187 FW - MONTGOMERY, AL

AL1.0 187TH FIGHTER WING INSTALLATION OVERVIEW

This section presents an overview of the 187th Fighter Wing (187 FW), Montgomery, Alabama; 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 187 FW installation.

The 187 FW of the Alabama Air National Guard (ALANG) is co-located with Montgomery Regional Airport (also known as Dannelly Field). The federal government leases the property from the airport and then licenses the facility to the state of Alabama for use by the ALANG. The installation is approximately 7 miles southwest of downtown Montgomery, Alabama, in western Montgomery County (Figure AL1.0-1). The 187 FW main cantonment area comprises 64 acres north of the airport's Runway 10/28. The remainder of the property lies south of the runway and includes a 7-acre Munitions Storage Area (MSA) Complex and two clear zone (CZ) arcs covering an approximate 65-acre easement surrounding the MSA Complex.

The 187 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). The 187 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, earthquakes, and forest fires; search and rescue operations; support to civil defense authorities; maintenance of vital public services and counterdrug operations (ALANG 2017a). The 187 FW currently operates 18 F-16C/D aircraft.

In the sections that follow, AL2.0 presents the installation-specific description of the Proposed Action at the 187 FW installation. Section AL3.0 addresses the affected environment and environmental consequences that could result if the 187 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 AL4.0 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 action. This section also represents the irreversible and irretrievable resources that would be committed if the F-35A beddown were implemented at the 187 FW installation.

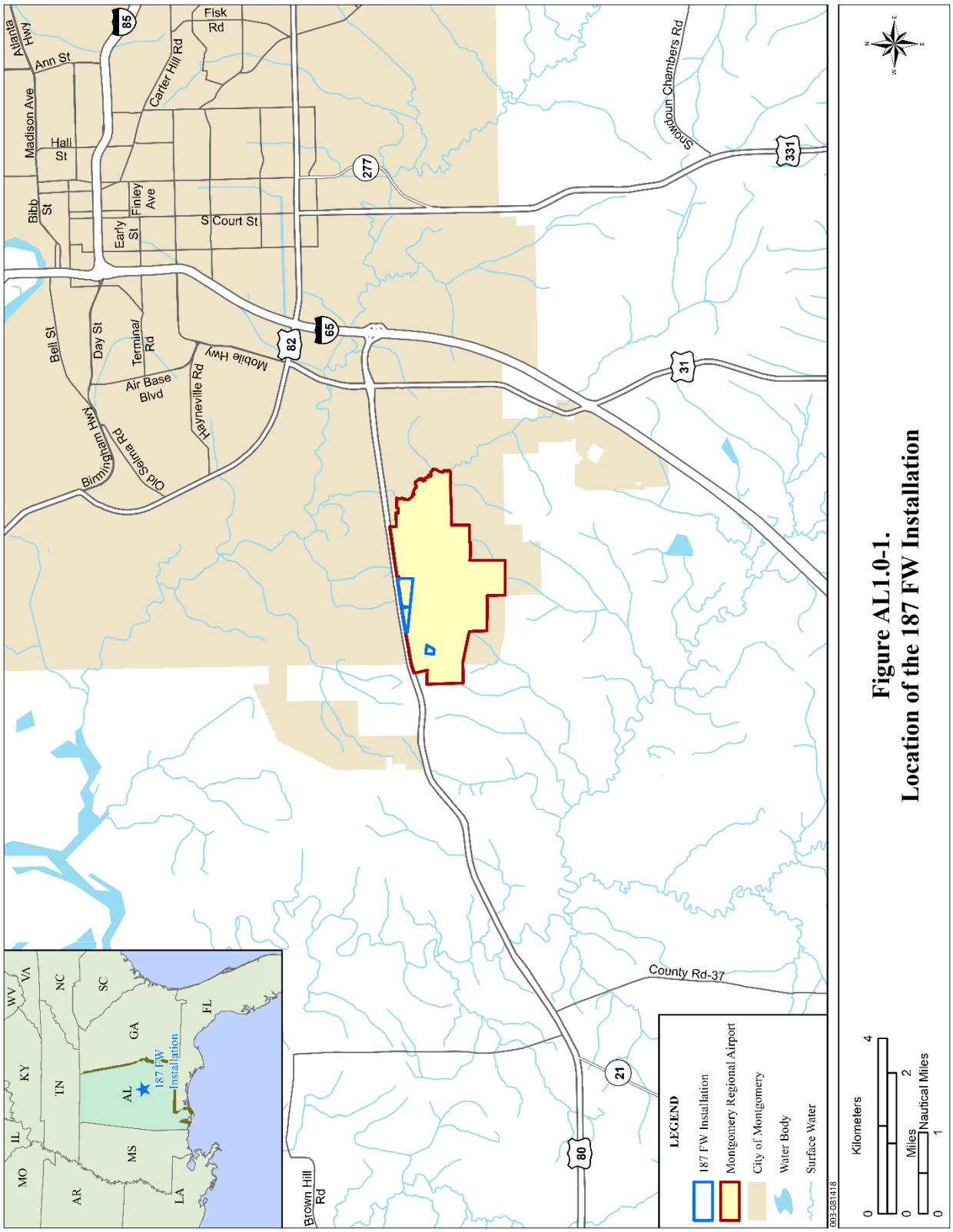

Figure AL1.0-1.
Location of the 187 FW Installation

AL2.0 187TH FIGHTER WING ALTERNATIVE

AL2.1 187TH FIGHTER WING INSTALLATION

Four elements of this alternative have the potential to affect the 187 FW installation: (1) conversion from F-16C/Ds 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.

AL2.1.1 Aircraft Conversion

Under this alternative, 18 F-35A aircraft would be based at the 187 FW installation and replace the 18 F-16C/Ds currently based there. The beddown is anticipated to 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 187 FW's F-16C/Ds would be complete approximately 6 months before the arrival of the F-35A.

AL2.1.2 Airfield Operations

The 187 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 187 FW must train as it would fight (ALANG 2017b).

Under this alternative, the National Guard Bureau (NGB) anticipates that by 2024, all 18 F-35A aircraft would be flying up to 7,094 operations per year, compared to the 7,026 annual operations currently with the F-16C/D (Table AL2.1-1). In total, Montgomery Regional Airport supports about 42,658 operations annually, with 62 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.

Under this alternative, total 187 FW annual airfield operations would increase 1 percent from 7,026 to 7,094. This would represent virtually no change in terms of total operations at the airfield.

Table AL2.1-1. Current and Proposed Annual Airfield Operations at Montgomery Regional Airport

	Total Current Operations	*Proposed F-35A Operations*
Based F-16	7,026	-
Proposed F-35A	-	7,094
Other Aircraft	35,632	35,632
Total Airfield Operations	42,658	42,726
Percent Change at Airfield	N/A	0.2%

Note: N/A = not applicable.

The F-35As would employ the same departure and landing flight tracks as currently used by the F-16C/Ds. The 187 FW currently uses afterburner on approximately 60 percent of their take-offs at the airfield, but because the F-35 has much more thrust in military power than the F-16, the use of afterburner is 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, avoidance procedures, and the quiet-hours program (or what is termed course rules) at Montgomery Regional Airport. The F-16C/Ds currently fly less than 1 percent of their operations between the hours of 10 p.m. and 7 a.m. (environmental night), although an occasional landing may occur during this time period. There are no scheduled departures or closed patterns after 10 p.m. or before 7 a.m. However, overseas deployment departures may occur during environmental night, but would be infrequent. In contrast, the civilian and commercial aircraft perform 11 percent (2,920) of their operations after 10 p.m. The 187 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.

AL2.1.3 Construction

To support the proposed F-35A operations, additional infrastructure and facilities would be required at the 187 FW installation. Fifteen 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 AL2.1-2 describes these projects, the total affected area in square feet (SF), and new impervious surfaces introduced. Figure AL2.1-1 identifies the construction locations for each project within the installation. It is anticipated that construction would occur between 2020 and 2023.

Table AL2.1-2. Proposed Construction and Modifications for the 187 FW Installation (Page 1 of 3)

Action	*Total Area of New Ground Disturbance (SF)*	*New Impervious Surface (SF)*
Project #1 (Option 1) – Flight Simulator		
Construct a new 19,000 SF flight simulator building west of B1104. This would include new electrical and communication infrastructure needed for the structures.	19,000	0
Project #1 (Option 2) – Flight Simulator		
Construct a new 19,000 SF flight simulator building west of the Hush House (B1408).	19,000	0
Project #2 – DSP Shelter		
Construct a 2,500 SF DSP shelter north of B1104.	2,500	2,500
Project #3 – (Option 1) Engine Shop		
Implement internal modifications to B1407, including repair of fire protection systems and modifications to door to fit one Gantry crane and one Overhang crane.	0	0
Project #3 – (Option 2) AGE		
Implement internal modifications to B1407 for AGE facility.	0	0
Project #4 (Option 1) – Aircraft Shelters		
Add one F-35A aircraft shelter to the northeast side of the current shelters. This increases the number of aircraft shelters to 12. There will also be updates to the electrical and communication components of the shelter.	5,100	5,100
Project #4 (Option 2) – Aircraft Shelters		
Add seven F-35A aircraft shelters on current parking spaces on the south side of the airfield apron. This requires an expansion of the apron and an additional 9,000 SF of new impervious surfaces.	34,200	9,000
Project #5 – Maintenance Hangar		
Implement internal modifications to the Maintenance Hangar (B1201), including relocation of tool cage area, upgrade of power supply, and resurfacing of floors to meet F-35A requirements.	0	0
Project #6 – M&I Facility		
Construct a new 4,000 SF M&I Facility for the F-35A southeast of the MSA on a grassy lawn outside the existing fence line. This location is owned by the airport and would be leased by the ANG. It was chosen because it is currently located outside the CZ. In addition, access roads to the facility and the existing MSA would be added.	85,750	76,144
Project #7 – (Option 1) Weapons Loading Training		
Add 11,500 SF to the west side of B1403 and demolish B1403.	11,500	5,445
Project #7 – (Option 2) Weapons Loading Training		
Construct a new 11,500 SF Weapons Loading Training building and demolish B1304.	11,500	2,752
Project #8 – (Option 1) Interior Renovations to AGE B1313		
Internal and external renovations, to include interior reconfigurations, provide oil/water separator, upgrade electrical service, relocate fence, and expand storage yard capability.	18,000	18,000
Project #8 – (Option 2) Engine Shop		
Demolish B1313 and construct a 6,000 SF engine shop.	6,000	0
Project #9 – (Option 1) Interior Renovations to B1305		
Interior renovations, to include providing ventilation fire protection and special containment as needed to accommodate AMU and battery storage and work activity.	0	0

Table AL2.1-2. Proposed Construction and Modifications for the 187 FW Installation (Page 2 of 2)

Action	*Total Area of New Ground Disturbance (SF)*	*New Impervious Surface (SF)*
Project #9 – (Option 2) AMU Administration		
New 18,000 SF 2-story facility for AMU and battery storage. In addition, existing pavement north and northeast of new building would be replaced and reconfigured for new parking areas.	9,000	0
Project #10 – Repair Refueler Parking		
Reconfiguring existing parking in the POL yard and adding two more parking areas.	12,600	12,600
Project #11 – Hush House		
Demolish the existing Hush House (B1408).	9,120	0
Project #12 – B1203 Modifications		
Internal modifications to power and cooling for B1203 to meet F-35A requirements.	0	0
Project #13 – Weapons Building		
Internal modifications to B1312 to appropriately configure it for the F-35A beddown would include modernization of mechanical and electrical systems, new fire suppression, fire alarm, and mass notification systems, and ADA/ABAA-compliant restroom facilities. Additionally, the exterior of the building will be repaired (e.g., new windows, doors, roofing, etc.).	0	0
Project #14 – Distributed Spares (Option 1)		
New 6,000 SF Facility for Distributed Spares. Demolish B1202.	6,000	0
Project #14 – Distributed Spares (Option 2)		
Addition of 6,000 SF to the Base Supply Complex that would be built for the current mission.	6,000	0
Project #15 – Life Support		
Construct a 900 SF addition to the west side of B1303.	900	900

Legend: ADA = Americans with Disabilities Act; ABAA = Architectural Barriers Act Accessibility; AGE = Aerospace Ground Equipment; AMU = Aircraft Maintenance Unit; ANG = Air National Guard; CZ = Clear Zone; DSP = Deployment of Spare Parts; M&I = Maintenance and Inspection; MSA = Munitions Storage Area; POL = Petroleum, Oil, and Lubricants; SF = square feet.

