines for construction permitting to ensure water quality was protected from possible erosion and sedimentation. This includes implementing project-specific BMPs to minimize impacts to water quality and using stormwater engineering controls (e.g., stormwater runoff control systems directing water off the developed areas) to decrease future impacts to water quality following construction. The use of spill prevention plans and SWPPPs during construction would minimize impacts to water quality.

Additionally, in accordance with UFC 3-210-10, *Low Impact Development* (as amended, 2016) and EISA Section 438, any temporary increase in surface water runoff as a result of the proposed construction at the 124 FW installation is required to be attenuated through the use of temporary

and/or permanent drainage management features. Under these requirements, federal facility projects with over 5,000 SF of new impervious surface must maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow. This would apply to several of the construction projects proposed under this alternative and as such would minimize impacts to stormwater runoff. Cumulative impacts to stormwater would not be significant.

***Floodplains.*** None of the Proposed Action Alternative projects or other projects lie within the 100-year floodplain. Therefore, cumulative impacts to floodplains would not be significant when the Proposed Action at the 124 FW installation is considered along with present and reasonably foreseeable projects.

***Wetlands.*** None of the construction activities are associated with wetlands. Therefore, cumulative impacts to wetlands would not be significant when the Proposed Action at the 124 FW installation is considered along with present and reasonably foreseeable projects.

#### **ID4.2.11 Biological Resources**

Noise levels would be expected to increase from current levels with the conversion to the F-35A aircraft. However, these noise levels from operations and construction are not expected to impact wildlife in the area because they are likely accustomed to elevated noise levels associated with current commercial aircraft and military operations. The opportunity for bird-aircraft strikes to occur, including those with migratory birds, would remain the same as current levels. No threatened and endangered or special status species are currently known to reside on the 124 FW installation or within the land area under the projected noise contours. Construction-related impacts to the vegetation at the installation and in the vicinity of projects identified in Table ID4.1-1 would be minor due to the lack of sensitive vegetation in the project areas. In general, construction activities at the 124 FW installation and at Boise Airport would primarily occur on sites that are already highly altered. These impacts would include the removal of some vegetation and associated wildlife habitat. However, wildlife that uses these areas is typical of urban and suburban areas. No impacts to any federally or state threatened, endangered, or special status species is expected as a result of the Proposed Action at the 124 FW installation; therefore, cumulative impacts to biological resources would not be significant.

#### **ID4.2.12 Cultural Resources**

The areas of proposed construction are considered to have no to low probability of containing archaeological resources. In the event of an inadvertent discovery during ground-disturbing operations, work would cease immediately, the area would be secured, and the environmental manager would be contacted. The environmental manager would follow ANG Inadvertent

Discovery protocol. Building 1524 is a facility that is listed for renovation and/or modification under the Proposed Action at the 124 FW installation and is potentially eligible for listing in the NRHP; consultation with the Idaho SHPO is ongoing. No traditional cultural resources have been identified on the installation or in areas proposed for present and future development. Therefore, cumulative impacts to cultural resources would not be significant under the Proposed Action at the 124 FW installation.

#### **ID4.2.13 Hazardous Materials and Wastes, and Other Contaminants**

The types of hazardous materials needed for maintenance and operation of the F-35A would be similar to those currently used for maintenance and operation of the A-10 fleet. Under this alternative, the total number of airfield operations would increase approximately 1 percent; therefore, throughput of petroleum substances and hazardous waste streams would be expected to increase slightly. Additionally, it is expected that short-term increases in the quantity of fuel used during construction activities for this action and the present/reasonably foreseeable project would occur. Hazardous waste generation (e.g., used oil, used filters, oily rags, etc.) would continue to be managed in accordance with the installation's Hazardous Waste Management Plan and all applicable federal, state, and local regulations. The pollution prevention and waste minimization practices would continue to be managed in accordance with the Hazardous Waste Management Plan and the Solid Waste Management Plan and would include any construction-related materials or waste associated with aircraft operations. Additionally, no changes to the installation's SQG status would be expected to occur due to the decrease or no net change in hazardous waste generation from aircraft operations. In addition, any projects proposed for demolition, addition, or retrofit would be inspected for ACM and LBP according to established procedures prior to any renovation or demolition activities. Currently, none of the projects listed in Table ID4.1-1 are expected to encounter PFOS/PFOA contaminated media. Cumulative impacts as a result of the Proposed Action at the 124 FW installation and present/reasonably foreseeable projects would not be significant.

#### **ID4.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

NEPA CEQ regulations require environmental analyses under an EIS to identify "...any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action should it be implemented" (40 CFR Section 1502.16). Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable timeframe. Building construction material such as gravel and gasoline usage for construction equipment would constitute the consumption of nonrenewable resources.

Irretrievable resource commitments also involve the loss in value of an affected resource that cannot be restored as a result of the action.

Training operations would involve consumption of nonrenewable resources, such as gasoline used in vehicles and jet fuel used in aircraft. Use of training ordnance would involve commitment of chemicals and other materials. None of these activities would be expected to substantially affect environmental resources because the relative consumption of these materials is expected to change negligibly.

The primary irretrievable impacts of implementation of the Proposed Action at the 124 FW installation or for any of the alternatives would involve the use of energy, labor, materials and funds, and the conversion of some lands from an undeveloped condition through the construction of buildings and facilities on the installation. Irretrievable impacts would occur as a result of construction, facility operation, and maintenance activities. Direct losses of biological productivity and the use of natural resources from these impacts would be inconsequential.

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