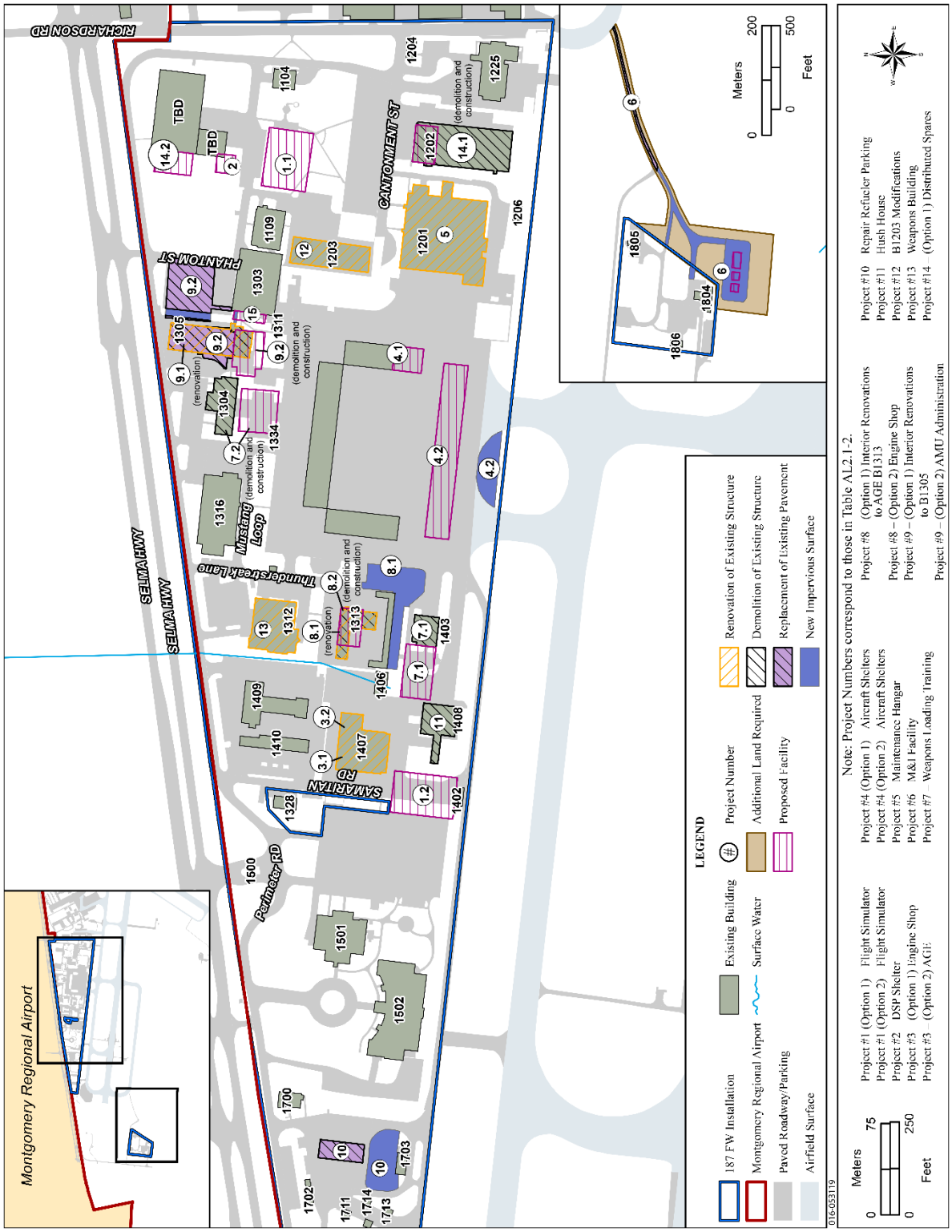

Figure AL2.1-1.
187 FW Installation Construction and Modifications

AL2.1.4 Personnel

The 187 FW supports 340 federal technician civilian employees, 111 Active Guard Reserve (AGR), and 1,018 traditional guardsmen (ALANG 2017c). It is expected that the overall number of Air National Guard (ANG) personnel at the 187 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 187 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 187 FW currently has a USAF Active Duty Associate Unit of 5 pilots, 47 maintenance staff, and 6 other support staff in place. As a component of the Proposed Action, this USAF Active Duty Associate Unit would be composed of up to 5 pilots, 40 maintenance staff, and approximately 5 other support staff. Therefore, the 187 FW would decrease by 7 maintenance staff and 1 other support staff, 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).

AL2.2 187TH FIGHTER WING: TRAINING AIRSPACE AND RANGES

The 187 FW uses multiple areas for training in the local area (Table AL2.2-1 and Figure AL2.2-1), including over land Military Operations Areas (MOAs) with overlying Air Traffic Control Assigned Airspace (ATCAAs) and Restricted Areas, and occasional use of the Warning Areas over the Gulf of Mexico. Section 2.2.2.1 provides definitions of the airspace units. The beddown action would not require changes in Special Use Airspace (SUA) attributes, volume, exclusionary areas, or proximity; and it is expected that the type and number of ordnance employed at the ranges would remain the same or decrease.

AL2.2.1 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 187 FW, with approximately the same number of operations in each airspace unit, but may operate somewhat differently than the F-16Cs now using that airspace. These differences would derive from enhanced capabilities and changed requirements for the F-35A.

Table AL2.2-1. 187 FW Military Training Airspace

Airspace	*Floor (feet MSL)[1]*	*Ceiling (feet MSL)[1]*
Birmingham MOA	10,000	To BNI 18,000
Birmingham 2 MOA	500 feet AGL	To BNI 10,000
Birmingham ATCAA[2]	18,000	To BNI 23,000
Camden Ridge MOA	500 feet AGL	To BNI 10,000
Pinehill East/West MOA	10,000	To BNI 18,000
Grove Hill ATCAA[2]	24,000	50,000
Grove Hill Bridge ATCAA[2]	32,000	50,000
Grove Hill North ATCAA[2]	24,000	50,000
Grove Hill West ATCAA[2]	24,000	50,000
Grove Hill Shelf ATCAA$_2$	24,000	27,000
Montgomery West ATCAA[2]	18,000	23,000
R-4401 A[3]	Surface	To BNI 4,000
R-4401 B[3]	4,000	To BNI 10,000
R-4401 C[3]	10,000	To BNI 10,000
R-4401 D[3]	18,000	To BNI 23,000
R-4401 E[3]	23,000	To 29,000
Desoto 1 MOA	500 feet AGL	10,000
Desoto 2 MOA	100 feet AGL	5,000
Bullseye 1 MOA	10,000	To BNI 18,000
Bullseye 2 MOA	5,000	To BNI 18,000
Bullseye 3 MOA	11,000	To BNI 18,000

Notes: [1]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 is denote the "plane" on which the floors and ceilings of SUA are established and the altitude at which aircraft must operate within that SUA.
[2]Supersonic flight authorized above 30,000 feet MSL.
[3]R-4401 A/B/C/D/E support aircraft operations for Shelby Range

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; Atlanta ARTCC, Memphis ARTCC, and 187 FW 2018.

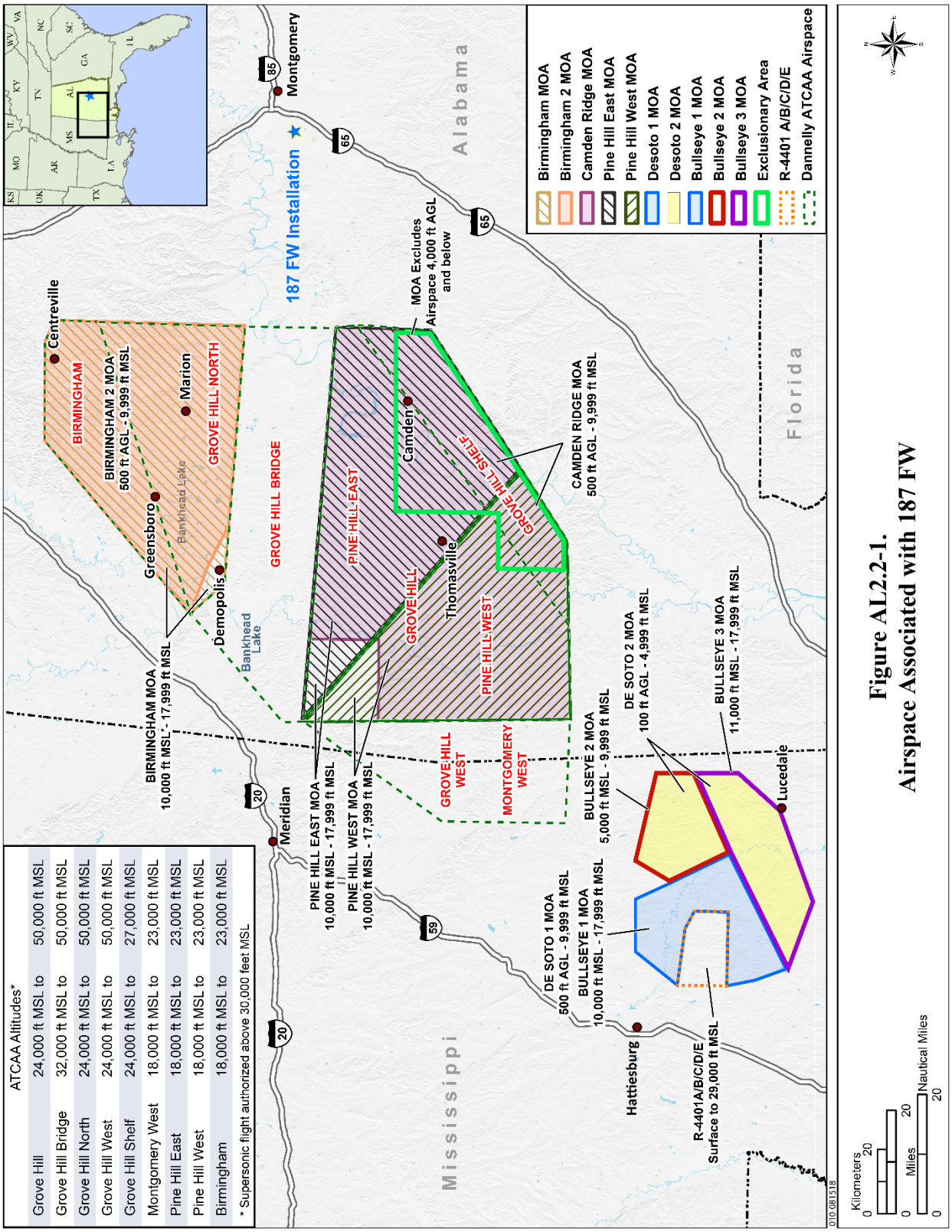

Figure AL2.2-1.
Airspace Associated with 187 FW

Although the F-35As would perform the same mission as the existing F-16C, 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 and possibly different combinations of use of existing airspace.

Birmingham, Camden Ridge, and Pinehill MOAs support 61 percent of training operations by the F-16s from the 187 FW. Within these airspace units, the 187 FW accounts for about 20 percent of the activity. The remaining airspace receive much less use, contributing 39 percent to the total operations by the 187 FW. Over water units such as Warning Areas also receive use.

The F-35A would be expected to fly more of the time at higher altitudes than the F-16 (Table AL2.2-2), operating more than 90 percent of the time above 10,000 feet mean sea level (MSL). This would result in the F-35A aircraft conducting most of their operations in the ATCAAs and higher altitude regimes of the airspace. Regardless of the altitude structure and percent use indicated in Table AL2.2-2, 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.

Table AL2.2-2. Approximate 187 FW Current and Proposed Altitude Distribution

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

Legend: AGL = above ground level; MSL = mean sea level.
Source: Surles 2017

Table AL2.2-3 shows current use of 187 FW airspace and reflects the total number of aircraft, including the ALANG aircraft as well as other USAF, Navy, and transient aircraft operations. The T-45 aircraft from Training Air Wing One, Naval Air Station Meridian, Mississippi account for the majority of other operations using the MOAs.

Table AL2.2-3. Approximate 187 FW Current and Proposed Annual Airspace Operations

Airspace Unit	*Total All Aircraft Current Airspace Operations*	*F-16C Current Airspace Operations*	*Proposed Total All Aircraft Airspace Operations*	*Proposed F-35A Airspace Operations*
Birmingham 1 and 2 MOA; Montgomery West; Grove Hill and Grove Hill West ATCAAs	4,405	221	4,326	142
Camden Ridge MOA; Pinehill East/West MOA; Grove Hill ATCAAs/Red Tail MOA	6,419	1,645	7,339	2,565
Shelby Range [R-4401 A/B/C/D/E]	31,438	221	31,571	354
Bullseye 1/2/3 MOA	4,574	221	4,707	354
Desoto 1/2 MOA	3,373	221	3,506	354

Notes: [1]The Red Tail MOA is not charted, it is the combined use of Pine Hill E/W MOAs and the Montgomery West, Grove Hill West, Grove Hill, Grove Hill Bridge and Grove Hill North ATCAAs.
Legend: ATCAA = Air Traffic Control Assigned Airspace; MOA = Military Operations Area; R- = Restricted Area
Source: 187th Operations Support Squadron/OSA 2017; Army National Guard 2017.

Like the F-16s, 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 187 FW F-16 aircraft currently conduct up to 3,076 annual sorties (or 256 monthly sorties) lasting between 30-78 minutes in the airspace. Under the Proposed Action, the F-35A aircraft would conduct up to 3,061 annual sorties (approximately the same number of 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, there would be approximately 17 percent decrease in the amount of time spent in the airspace under the Proposed Action.

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-35As mission and the aircraft's capabilities, the USAF anticipates that approximately 10 percent of the time spent in air combat training would involve supersonic flight. Supersonic flight during air combat training would be performed in over water Warning Areas (more than 15 nautical miles [NM] offshore) and in the existing over land airspace used by the 187 FW. The 187 FW conducts supersonic operations above 30,000 feet MSL in the Birmingham MOA, Birmingham 2 MOA, Pinehill (East/West) MOAs, Camden Ridge MOA, and Grove Hill ATCAAs. All supersonic flight in the local training airspace would be conducted above 30,000 feet MSL and in the same airspace currently used by the F-16s.

AL2.2.2 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 (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 would 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.

Camp Shelby (Restricted Area [R-] 4401 A/B/C/D/E) contains varied target sets for supporting laser and practice/inert air-to-ground weapons training. No live-weapons training is permitted at Camp Shelby. It is expected that any live-fire training would be conducted during formal training exercises conducted remotely from the 187 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 is permitted in the Birmingham, Birmingham 2, Camden Ridge, Pinehill East and Pinehill West MOAs at altitudes above 2,500 feet MSL, and proposed for use by the F-35A. Use of chaff and flares in the Desoto 1/2 and Bullseye 1/2/3 MOAs and R-4401 A/B/C/D/E (Shelby Range) is not authorized and is not proposed in this Environmental Impact Statement (EIS). For the purposes of this analysis, it is estimated that F-35A chaff and flare expenditure would not exceed use by the legacy F-16s on a per operation basis for the 187 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.

AL2.3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES AT THE 187 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.

AL2.4 PERMITS, AGENCY CONSULTATIONS, AND GOVERNMENT-TO-GOVERNMENT CONSULTATIONS

The 187 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.
  - The Alabama Department of Environmental Management (ADEM) requires owners or operators of construction sites that disturb 1 acre or greater and sites less than 1 acre but are part of a larger common plan of development or sale to submit a Construction Best Management Practices Plan (CBMPP). The plan must describe how the permittee will effectively design, install and maintain effective erosion controls, sediment controls, and pollution prevention measures appropriate for the site conditions. Plans should be designed and maintained to minimize erosion and maximize sediment removal resulting in a 2-year 24-hour storm event (ADEM 2017).
  - The State of Alabama, through the ADEM, issued a general permit for industrial discharges to the 187 FW installation in October of 2011 (ALANG 2016). A Best Management Practice (BMP) Plan has been prepared to comply with the U.S. Environmental Protection Agency (USEPA) NPDES program. The industrial-type activities at the 187 FW installation warrant consideration of control for reduction or elimination of the discharge of pollutants to the stormwater system. The BMP Plan addresses those activities and identifies appropriate controls and was prepared to provide stormwater pollution prevention guidance to the 187 FW installation. The BMP Plan also complies with Air Force Instruction (AFI) 32-7041, *Water Quality Compliance*. The existing industrial BMP Plan (ALANG 2016) already in place for the installation would be amended, as necessary, to reflect post-construction operations and potentially new 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 187 FW will coordinate with the USEPA, Region IV and ADEM regarding proposed construction near Environmental Restoration Program (ERP) sites on the 187 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 187 FW installation is located within an attainment area 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 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 either ACM or LBP is present, the 187 FW would employ appropriately trained and licensed contractors to perform the ACM and/or LBP removal and disposal. Construction contractors would be notified 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 Alabama and Mississippi 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 late October/early November 2017. An initial government-to-government consultation letter was sent to 20 federally-recognized American Indian Tribes with ancestral ties to the 125 FW installation and lands beneath the associated airspace in February 2018. These 20 American Indian Tribes included Alabama-Coushatta Tribe of Texas, Alabama-Quassarte Tribal Town of the Creek Nation, Kialegee Tribal Town of the Creek Nation of Oklahoma, Mississippi Band of Choctaw Indians, Absentee-Shawnee Tribe of Indians of Oklahoma, Coushatta Tribe of Louisiana, Eastern Shawnee Tribe of Oklahoma, Jena Band of Choctaw Indians, Shawnee Tribe, Thlopthlocco Tribal Town of Oklahoma, Miccosukee Tribe of Indians, Muscogee (Creek) Nation, Poarch Band of Creek Indians, The Seminole Tribe of Florida, Cherokee Nation of Oklahoma, Eastern Band of Cherokee Indians, Choctaw Nation of Oklahoma, Chickasaw Nation of

Oklahoma, Seminole Nation of Oklahoma, and United Keetoowah Band of Cherokee 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. No American Indian reservations underlie the airspace associated with the 187 FW.

The Seminole Nation of Oklahoma responded via e-mail that they would like to be included in any consultation pursuant to the Proposed Action, and also requested that a full flora inventory be conducted in each area of interest. The Seminole Nation of Oklahoma also requested a face-to-face meeting to discuss the project (Isham 2018).

To date, no other responses have been received from federally-recognized American Indian Tribes associated with the 187 FW installation.

AL2.5 PUBLIC INVOLVEMENT / AGENCY CONCERNS

AL2.5.1 Scoping

A scoping meeting was held on March 1, 2018 in Montgomery, Alabama. There were 28 people that attended the scoping meeting and 20 comments were received from the public and agencies prior to close of the scoping period (1 Tribe, 2 agencies, and 17 general public).

Most comments received at the meeting were in support of the F-35A beddown at the 187 FW installation. The primary issue was concern about noise generated from the F-35A aircraft. Of the 17 general public comments, 7 expressed support of the proposed beddown, and 2 expressed concerns about noise.

AL2.5.2 Draft Environmental Impact Statement Public Comment Period

A Draft EIS public meeting was held on August 29, 2019 in Montgomery, Alabama. There were 15 people that attended the meeting and 22 comments were received from the public and agencies with regard to the proposed action at Montgomery 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 Montgomery 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) General concerns about Environmental Justice communities.
4) Concern about increased noise causing health concerns.
5) The public requested more elaboration on potential mitigation.

6) Concern about a decrease in property values and tax base.

AL2.6 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 Day-Night Average Sound Level (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.

AL3.0 187TH FIGHTER WING AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

AL3.1 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.

AL3.1.1 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 187 FW installation.

The civil/commercial aircraft data, derived from Integrated Noise Model files and converted to AEDT, includes modifications provided by Montgomery Regional Airport Air Traffic Control (ATC) personnel to adjust general aviation flights to coincide with the 2017 Air Traffic Activity Report. Flight patterns and utilization were based on the 2005 Integrated Noise Model Part 150 Study utilizing standard flight profiles. Interviews with members of the 187 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 (187 FW 2019a).

AL3.1.1.1 Affected Environment

For the noise analysis at and around the 187 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 AL3.1-1 summarizes the modeled annual military flight operations for aircraft based at the installation as well as transient military aircraft that visit the airfield on a temporary basis, referred to as 'transients.' Table AL3.1-2 summarizes the modeled annual civil/commercial flight operations, which includes 757, Cessna's, regional jets. Current operations includes 42,658 flight operations per year, of which 62 percent (26,386) are civil/commercial aircraft. Based and transient military aircraft account for 38 percent of the total flight operations (16,272). Of the military fixed-wing aircraft, the F-16s comprise 7,026 operations or about 16 percent of the airport total. F-16 utilize afterburner on 60 percent of departures and military power on the remainder. Individual flight profiles have been modeled for the two departure types.

Table AL3.1-1. Annual Airfield Operations for Based and Transient Military Aircraft at Montgomery Regional Airport – Current

Aircraft Type	*Modeled As*	*Arrivals Day*	*Arrivals Night*	*Departures Day*	*Departures Night*	*Closed Patterns Day*	*Closed Patterns Night*	*Total Day*	*Total Night*	*Total*
Based Military Aircraft										
Fighter	F-16	3,076	0	3,076	0	874	0	7,026	0	7,026
Turbo Prop	C-26	92	0	92	0	20	0	204	0	204
Military Helicopter	UH-60	730	0	730	0	5,100	0	6,560	0	6,560
	Subtotal Based	**3,898**	0	**3,898**	0	**5,994**	0	**13,790**	0	**13,790**
Transient Military Aircraft										
Fighter	F-22	52	0	52	0	0	0	104	0	104
Heavy Jet	KC-135	60	0	60	0	624	0	744	0	744
Light Propeller	T-6	372	0	372	0	0	0	744	0	744
Light Propeller	C-130	114	0	114	0	0	0	228	0	228
Military Helicopter	UH-60	141	0	141	0	0	0	282	0	282
Fighter	F-15E	16	0	16	0	0	0	32	0	32
Fighter	F-35A	52	0	52	0	0	0	104	0	104
	Subtotal Transient	**929**	0	0	0	**624**	0	**2,482**	0	**2,482**
	Total Military Aircraft	**4,827**	0	**4,827**	0	**6,618**	0	**16,272**	0	**16,272**

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.
The C-26 is a surrogate for the RC-26B

Table AL3.1-2. Annual Airfield Operations for Civil/Commercial Aircraft at Montgomery Regional Airport – Current

Aircraft Type	*Arrivals Day*	*Arrivals Night*	*Departures Day*	*Departures Night*	*Total Day*	*Total Night*	*Total*
717200	1	0	1	0	2	0	2
757PW	90	0	90	0	180	0	180
BEC58P	791	0	791	0	1,582	0	1,582
CL601	21	0	21	0	42	0	42
CNA172	2,276	0	2,276	0	4,552	0	4,552
CNA206	1,023	0	1,023	0	2,046	0	2,046
CNA441	147	0	147	0	294	0	294
CNA500	132	0	132	0	264	0	264
DC3	105	0	105	0	210	0	210
DC910	1	0	1	0	2	0	2
DC930	1	0	1	0	2	0	2
DHC6	683	0	683	0	1,366	0	1,366
DHC8	12	0	12	0	24	0	24
DHC830	130	0	130	0	260	0	260
EMB145	1	0	1	0	2	0	2
GASEPV	1,228	0	1,228	0	2,456	0	2,456
GV	2,920	1,460	2,920	1,460	5,840	2,920	8,760
HS748A	7	0	7	0	14	0	14
Lear25	45	0	45	0	90	0	90
Lear35	27	0	27	0	54	0	54
MU3001	220	0	220	0	440	0	440
PA28	1,872	0	1,872	0	3,744	0	3,744
Total	**11,733**	**1,460**	**11,733**	**1,460**	**23,466**	**2,920**	**26,386**

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

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 AL3.1-1 and Table AL3.1-3 present a graphical depiction and tabular description of the 17 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. POI #10, a Mobile Home Park just outside the airport, currently experiences the greatest DNL of 65 dB; additionally, Southlawn Baptist Church, Housing Area 1, Housing Area 2, and Martin Luther King Elementary School are also exposed to DNL between 60 and 65 dB.

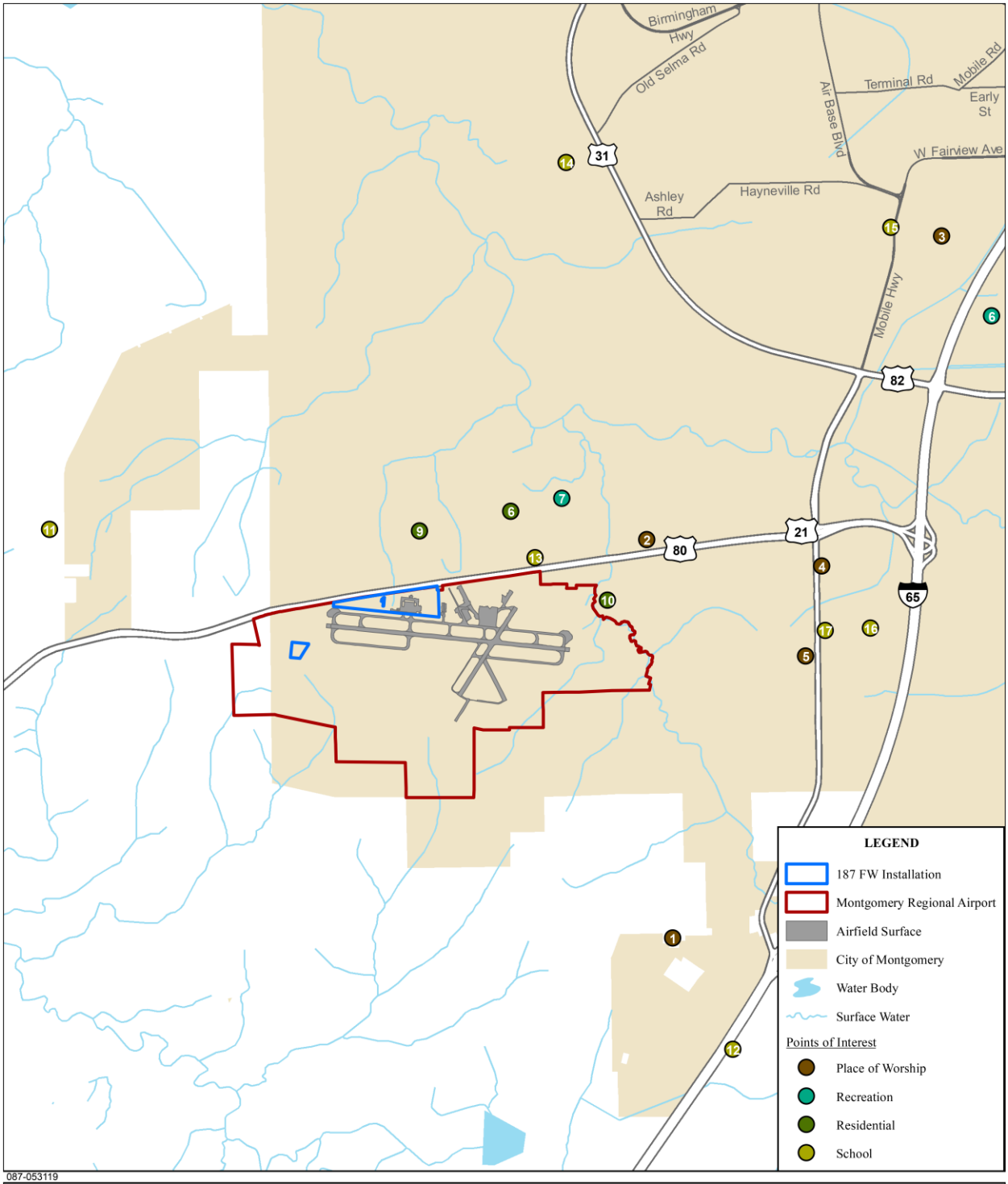

Figure AL3.1-1.
Points of Interest in the Vicinity of
Montgomery Regional Airport

Table AL3.1-3. DNL at Representative Points of Interest– Current

Map ID	*Named POI*	*DNL (dB)*
1	Hope Hull United Methodist Church	49
2	Macedonia Ministries	58
3	Masjid Qasim Bilal El-Amin	37
4	New Life Church of God	54
5	Southlawn Baptist Church	61
6	Gateway Park/Golf Course	39
7	Twin Gates Park	57
8	Housing Area 1	60
9	Housing Area 2 Danville Street	63
10	Mobile Home Park 1330 Lamar Road, Hope Hull	65
11	Catoma Elementary School	57
12	Hooper Academy	49
13	Martin Luther King Elementary School	64
14	New Generation Preschool	49
15	Peewee Angel's Christian Academy	38
16	Southlawn Elementary	57
17	Southlawn Middle School	59

Legend: dB = decibel; DNL = Day-Night Average Sound Level; POI = Point of Interest.
Sources: 187 FW 2019a.

Figure AL3.1-2 shows the DNL contours for the affected environment at Montgomery 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 to the east, west, and to the north. The 70 to 80 dB DNL contour bands extend outside of the airport boundary to the north and in small pockets in the south. The majority of the noise contours greater than 80 dB DNL remain within the Montgomery Airport boundary, with a small amount outside of airport boundaries to the north.

Table AL3.1-4 lists the acreage lying within noise contours of 65 to 85 dB DNL under the affected environment. Outside airport boundaries there are 683 acres within the 65 to 75 dB DNL noise contours and 23 acres within the 75 to 85 dB DNL noise contours.

Table AL3.1-4. Acreage within Noise Contours Bands – Current

DNL Level (dBA)	*On Airport*	*Off-Airport*	*Total*
65–70	402	605	1,007
70–75	348	78	426
75–80	268	21	289
80–85	179	2	181
85+	204	0	204
Total	**1,401**	**706**	**2,107**

Note: Totals may be off due to rounding.
Legend: dBA = A-weighted decibel; DNL = Day-Night Average Sound Level.
Source: 187 FW 2019a.

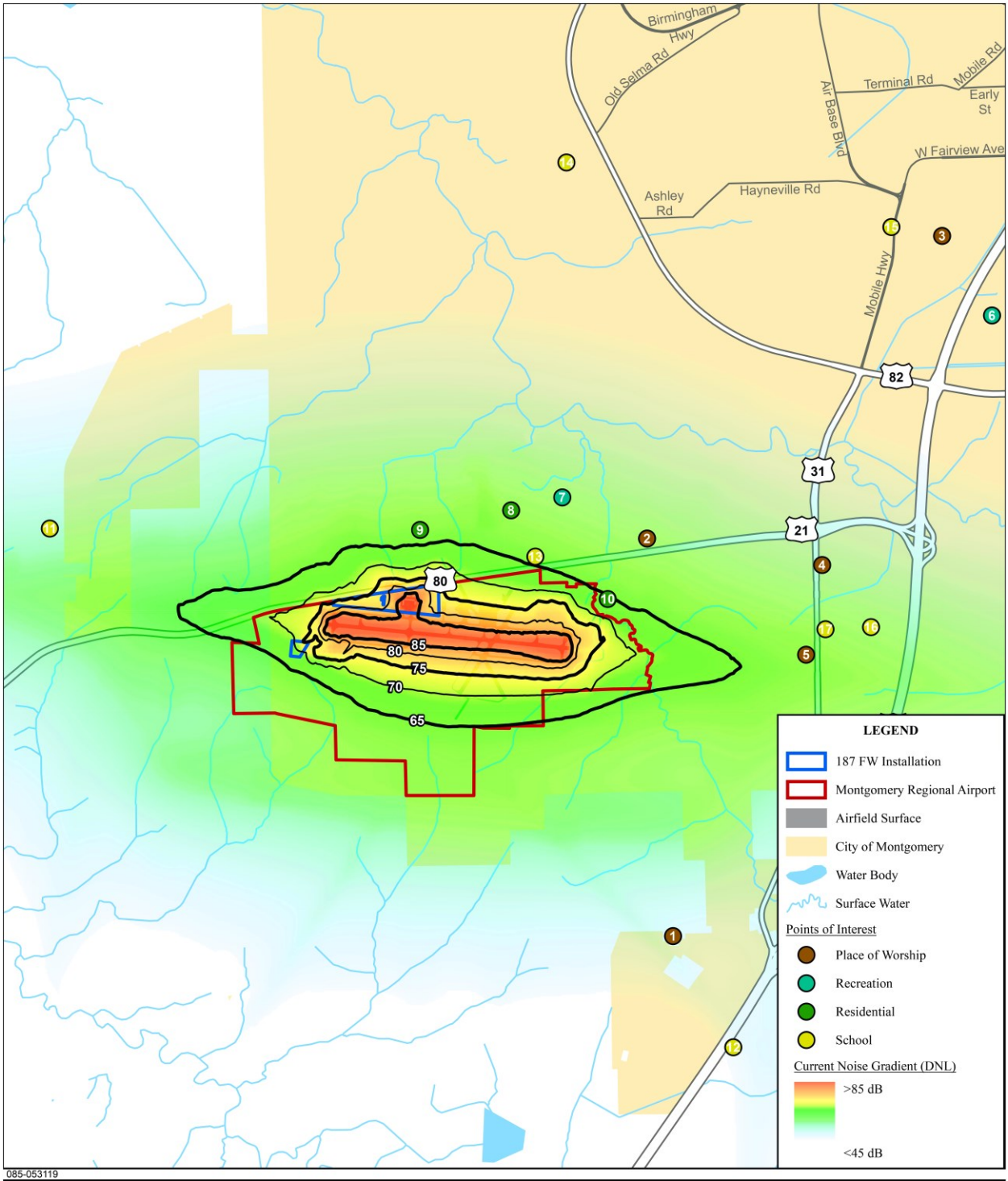

Figure AL3.1-2.
Current DNL Contours at
Montgomery Regional Airport

Table AL3.1-5 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. Exposure to noise levels of 65 dB DNL and greater include an estimated 146 people and 62 households.

Table AL3.1-5. Off-Airport Noise Exposure within Contour Bands at Montgomery Regional Airport – Current

Contour Band (dB DNL)	*Population*	*Households*
65–70	146	62
70–75	0	0
75–80	0	0
80–85	0	0
85+	0	0
Total	**146**	**62**

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

Supplemental Metrics

To supplement the cumulative metric analysis, single-event sound exposure levels (SELs) are provided at each POI for the greatest noise events listed in Table AL3.1-6. SEL accounts for both the magnitude and duration of individual events, making it a good metric to compare disparate noise events. For each POI, Table AL3.1-6 shows the number of day and night weekly events. Also included are the POI DNL values to demonstrate that some "loud" events may occur in an area of a lower DNL. For instance, at Hope Hull United Methodist Church (POI #1), the point has a current DNL value of 49 dB, and has less than one F-22 flight event per week with an SEL value of 95 dB. This table illustrates that even while the overall noise exposure (represented by DNL) can be relatively low, the individual events that make up the DNL are still noticeable. Note that the greatest SELs are due to F-16, F-15, and F-22 military aircraft and that the loudest events tend to occur closest to the airfield and nearest the flight tracks that align with the airport runways.

Table AL3.1-6. 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	Hope Hull United Methodist Church	49	95	0.5	0.0
2	Macedonia Ministries	58	104	0.0	0.0
3	Masjid Qasim Bilal El-Amin	37	83	0.6	0.0
4	New Life Church of God	54	101	0.2	0.0
5	Southlawn Baptist Church	61	111	0.2	0.0
6	Gateway Park/Golf Course	39	85	0.6	0.0
7	Twin Gates Park	57	107	0.0	0.0
8	Housing Area 1	60	106	0.0	0.0
9	Housing Area 2 Danville Street	63	106	0.4	0.0
10	Mobile Home Park 1330 Lamar Road, Hope Hull	65	111	0.6	0.0
11	Catoma Elementary School	57	105	0.1	0.0
12	Hooper Academy	49	103	0.5	0.0
13	Martin Luther King Elementary School	64	108	0.6	0.0
14	New Generation Preschool	49	81	0.6	0.0
15	Peewee Angel's Christian Academy	38	83	0.6	0.0
16	Southlawn Elementary	57	106	0.2	0.0
17	Southlawn Middle School	59	108	0.2	0.0

Legend: dBA = A-weighted decibel; DNL = Day-Night Average Sound Level; POI = Point of Interest; SEL = Sound Exposure Level.
Source: 187 FW 2019a.

Classroom Speech Interference. To evaluate the potential for classroom learning interference, the Equivalent Noise Level (L_{eq}) was computed for daytime events. Additionally, the Number of Events Above (NA) 50 dB were tabulated as well as the duration of time above 50 dB for an average school day and presented in Table AL3.1-7. Seven of the 17 POIs identified near Montgomery Regional Airport are schools and one is a childcare center. As indicated in Table AL3.1-6, Martin Luther King Elementary School has an L_{eq} of 66 dB and Southlawn Middle School has an L_{eq} of 61 dB. The L_{eq} at other schools is less than 60 dB.

Table AL3.1-7. Classroom Speech Interference – Current

POI Number	*Named POI*	*Exterior $L_{eq(8)}$ (dBA)*	*Speech Interfering Events per School Day (hour)[1]*	*Time above 50 dBA per 8-hour school day (minutes)[1]*
11	Catoma Elementary School	58	2	2
12	Hooper Academy	50	1	4
13	Martin Luther King Elementary School	66	1	5
14	New Generation Preschool	50	2	1
15	Peewee Angel's Christian Academy	40	0	1
16	Southlawn Elementary	59	1	2
17	Southlawn Middle School	61	2	2

Note: [1]Assumes even distribution of daytime operations throughout the day.
Legend: dBA = A-weighted decibel; L_{eq} = Equivalent Noise Level; POI = Point of Interest.
Source: 187 FW 2019a.

The interfering events represents the average number of potential speech interfering events per school hour. A speech interfering event is one that exceeds 50 dB indoors because this is the level at which speech intelligibility decreases. As depicted in Table AL3.1-7, under the affected environment, the number of speech interfering events exceeds one per hour at Catoma Elementary, New Generation Preschool, and Southlawn Middle School. The time above metric is calculated to show the total number of minutes per 8-hour school day that the interior noise level exceeds 50 dB in the classroom with windows open due to aircraft noise. Under the affected environment, the longest time above the threshold is 5 minutes, which occurs at the Martin Luther King Elementary School.

Residential Speech Interference. Residential speech interference examines the numbers of events exceeding 50 dB interior levels during the daytime. It represents the number of average hourly interruptions to activities like conversation and watching television during the daytime day (from 7 a.m. until 10 p.m.). Normally, this metric is applied only to residential locations, but this analysis is shown for all 17 POIs. The numbers associated with schools, places of worship, etc., are there to represent the conditions of adjacent residential locations. Table AL3.1-8 shows the number of indoor speech interfering events per hour for both windows open and closed conditions. Standard values for building attenuation of 15 dB with windows open and 25 dB with window closed were applied. In the "windows closed" condition all of the POIs experience one or less disturbances per hour on average.

Table AL3.1-8. Residential Speech Interference Events per hour (Daytime) – Current

POI Number	*Named POI*	*Windows Open[1, 2]*	*Windows Closed[1, 3]*
1	Hope Hull United Methodist Church	1	1
2	Macedonia Ministries	1	1
3	Masjid Qasim Bilal El-Amin	0	0
4	New Life Church of God	1	1
5	Southlawn Baptist Church	3	1
6	Gateway Park/Golf Course	0	0
7	Twin Gates Park	1	1
8	Housing Area 1	1	1
9	Housing Area 2 Danville Street	1	1
10	Mobile Home Park 1330 Lamar Road, Hope Hull	2	1
11	Catoma Elementary School	2	1
12	Hooper Academy	1	0
13	Martin Luther King Elementary School	1	1
14	New Generation Preschool	2	0
15	Peewee Angel's Christian Academy	0	0
16	Southlawn Elementary	1	1
17	Southlawn Middle School	2	1

Notes: [1.] Assumes even distribution of daytime operations throughout the day.
[2.] Assumes 15 dB attenuation.
[3.] Assumes 25 dB attenuation.
Legend: POI = Point of Interest.
Source: 187 FW 2019a.

Sleep Disturbance. For residential areas, a common concern is the possibility of sleep disturbance, or the probability of awakening. Table AL3.1-9 shows the probability of awakening at each POI. The analysis takes into account all of the nighttime events (10 p.m. through 7 a.m.) using the American National Standards Institute (ANSI) S12.9 standard. The table shows the cumulative probability of awakening at least once during that period for both a windows closed and windows open conditions. While residences may not be present at each of the POIs, the points are good representations of the noise environment in their immediate vicinity, which often includes residences. The probability of awakening ranges from less than 1 percent to up to 4 percent for windows open and up to 3 percent for windows closed. This is primarily because there is very little flying activity after 10 p.m. local time on a regular basis at Montgomery Regional Airport and largely driven by civil aircraft operations.

Table AL3.1-9. Probability of Awakening – Current

POI Number	*Named POI*	*Windows Open[1]*	*Windows Closed[2]*
1	Hope Hull United Methodist Church	<1%	<1%
2	Macedonia Ministries	<1%	<1%
3	Masjid Qasim Bilal El-Amin	<1%	<1%
4	New Life Church of God	<1%	<1%
5	Southlawn Baptist Church	<1%	<1%
6	Gateway Park/Golf Course	<1%	<1%
7	Twin Gates Park	<1%	<1%
8	Housing Area 1	<1%	<1%
9	Housing Area 2 Danville Street	<1%	<1%
10	Mobile Home Park 1330 Lamar Road, Hope Hull	4%	3%
11	Catoma Elementary School	3%	2%
12	Hooper Academy	<1%	<1%
13	Martin Luther King Elementary School	<1%	<1%
14	New Generation Preschool	<1%	<1%
15	Peewee Angel's Christian Academy	<1%	<1%
16	Southlawn Elementary	4%	3%
17	Southlawn Middle School	4%	3%

Notes: [1]Assumes 15 dB attenuation.
[2]Assumes 25 dB attenuation.
Legend: POI = Point of Interest.
Source: 187 FW 2019a.

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 AL3.1-5), 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 Montgomery 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, the other noise sources were not considered under affected environment nor are they analyzed under environmental consequences.

AL3.1.1.2 Environmental Consequences

Proposed Action

The Proposed Action Alternative involves the beddown of 18 F-35A aircraft at the 187 FW installation and drawdown of 18 F-16s. Proposed annual F-35A flight operations total 7,094, about 68 more operations when compared to the No Action Alternative. The F-35A aircraft would account for approximately 17 percent of the operations Montgomery Regional Airport. Other than an occasional arrival, F-35As would not be expected to operate after 10 p.m. or before 7 a.m. The civil operations were determined to continue relatively unchanged through the Proposed Action implementation. Note that no F-35A high power engine run-ups or major maintenance would be performed at Montgomery Regional Airport. NGB estimates the F-35A would use afterburner on up to 5 percent of departures and military power on the remainder. 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 AL3.1-3 shows the DNL contours for the Proposed Action Alternative at Montgomery 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 1.5 miles to the east, 1 mile to the west, and less than 1 mile to the north and south. The 70 dB contour extends outside of the airport boundary by about 0.5 mile to the east and the west and less than 0.5 mile to the north and south. To the east, the 75 dB contour extends outside of the airport boundary by approximately 0.25 mile and in small pockets to the north. Figure AL3.1-4 compares the No Action and Proposed Action Alternatives' DNL contours. The growth in the DNL contours to the east and west would be due to the F-35A being approximately 5 dB louder than the F-16 on departure in these areas.

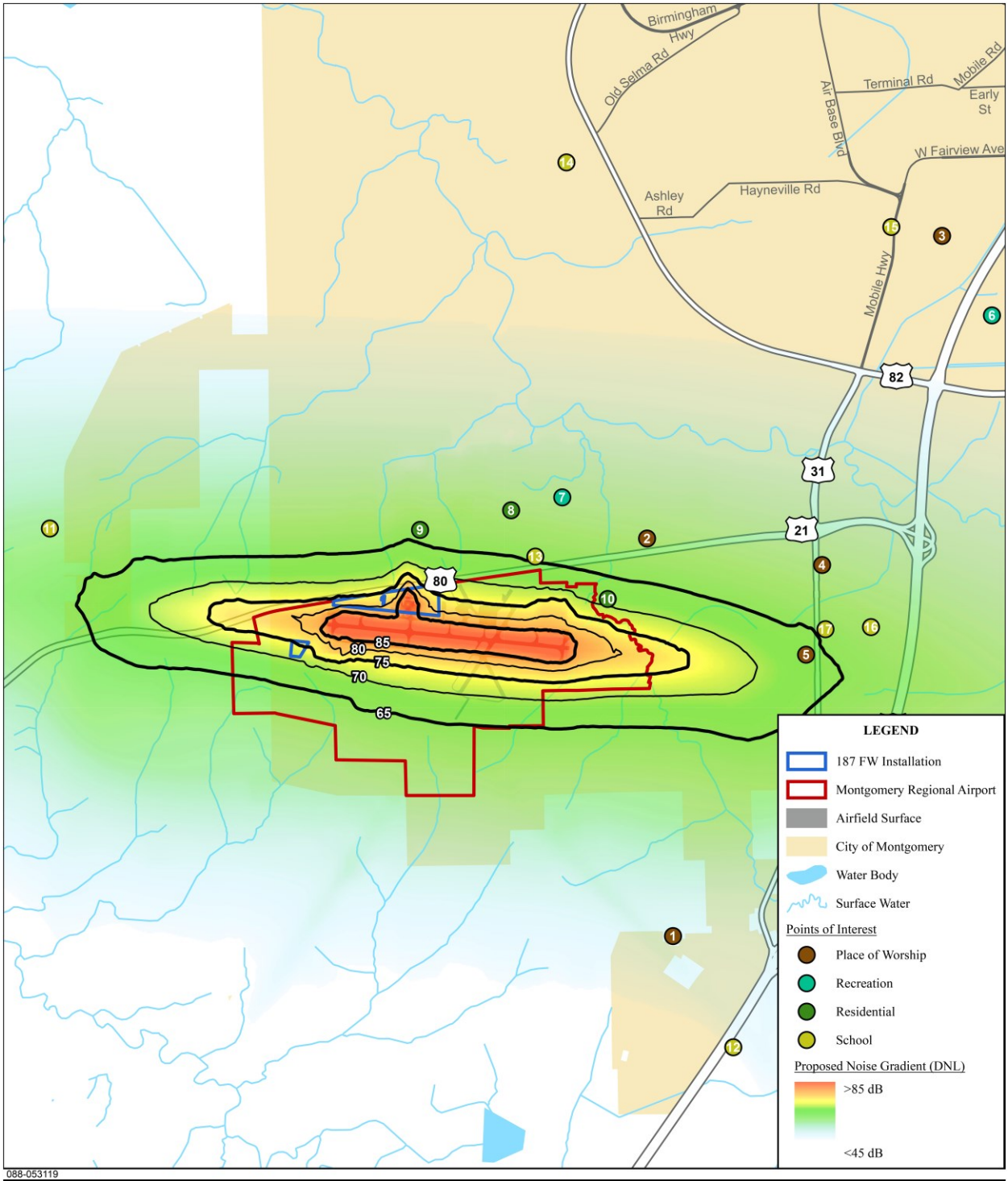

Figure AL3.1-3.
Proposed DNL Noise Contours at
Montgomery Regional Airport

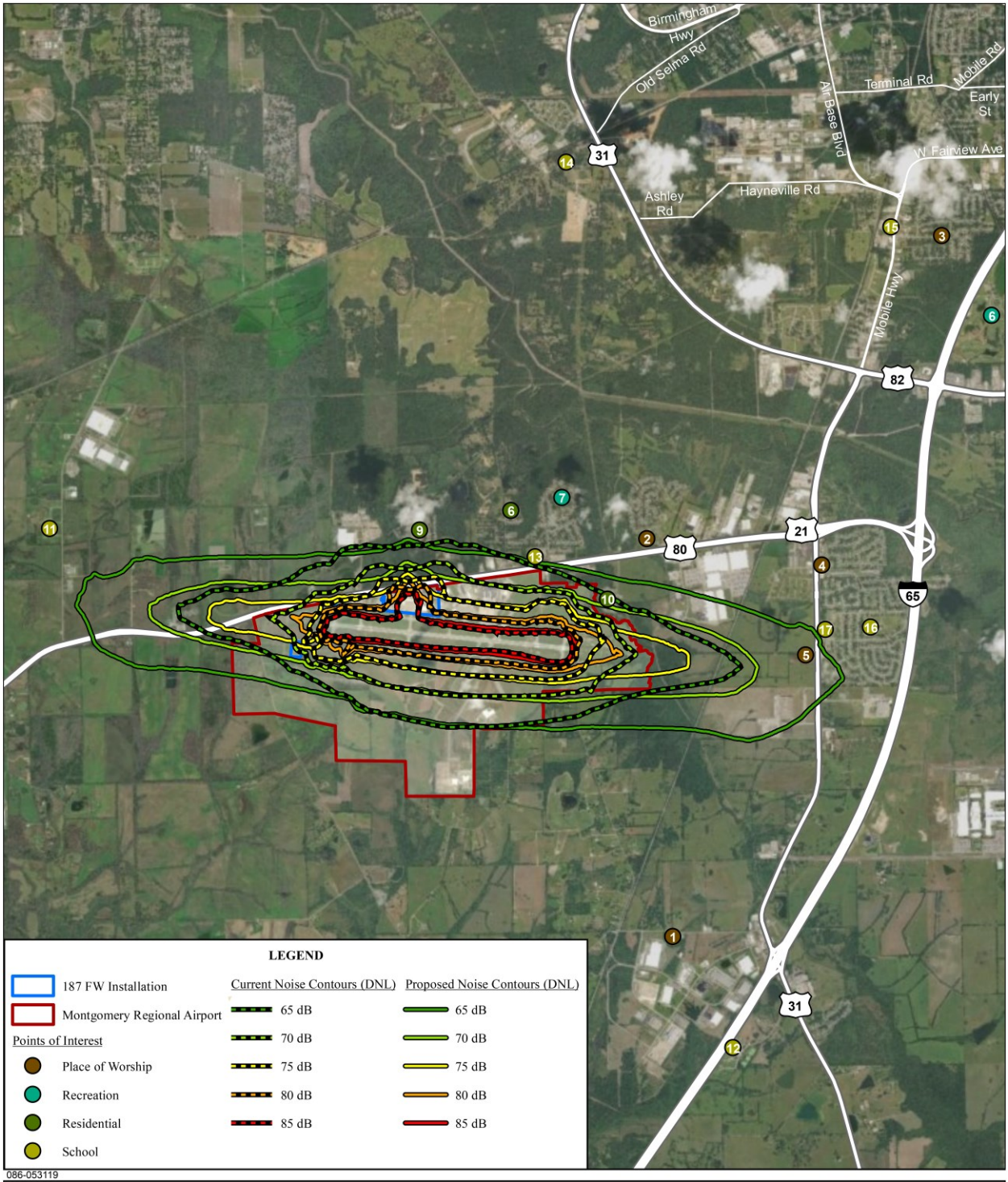

Figure AL3.1-4.
Current and Proposed DNL Noise Contours at Montgomery Regional Airport

Table AL3.1-10 lists the Proposed Action Alternative computed DNL for each of the 17 POIs. This table also shows the change in DNL when compared to the affected environment, outlined in Section AL3.0, above. Under the Proposed Action Alternative, DNL values at the POIs would range from 40 to 69 dB. Of the 17 POI locations, Southlawn Baptist Church and the Mobile Home Park area would be exposed to DNL greater than 65 dB. This would be an increase of 4 to 5 dB relative to the affected environment. Eleven of the remaining POIs would experience increases of 1 to 4 dB DNL. Five POIs would experience no change and only Housing Area 1 would experience a decrease of 1 dB DNL due to the Proposed Action. The primary cause for the increases would be due to the F-35A being louder on departures than the current F-16 by up to 5 dB.

Table AL3.1-10. Proposed Action Alternative DNL at POIs

POI Number	*Named POI*	*Proposed Action Alternative DNL (dB)*	*Change from No Action Alternative in DNL (dB)*
1	Hope Hull United Methodist Church	49	0
2	Macedonia Ministries	60	+2
3	Masjid Qasim Bilal El-Amin	40	+3
4	New Life Church of God	58	+4
5	Southlawn Baptist Church	66	+5
6	Gateway Park/Golf Course	42	+3
7	Twin Gates Park Housing Area 2	58	+1
8	Housing Area 1	59	-1
9	Housing Area 2 Danville Street	63	0
10	Mobile Home Park 1330 Lamar Road, Hope Hull	69	+4
11	Catoma Elementary School	60	+3
12	Hooper Academy	49	0
13	Martin Luther King Elementary School	64	0
14	New Generation Preschool	49	0
15	Peewee Angel's Christian Academy	40	+2
16	Southlawn Elementary	61	+4
17	Southlawn Middle School	64	+5

Legend: dB = decibel; DNL = Day-Night Average Sound Level; POI =Point of Interest.
Source: 187 FW 2019a.

Table AL3.1-11 presents the estimated on- and 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 1,219 more acres, 113 more people, and 46 more households experiencing DNL equal to or greater than 65 dB DNL to the east and west of the airport boundaries. Under the Proposed Action Alternative, 1,127 more acres would experience noise levels between 65 and 75 dB DNL and 92 additional acres would experience DNL between 75 and 85 dB. The increased acreage is primarily over agricultural land with low population density. However, this would be considered a significant impact to those persons affected.

Table AL3.1-11. Proposed Action Alternative Off-Airport Noise Exposure

DNL (dB)	*Proposed Action Alternative Acreage*	*Proposed Action Alternative Estimated Population*	*Proposed Action Alternative Households*	*Change from Current Acreage*	*Change from Current Estimated Population*	*Change from Current Households*
65–70	1,329	224	92	+724	+78	+30
70–75	481	35	16	+403	+35	+16
75–80	113	0	0	+92	0	0
80–85	2	0	0	0	0	0
85+	0	0	0	0	0	0
Total	1,925	259	108	+1,219	+113	+46

Legend: dB = decibel; DNL = Day-Night Average Sound Level
Source: 187 FW 2019a.

Supplemental Metrics

Consistent with the affected environment supplemental analysis, single-event SELs are provided at each POI for the greatest noise events for each POI. Table AL3.1-12 shows the aircraft and profile producing the loudest events at the airport along with the resulting SEL and weekly events during the environmental day and night. Also included are the DNL values at the POIs, which demonstrates that some "loud" events occur in areas of a lower DNL. Under the Proposed Action Alternative, the greatest SELs at the representative POIs would most often be generated by based F-35A and transient F-22 or F-15 aircraft. The F-35A would generate SELs at POIs under the departure flight paths 3 to 6 dB greater than the F-16. POIs located under the closed pattern flight paths would experience SELs due to the F-35A up to 3 dB less than the F-16 because the F-35A would reach pattern altitude and reduce power sooner than the existing F-16 aircraft it would replace. Because the F-22 and F-15 transient aircraft would remain top contributors at 15 POIs, the maximum SEL would not change substantially, but greater numbers of events within 3 dB of the loudest events would occur.

Table AL3.1-12. Loudest Events at Each POI, Calculated in SEL – Proposed Action Alternative

Map ID	*Named Point of Interest*	*Current DNL*	*Current SEL (dBA)*	*Current Average Events Per Week (Daytime)*	*Current Average Events Per Week (Night)*	*Proposed Action DNL*	*Proposed Action SEL (dBA)*	*Proposed Action Average Events Per Week (Daytime)*	*Proposed Action Average Events Per Week (Night)*
1	Hope Hull United Methodist Church	49	95	0.5	0.0	49	92	0.6	0.0
2	Macedonia Ministries	58	104	0.0	0.0	60	103	0.6	0.0
3	Masjid Qasim Bilal El-Amin	37	83	0.6	0.0	40	83	0.6	0.0
4	New Life Church of God	54	101	0.2	0.0	58	103	0.0	0.0
5	Southlawn Baptist Church	61	111	0.2	0.0	66	111	0.2	0.0
6	Gateway Park/Golf Course	39	85	0.6	0.0	42	85	0.6	0.0
7	Twin Gates Park	57	107	0.0	0.0	58	101	0.6	0.0
8	Housing Area 1	60	106	0.0	0.0	59	103	0.6	0.0
9	Housing Area 2 Danville Street	63	106	0.4	0.0	63	106	0.4	0.0
10	Mobile Home Park 1330 Lamar Road, Hope Hull	65	111	0.6	0.0	69	111	0.6	0.0
11	Catoma Elementary School	57	105	0.1	0.0	60	105	0.1	0.0
12	Hooper Academy	49	103	0.5	0.0	49	91	2.4	0.0
13	Martin Luther King Elementary School	64	108	0.6	0.0	64	108	0.6	0.0
14	New Generation Preschool	49	81	0.6	0.0	49	81	0.6	0.0
15	Peewee Angel's Christian Academy	38	83	0.6	0.0	40	83	0.6	0.0
16	Southlawn Elementary	57	106	0.2	0.0	61	106	0.2	0.0
17	Southlawn Middle School	59	108	0.2	0.0	64	108	0.2	0.0

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

Classroom Learning Interference. As noted under affected environment, seven of the 17 POIs identified near Montgomery Regional Airport are schools and one is a childcare center. Table AL3.1-13 lists these points along with the calculation of the L_{eq}, number of speech interfering events per hour, and the time above 50 dBA. Under the Proposed Action Alternative, the L_{eq} at the Martin Luther King Elementary School (POI #13) would remain at 66 dB DNL. The largest increase of 5 dB would occur at Southlawn Middle school, which would be exposed to an L_{eq} of 66. The L_{eq} at both Catoma and Southlawn Elementary would increase by 4 dB to 62 and 63 dB, respectively.

Catoma Elementary, New Generation Preschool, and Southlawn Middle School would be exposed to an average of two speech interfering events per school day hour with windows open. The other four POIs would not exceed one interfering event per hour. The maximum time above 50 dBA of 5 minutes would occur at Catoma Elementary.

Table AL3.1-13. Classroom Speech Interference – Proposed Action Alternative

POI Number	*Named POI*	*Outdoor $L_{eq(8)}$ (dBA) Current*	*Outdoor $L_{eq(8)}$ (dBA) Proposed*	*Outdoor $L_{eq(8)}$ (dBA) Change Relative to Current*	*Number of Events Interrupting Speech per School Day (hour)[1]*	*Time above 50 dBA per 8-hour School Day (minutes)[1]*
11	Catoma Elementary School	58	62	+4	2	5
12	Hooper Academy	50	50	0	1	3
13	Martin Luther King Elementary School	66	66	0	1	3
14	New Generation Preschool	50	50	0	2	1
15	Peewee Angel's Christian Academy	40	42	+2	0	2
16	Southlawn Elementary	59	63	+4	1	4
19	Southlawn Middle School	61	66	+5	2	4

Note: [1]Assumes even distribution of daytime operations throughout the day.
Totals may be off due to rounding.
Legend: dBA = A-weighted decibel; L_{eq} = Equivalent Noise Level; POI = Point of Interest.
Source: 187 FW 2019a.

Residential Speech Interference. Residential speech interference examines the potential for aircraft events to interfere with speech, which exceed 50 dB indoors. Table AL3.1-14 presents the number of indoor speech interfering events per hour for both windows open and closed conditions. In the windows open condition, the number of interfering events per hour would increase by one at Macedonia Ministries. There would be no change to all POIs for the windows closed condition.

Table AL3.1-14. Residential Speech Interference Events – Proposed Action Alternative

POI Number	*Named POI*	*Windows Open[1, 2] Proposed Action*	*Windows Closed[1, 3] Proposed Action*	*Windows Open[1, 2] Change*	*Windows Closed[1, 3] Change*
1	Hope Hull United Methodist Church	1	1	0	0
2	Macedonia Ministries	2	1	+1	0
3	Masjid Qasim Bilal El-Amin	0	0	0	0
4	New Life Church of God	1	1	0	0
5	Southlawn Baptist Church	3	1	0	0
6	Gateway Park/Golf Course	0	0	0	0
7	Twin Gates Park	1	1	0	0
8	Housing Area 1	1	1	0	0
9	Housing Area 2 Danville Street	1	1	0	0
10	Mobile Home Park 1330 Lamar Road, Hope Hull	2	1	0	0
11	Catoma Elementary School	2	1	0	0
12	Hooper Academy	1	0	0	0
13	Martin Luther King Elementary School	1	1	0	0
14	New Generation Preschool	2	0	0	0
15	Peewee Angel's Christian Academy	0	0	0	0
16	Southlawn Elementary	1	1	0	0
17	Southlawn Middle School	2	1	0	0

Notes: [1]Assumes even distribution of daytime operations throughout the day.
[2]Assumes 15 dB attenuation.
[3]Assumes 25 dB attenuation.
Legend: POI = Point of Interest.
Sources: 187 FW 2019a.

Sleep Disturbance. Table AL3.1-15 shows the probability of awakening for each POI 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 locations serve as good representations of the noise environment in the immediate vicinity, which often include residences. There would be no change in the probability of awakening for all POIs under the Proposed Action. The low probability of awakening of less than 1 percent is primarily due to the limited flying activity after 10 p.m. local time on at Montgomery Regional Airport. The probability of awakening would continue to be dominated by civil aircraft operations.

Table AL3.1-15. Probability of Awakening – Proposed Action Alternative

POI Number	*Named POI*	*Windows Open[1]*	*Windows Closed[2]*
1	Hope Hull United Methodist Church	<1%	<1%
2	Macedonia Ministries	<1%	<1%
3	Masjid Qasim Bilal El-Amin	<1%	<1%
4	New Life Church of God	<1%	<1%
5	Southlawn Baptist Church	<1%	<1%
6	Gateway Park/Golf Course	<1%	<1%
7	Twin Gates Park	<1%	<1%
8	Housing Area 1	<1%	<1%
9	Housing Area 2 Danville Street	<1%	<1%
10	Mobile Home Park 1330 Lamar Road, Hope Hull	4%	3%
11	Catoma Elementary School	3%	2%
12	Hooper Academy	<1%	<1%
13	Martin Luther King Elementary School	<1%	<1%
14	New Generation Preschool	<1%	<1%
15	Peewee Angel's Christian Academy	<1%	<1%
16	Southlawn Elementary	4%	3%
17	Southlawn Middle School	4%	3%

Notes: [1]Assumes 15 dB attenuation.
[2]Assumes 25 dB attenuation.
Legend: POI = Point of Interest.
Source: 187 FW 2019a.

Potential for Hearing Loss. Under the Proposed Action Alternative, no residential areas on or adjacent to Montgomery Regional 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 90 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 187 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 AL3.1.1.1 for noise exposure and supplemental noise metrics. Impacts under the No Action Alternative would not be significant.

AL3.1.2 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 associated airspace. 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 required or a surrogate animal can be used for the assessment of impacts. See Section AL3.11, *Biological Resources,* for a discussion of noise impacts to wildlife.

AL3.1.2.1 Affected Environment

The 187 FW uses the Birmingham, Camden Ridge, and Pinehill MOAs with overlying ATCAA, the Grove Hill Bridge ATCAA that ties the Birmingham and Pinehill/Camden Ridge MOAs together, as well as R-4401 in combination with the Desoto and Bullseye MOAs for training during each mission (see Figure AL2.2-1). For this analysis, the affected environment for the SUA is based on historical usage data for Fiscal Years (FY) 2015, 2016, and 2017. As shown in Figure

AL3.1-3, supersonic flight is authorized in the Grove Hill, Birmingham, Camden Ridge and Pine Hill East and West ATCAAs.

Under the affected environment, there are up to 3,076 sorties per year in the airspace attributable to the F-16s of the 187 FW. In addition to sorties generated by the 187 FW, the majority of the current operations in the SUA are attributable to the T-45s. Flight profile data for the F-16s were provided by representatives from the 187 FW.

Noise Exposure

Subsonic. Table AL3.1-16 shows the L_{dnmr} levels, rounded to whole decibels, for the affected environment within each of the respective MOAs. As can be seen, operations in all of the MOAs result in an L_{dnmr} of 35 dB or less.

Table AL3.1-16. L_{dnmr} Beneath SUA – Current

Description	*L_{dnmr} (dB)*
Birmingham MOA/Birmingham 2 MOA/ATCAA	35
Pinehill E/W MOA/Grove Hill Grove Bridge/N/W/Shelf ATCAA	35
Camden Ridge MOA	35
Desoto 1/2 MOA	35
Bullseye 1/2/3 MOA	35
R-4401 A/B/C/D/E	35
Montgomery West ATCAA	35

Legend: dB = decibel; L_{dnmr} = Onset-Rate Adjusted Day-Night Average Sound Level; MOA = Military Operations Area; R- = Restricted Area.
Source*:* 187 FW 2019a

Supersonic. The 187 FW conducts supersonic operations above 30,000 feet MSL in the Birmingham, Birmingham 2, Pinehill (East/West), Camden Ridge, and Grove Hill ATCAAs. The affected environment for supersonic operations includes 3,029 annual events. No supersonic events occur during environmental nighttime (10 p.m. to 7 a.m.). Note that like subsonic operations, supersonic events in the ATCAAs are counted each time aircraft use a different airspace unit, so one aircraft sortie typically generates more than one supersonic event. Supersonic flight operations data were provided by representatives from the 187 FW. Table AL3.1-17 shows the CDNL highest levels calculated for the affected environment at ground level beneath each of the respective ATCAAs and Table AL3.1-17 shows the CDNL for two towns that lie beneath the ATCAAs. Noise levels for both towns are at CDNL of 38 dB. Normal land use restriction recommendations start when CDNL is at 62 and greater C-weighted decibel (dBC); therefore, a level at 38 dBC is well below the recommended land use restrictions level.

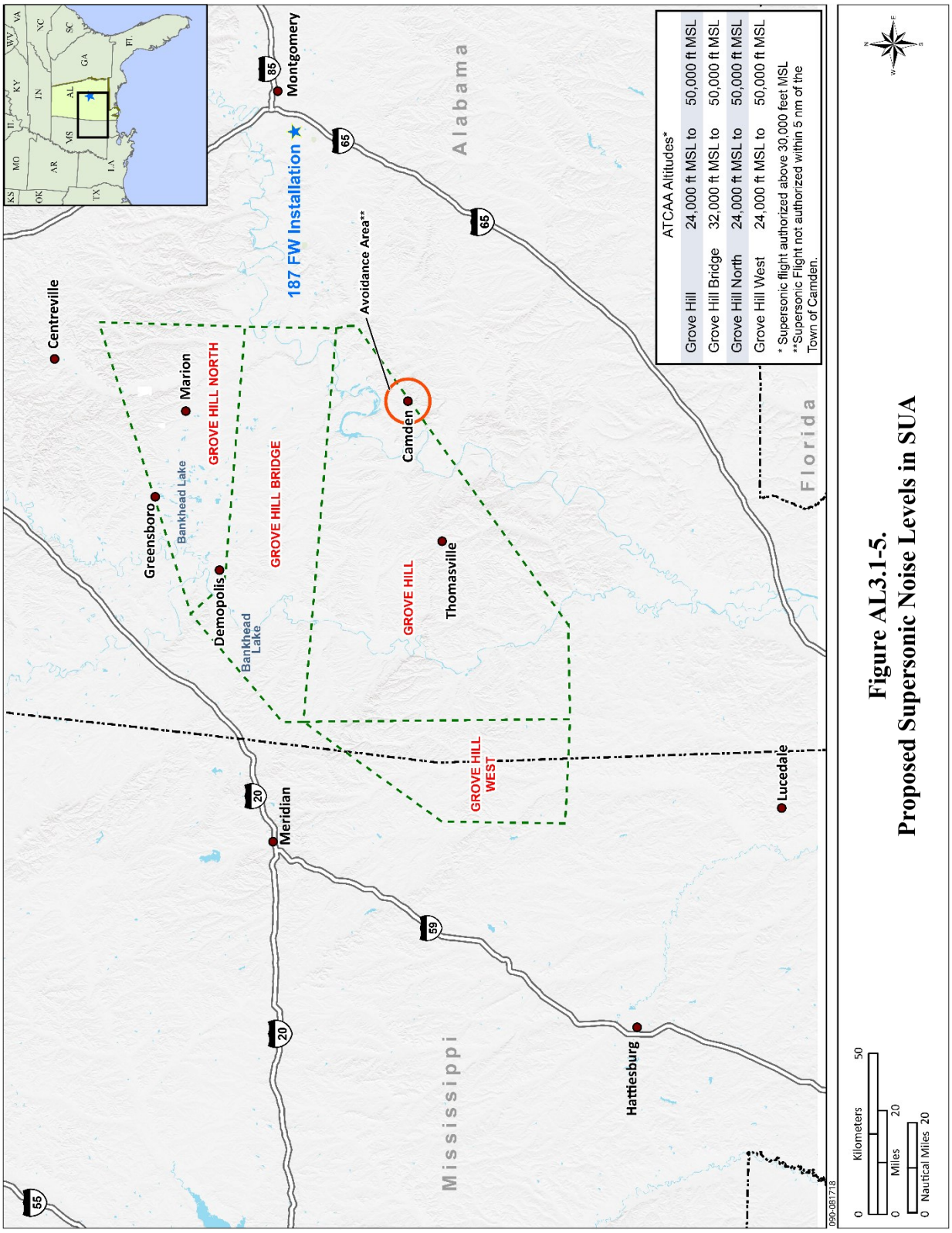

Figure AL3.1-5.
Proposed Supersonic Noise Levels in SUA

Table AL3.1-17. CDNL Beneath ATCAAs – Affected Environment

Description	*CDNL (dBC)*
Grove Hill ATCAA	38
Grove Hill Bridge ATCAA	38

Legend: ATCAA = Air Traffic Control Assigned Airspace; CDNL = C-weighted Day-Night Average Sound Level; dBC = C-weighted decibel.
Source: 187 FW 2019a.

AL3.1.2.2 Environmental Consequences

Proposed Action

This section presents noise conditions in the primary airspace and ranges that would be used by F-35A aircraft under the 187 FW Alternative. Under the Proposed Action Alternative, there would be essentially no change in the number of sorties in the airspace. However, there would be an approximately 17 percent decrease in the time spent in the airspace by 187 FW aircraft. All other aircraft operations would be unchanged from those described under the No Action Alternative. 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 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 AL3.1-18 shows the L_{dnmr} levels under the Proposed Action Alternative conditions and rate of change within each of the respective MOAs/ATCAAs. As can be seen, the greatest change in L_{dnmr} is associated with the Birmingham and Camden Ridge MOAs (up 15 A-weighted decibels [dBA] L_{dnmr}) and R-4401 (up 14 dBA L_{dnmr}). This indicates that a change in noise exposure would be noticeable even though the overall L_{dnmr} remains relatively low. The highest noise exposure, L_{dnmr} 50 dBA, would occur in the Birmingham and Camden Ridge MOAs. All other SUA would have an L_{dnmr} less than 50 dB.

The noise levels computed in Table AL3.1-18 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 all areas listed in Table AL3.1-18 would experience relatively large increases in L_{dnmr} due to aircraft noise, the proposed level likely would not exceed current ambient levels when other noise sources are accounted for.

Table AL3.1-18. Comparison of the Proposed Action Alternative L_{dnmr} Beneath SUA to the Affected Environment

Airspace Name	*Current L_{dnmr} (dBA)*	*Proposed Action Alternative L_{dnmr} (dBA)*	*Change L_{dnmr} (dBA)*
Birmingham MOA/Birmingham 2 MOA/ATCAA	35	50	+15
Pinehill E/W MOA/Grove Hill Grove Bridge/N/W/Shelf	35	40	+5
Camden Ridge MOA	35	50	+15
Desoto 1/2 MOA	35	46	+11
Bullseye 1/2/3 MOA	35	46	+11
R-4401 A/B/C/D/E	35	49	+14
Montgomery West ATCAA	35	35	0

Legend: dBA = A-weighted decibel; L_{dnmr} = Onset-Rate Adjusted Day-Night Average Sound Level; MOA = Military Operations Area; R- = Restricted Area.
Source: 187 FW 2019a.

Supersonic. The Proposed Action Alternative supersonic operations would replace the No Action Alternative of 128 annual events by the F-16s, with 584 events attributable to the proposed F-35A. There are no proposed F-35A supersonic operations during environmental nighttime hours. Table AL3.1-19 presents the highest CDNL predicted within each airspace unit under the No Action and Proposed Action Alternatives and indicates the change in CDNL levels. The highest CDNL under the Proposed Action Alternative would be 44 dBC, an increase in CDNL of 6 dB. The F-35A would continue to follow existing procedures, which includes avoiding supersonic flight within 5 NM of Camden.

Table AL3.1-19. Comparison of the Proposed Action Alternative L_{dnmr} Beneath SUA to the Affected Environment

Airspace Name	*Current CDNL (dBC)*	*Proposed Action Alternative CDNL (dBC)*	*Change CDNL (dBC)*
Grove Hill ATCAA	38	44	+6
Grove Hill Bridge ATCAA	38	44	+6

Legend: ATCAA = Air Traffic Control Assigned Airspace; CDNL = C-weighted Day-Night Average Sound Level; dBC = C-weighted decibel.
Source: 187 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. Therefore, refer to Section AL3.1.2.1 for noise exposure.

AL3.1.3 Summary of Impacts

Under the Proposed Action at the 187 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 1,219 acres. There would be an estimated increase of 46 households and 113 more people residing within the 65 and greater dB DNL contours. Predicted changes in the DNL at POIs would range from -1 to +5 dB with levels at two representative POIs to exceed 65 dB. Representative schools located within the Region of Influence (ROI) would experience increase in L_{eq} of up to 5 dB. However, the number of hourly speech interfering events would not change at any location. The predicted increase in L_{dnmr} in SUA would range from 5 to 15 dB with the highest L_{dnmr} remaining at or below 50 dB. Increases in the CDNL resulting from the addition of supersonic activity would be 6 dB with levels remaining at 44 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.

AL3.2 AIRSPACE

AL3.2.1 Installation

AL3.2.1.1 Affected Environment

Montgomery Regional Airport is a joint-use airport located approximately 6 miles southwest of downtown Montgomery, Alabama on 1,907 acres of land. The airport is publicly owned and operated by the Montgomery Airport Authority with the FAA providing ATC services for pilots operating in the local airspace. The 187 FW is located on approximately 71 acres of land within the boundaries of the Montgomery Regional Airport (see Figure AL1.0-1). The airport has two runways, Runway 10/28 and Runway 03/21. The majority of civil and commercial air traffic and all F-16C depart and arrive on Runway 10/28 with an east/west traffic flow; there is limited use of Runway 03/21. The 30 NM terminal radar service area includes two publicly owned airports, Prattville Gouby and Wetumpk, as well as one private airport, Emerald Mountain. In addition, one military airfield, Maxwell Air Force Base (AFB), is located approximately 10 NM to the north of Montgomery Airport.

The 187 FW currently flies and maintains 18 F-16C aircraft in support of its mission for the ALANG. Operations into and out of Montgomery Regional Airport use the Class E airspace immediately surrounding the airfield, and within the Maxwell AFB 30 NM terminal radar service area. In 2016, there were 42,658 operations conducted at Montgomery Regional Airport, including 16,272 military operations and 26,386 civilian operations. There are 7,026 F-16C aircraft operations performed by the 187 FW.

AL3.2.1.2 Environmental Consequences

Proposed Action

The one-for-one replacement of F-16 military aircraft assigned to the 187 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 1 percent increase in military airfield operations and less than a 1 percent increase in total airfield operations compared to the affected environment (a predicted change of approximately one airfield operation every 5 days) (Table AL3.2-1). This minor increase in airfield operations would have no appreciable effect on the local air traffic environment. No changes to the Montgomery 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 AL3.2-1. Comparison of Current and Proposed Annual Airfield Operations

	Current	*Proposed Airfield Operations*
Based F-16C	7,026	0
Based ARNG UH-60	6,560	6,560
Based ARNG RC-26B	204	204
Military Transient	2,482	2,482
Proposed F-35A	0	7,094
Civil/Commercial	26,386	26,386
Total	**42,658**	**42,726**
Percent Change from Current	**-**	**+<1%**

Note: [1]Transients include KC-135, T-6, T-38, F-35, F-22, F-15, C-17, C-130, C-12 and UH-60.
Legend: ARNG = Army National Guard.
Source: 187 FW 2019a.

No Action Alternative

Under the No Action Alternative, the F-16s would continue to fly from Montgomery Regional Airport. No changes to the frequency of operations, or use of arrival or departure routes, would occur. Operations would remain as described in Section AL3.2.1.1. There would be no change in use of local airspace; therefore, no significant impacts would occur.

AL3.2.2 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.

AL3.2.2.1 Affected Environment

The 187 FW consistently uses several airspace units that consist of MOAs, Restricted Areas, and ATCAAs (see Table AL2.2-1 and Figure AL2.2-1) with occasional use of other training areas and the Warning Areas located over the Gulf of Mexico. The 187 FW F-16 aircraft currently conduct up to 3,076 annual sorties (or 256 monthly sorties) lasting between 30-78 minutes in the airspace. The scheduling agency for the Camden Ridge and Birmingham 1 and 2 MOAs is the 187 FW; the airspace controlling agency is the FAA, Atlanta Air Route Traffic Control Center (ARTCC). The MOAs are scheduled for use from 7 a.m. to 11 p.m. daily. The scheduling agency of the Pine Hill East and West MOAs is the Training Air Wing One, from Meridian Naval Air Station; the controlling agency is the Atlanta ARTCC. The MOAs are scheduled for use from 7 a.m. to 11 p.m. Monday through Friday, and from 8 a.m. to 3 p.m. on Saturday with other times by Notice to Airmen (NOTAM). The scheduling agency for the Bullseye 1/2/3 and Desoto 1/2 MOAs is the Gulfport Mississippi ANG; the controlling agency is the Houston ARTCC. The Bullseye 1/2/3 MOAs are scheduled for use from 8:30 a.m. to 5:30 p.m. Monday through Friday, with use permitted at other times by NOTAM. Shelby Range and R-4401 A/B/C/D/E times of use require a request to Camp Shelby, Mississippi, and must be scheduled by NOTAM at least 4 hours in

advance of use (FAA 2018a). The Houston ARTCC is the controlling agency for the R-4401 complex.

There are six Air Traffic Service Routes within the affected environment that provide for transit through training airspace, Table AL3.2-2 identifies these routes. No Victor (V) or Tango (T) routes transit the Birmingham, Pine Hill, or Camden Ridge MOAs. Two V routes (V-209 and V-56) lie beneath the Montgomery West and Grove Hill Bridge ATCAAs, respectively; however, these routes would not be affected due to their low-altitude structure (altitudes below 18,000 feet MSL) and the high altitude structure of the ATCAAs (18,000 to 50,000 feet MSL). Route V-11 transects the Desoto 2 and Bullseye 2 MOAs and V-70 transects Desoto 2 and Bullseye 3 MOAs. Jet (J-) route J-69 transects the Grove Hill North, Grove Hill Bridge and Grove Hill ATCAAs, J-590 lies above the Desoto and Bullseye MOAs, and J-50 transects R4401D/E. Route Q-24 lies above the Desoto 2 and Bullseye 3 MOAs. All three jet routes have a Minimum Enroute Altitude (MEA) of 22,000 feet MSL. The MEA creates a minimum 4,000-foot buffer above each MOA, and a minimum 2,000-foot buffer below each ATCAA, thereby allowing air traffic controllers use of these routes when the MOAs and/or ATCAAs are active. J-420 runs through the Grove Hill Bridge ATCAA; although there is no MEA associated with this jet route, the ARTCC dynamically adjusts the 32,000-foot MSL floor associated with the Grove Hill Bridge ATCAA when needed to accommodate civilian air traffic. Commercial aircraft activity in Alabama and Mississippi has remained relatively stable over the past 10 years with air traffic at local airports fluctuating up and down from year to year (FAA 2018b).

Table AL3.2-2. Air Traffic Service Routes in the Vicinity of the Training Airspace

Route Name	*MEA[1]*	*Associated Airspace*
V-11	None	Desoto 2/Bullseye 2
V-70	None	Desoto 2/Bullseye 3 MOA
J-69	22,000 MSL	Birmingham/Pine Hill/Camden Ridge MOAs/Grove Hill ATCAA
J-590	22,000 MSL	DeSoto/Bullseye MOAs
J-50	22,000 MSL	R-4401 D/E
Q-24	None	Desoto 2/Bullseye MOAs
J4-20	None	Grove Hill Bridge ATCAA

Note: [1]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; R- = Restricted Area

As can be seen in Table AL3.2-3, there are three public airports located beneath the Birmingham MOA complex: Bibb County, Greensboro, and Vaiden, as well as a portion of Demopolis Regional Airport's Class D airspace. There are no private airports. The MOA excludes airspace from the surface to, but not including, 5,000 feet MSL in the Bibb County Airport's Class D airspace and from the surface to, but not including, 4,000 feet MSL in the Greensboro and Vaiden Airport Class D airspace. One public airport, Richton-Perry County Airport, lies beneath the

Desoto 1 and Bullseye 1 MOAs; there are no other public or private airports located within the Desoto/Bullseye/R-4401 airspace complex.

Table AL3.2-3. Public and Private Airports in the Vicinity of the Training Airspace

Airport Name	*Airport Ownership*	*Associated MOA*	*Based Aircraft*	*Annual Operations*
Bibb County Airport	Public	Birmingham	7 – Single Engine 1 – Multi-Engine 2 – Jet	1,958
Greensboro Municipal Airport	Public	Birmingham	9 – Single Engine 1 – Multi-Engine 1 – Helicopter	2,088
Vaiden Field Airport	Public	Birmingham	13 – Single Engine	10,200
Butler-Choctaw County Airport	Public	Camden Ridge/ Pine Hill	None Reported	1,920
Camden Municipal Airport	Public	Camden Ridge/ Pine Hill East	5 – Single Engine 1 – Multi-Engine	3,248
Grove Hill Municipal Airport	Public	Camden Ridge	3 – Single Engine 1 – Multi-Engine	2,490
Richton-Perry County Airport	Public	Desoto 1/ Bullseye 1	4 – Single Engine Aircraft	1,036

Legend: MOA = Military Operations Area.
Source: Skyvector 2018.

Three airports, Butler-Choctaw, Camden, and Grove Hill lie beneath the Camden Ridge and Pine Hill MOA Complex. There are no private airports, but a small portion of Jackson and Wilcox Airport's Class D airspace lies within the Camden Ridge MOA. The Pine Hill East MOA excludes airspace from the surface to, but not including, 4,000 feet MSL within the Class D airspace around each airport.

AL3.2.2.2 Environmental Consequences

Proposed Action

Selection of the 187 FW installation for beddown of 18 operational F-35A aircraft would not result in adverse impacts on airspace use and management throughout this 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 and 187 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 the same number of monthly sorties as the affected environment) lasting 30-60 minutes each. Based on this, there would be a decrease of approximately 17 percent of the amount of time spent in the airspace under the Proposed Action when compared to No Action Alternative conditions.

Impacts to civil and commercial aviation traffic in the training airspace used by the 187 FW would be negligible as a result of decreases in F-35 operations and no comments were received during the public scoping period revealing conflicts with civil or commercial aviation. Although the F-35A would operate more frequently at higher altitudes (see Table AL2.2-2) and within the ATCAAs, air traffic on J4-20, J-590, J-50, and Q24 are within Class A airspace (over 18,000 feet MSL) where flight operations would continue to be controlled by either the Atlanta, Houston, or Memphis ARTCCs. The existing procedures defined in a letter of agreement (LOA) between the 187 FW, Atlanta ARTCC, and Memphis ARTCC together with the altitude structure would continue to support use of the Air Traffic Service Routes traversing the training airspace. 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. Other air traffic traveling near these airspace units would not be in conflict with military flight activities. The Proposed Action Alternative represents a continuation of current activities with minimal increases in operations, and no comments were received during the public scoping period revealing conflicts with civil or commercial aviation. Therefore, impacts to airspace use and management would not be significant.

No Action Alternative

Under the No Action Alternative, the F-16s would continue to fly from Montgomery Regional Airport and use the same training airspace as they do today. No changes to the number of operations or frequency of use of training would occur. Operations would remain as described in Section AL3.2.1.1. There would be no change in use of training airspace; therefore, no significant impacts would occur.

AL3.2.3 Summary of Impacts

The one-for-one replacement of F-16C military aircraft with F-35A aircraft assigned to 187 FW would not require changes in local airspace or airfield management. Eventual replacement of F-16C aircraft at the installation with F-35As would result in a 1 percent increase in military operations and less than 1 percent increase in total airfield 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 decrease by approximately 17 percent from the affected environment. No changes to the Montgomery Regional 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 187 FW with the scheduling agencies would continue to ensure safe air traffic operations throughout the region. Therefore, impacts to airspace around the 187 FW installation and the SUA associated with the 187 FW would not be significant as a result of the F-35A beddown.

AL3.3 AIR QUALITY

AL3.3.1 Installation

The following section describes the affected environment and examines the extent to which the beddown of the F-35A at the 187 FW installation would be consistent with federal, state, and local air quality regulations.

AL3.3.1.1 Affected Environment

The affected environment for the air quality analysis is Montgomery County, Alabama, which is part of the Columbus (Georgia)-Phenix City (Alabama) Interstate Air Quality Control Region (AQCR) (40 CFR 81.58). Montgomery 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 AL3.33-1 presents the 2014 emission inventory for Montgomery County, which includes the city of Montgomery as well as Montgomery Regional Airport.

Table AL3.3-1. 2014 Criteria Pollutant Emissions for Montgomery County, Alabama (tons/year)

Location	*VOCs*	*NO_x*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
Montgomery County, AL	34,490	10,020	56,484	1,902	10,204	4,580

Legend: CO = carbon monoxide; NO_x = nitrogen oxides; SO_2 = sulfur dioxide; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; VOC = volatile organic compound.

Source: USEPA 2018a.

In the Montgomery, Alabama region, the summers are long and hot, with high humidity. The winters are short and cold. It is wet and partly cloudy throughout the year. Over the course of the year, the temperature typically varies from 39 degrees Fahrenheit (°F) to 92°F and is rarely below 25°F or above 97°F. The rainiest time of year is in the spring, with an average of 5.3 inches of rainfall in March (Weather Spark 2018).

Airfield operations are performed by the 187 FW, which currently flies 18 F-16C aircraft that are scheduled for replacement with 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 F-16C aircraft include 3,076 landings and take-offs and 874 closed pattern operations. Other sources of air emissions associated with aircraft operations include airfield equipment such as tow tractors, and aircraft engine testing. Table AL3.3-2 presents the annual F-16C emissions for the 187 FW at Montgomery Regional Airport. Emission estimates were developed for 18 F-16C 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 aircraft 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 AL3.3-2. Annual F-16C Emissions Estimates for the 187 FW at Montgomery Regional Airport (tons/year)

Emission Source	*VOCs*	*NO_x*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*	*CO_2e*
F-16C	6.14	48.08	73.51	4.74	8.20	4.87	11,760

Legend: CO = carbon monoxide; CO_2e = carbon dioxide equivalents; NO_x = nitrogen oxides; SO_2 = sulfur dioxide; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; USAF = United States Air Force; VOC = volatile organic compound.

AL3.3.1.2 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 Montgomery 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 208,570 SF (4.8 acres) of new construction footprint, including up to 124,589 SF (2.9 acres) of new impervious surface. 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 187 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 AL3.3-3. The 100-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 AL3.3-3. Annual Construction Emissions Estimates for the 187 FW installation at Montgomery Regional Airport – 2019 (tons/year)

Year	*VOC*	*NO_x*	*CO*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*	*CO_2e*
2019	1.19	5.13	4.57	0.01	4.88	0.25	1,044
Comparative Indicator	250	250	250	250	250	250	N/A
Exceedance (Yes/No)	No	No	No	No	No	No	N/A

Legend: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; N/A = Not Applicable; NO_x = nitrogen oxides; SO_x = sulfur oxides; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; VOC = volatile organic compound.

Based on the ACAM calculations, the emissions associated with the construction necessary for basing the F-35A at the 187 FW installation would not be significant. All of the criteria pollutant emissions are below the comparative indicator values. A Record of Air Analysis (ROAA) has been prepared to document that the impacts will be minimal, 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 F-16C. The primary differences would be that the annual number of landings and take-offs is projected to decrease by 15 and the closed pattern operations are expected to increase by 98, resulting in a slight overall increase in operations (68 additional operations annually). The net change in operational emissions at the 187 FW installation are presented in Table AL3.3-4 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 F-16C and F-35A aircraft, the small increase in annual operations, and the small increase in personnel who would be assigned to the 187 FW installation as a result of basing the F-35A at the installation.

Table AL3.3-4. Annual Airfield Emissions Estimates for 187 FW at Montgomery Regional Airport – 2025 (tons/year)

Emissions Source	*VOC*	*NO_x*	*CO*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*	*CO_2e*
F-35A Operations	6.58	80.95	42.56	18.21	2.57	2.47	26,744
F-16C Operations	6.14	48.08	73.51	4.74	8.20	4.87	11,760
Net Change	0.44	32.88	-30.95	13.47	-5.62	-2.40	14,983
Comparative Indicator	250	250	250	250	250	250	NA
Exceedance (Yes/No)	No	No	No	No	No	No	NA

Legend: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; NO_x = nitrogen oxides; SO_x = sulfur oxides; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = 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. Carbon monoxide (CO) emissions, particulate matter less than or equal to 10 microns in diameter (PM_{10}), and particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$) would decrease. The largest increase is in nitrogen oxides (NO_x), but the increase remains 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 1,044 tons of carbon dioxide equivalent (CO_2e) emissions for 2020. To put these emissions in perspective, 1,044 tons

of GHGs is the equivalent of 291 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 could 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 gas 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 that would result from the basing of the F-35A. The annual airfield CO_2e emissions would increase by approximately 14,983 tons or 127 percent. This is equivalent to adding an additional 2,928 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 187 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.

AL3.3.2 Airspace

AL3.3.2.1 Affected Environment

The affected environment is the airspace units that are used by the 187 FW that consist of MOAs, Restricted Areas, and ATCAAs (see Table AL2.2-1 and Figure AL2.2-1). The F-16Cs currently fly approximately 13 percent of the time below 3,000 feet above ground level (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.

AL3.3.2.2 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 12 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 187 FW installation. The overall impact on air quality as a result of F-35A flight in the airspace would be expected to be slightly 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 airspaces are highly variable, and it is not possible to quantitatively analyze the current or Proposed Action GHG emissions in airspace. Any increases resulting from F-35A flight would be small based on the small number of 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-16 C would continue to operate from the 187 FW installation. Airspace activities would not be notably different from those that occur today and as such, would not be significant.

AL3.3.3 Summary of Impacts

Montgomery County is in attainment for all criteria pollutants and has no designated maintenance areas. Emission for construction and operations would not exceed threshold levels. There would be little change in operations at the airfield, and a decrease in operations below the mixing height in the SUA. Impacts to air quality associated with the proposed beddown of the F-35A at the 187 FW installation would be slightly beneficial, but not significant.

AL3.4 SAFETY

AL3.4.1 Installation

AL3.4.1.1 Affected Environment

Fire/Crash Response

Day-to-day operations and maintenance activities conducted by the 187 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

187 FW provides fire, crash, rescue, and structural fire protection for the installation and its aircraft. The 187 FW has a cooperative response agreement with the local Montgomery Regional Airport fire department for mutual aid in fire protection, first responder and lifesaving services, and hazardous materials incident response. The 187 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 AL3.4-1).

Development restrictions associated with RPZs are intended to preclude incompatible land use activities from being established in these areas (see Section 3.5.1.1 for specific RPZ discussion and Section 3.6.1 for land use compatibilities). The City of Montgomery utilizes the FAA's airport land use compatibility guidelines, and as such, the RPZs have allowed development compatible with airport operations.

Explosive Safety

The 187 FW stores, maintains, and uses a small range of munitions required for performance of their mission. The MSA at the 187 FW installation currently has six facilities: B1804 Admin and Trailer Maintenance facility, B1805 Maintenance and Inspection, B1806 Above Ground Magazine, B1807 and B1808 Earth Covered Magazines, and a Covered Inert Training Munitions Assembly Conveyor Pad/Inert Storage area. Figure AL3.4-2 shows the quantity-distance (QD) arcs associated with these facilities.

Anti-terrorism/Force Protection

Many of the military facilities at the 187 FW installation were constructed before Anti-terrorism/Force Protection (AT/FP) considerations became a critical concern. Thus, , many facilities currently do not comply with all current AT/FP standards. However, as new construction occurs and as facilities are modified, the 187 FW would incorporate these standards to the maximum extent practicable.

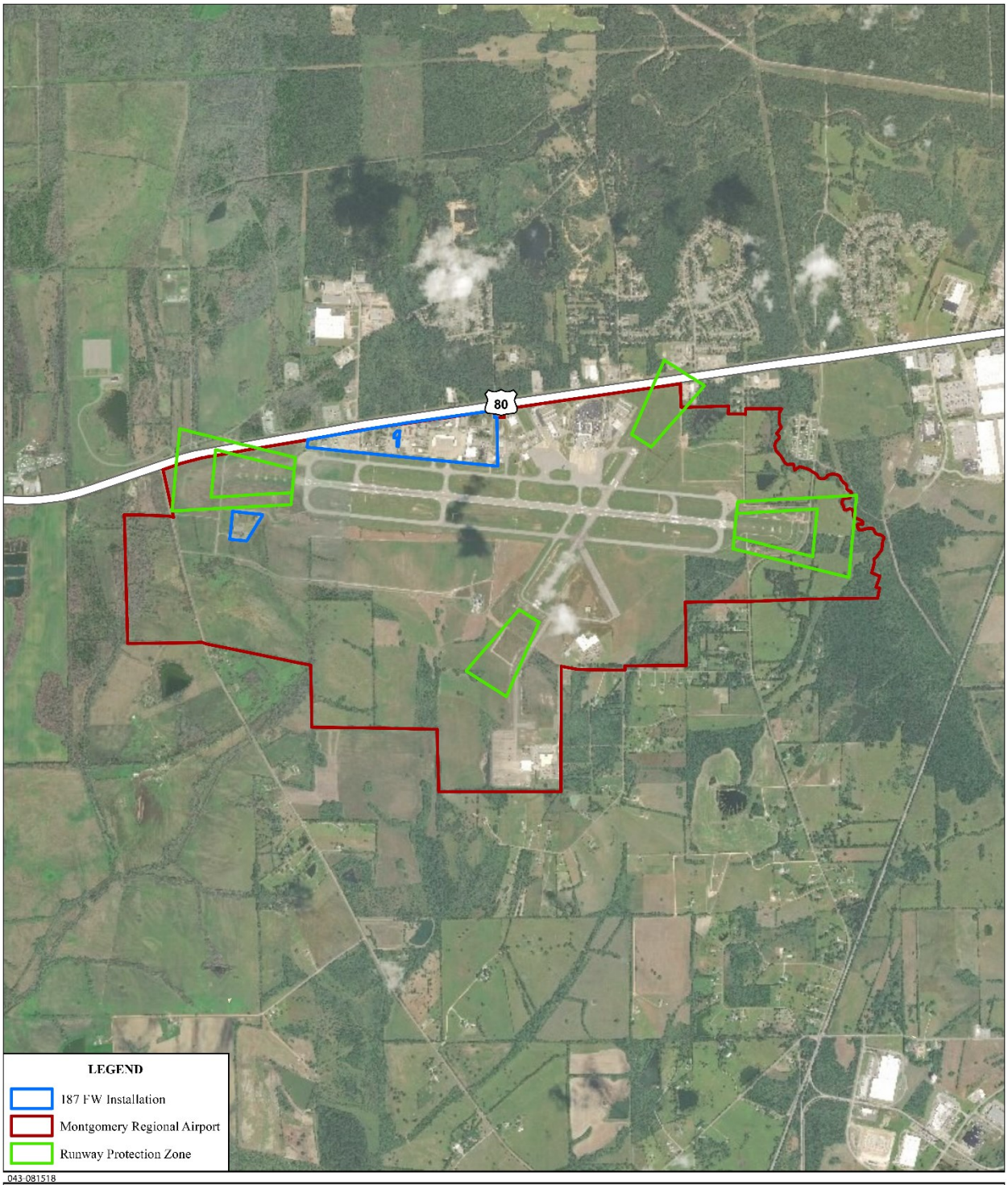

Figure AL3.4-1.
Existing Runway Protection Zones at
Montgomery Regional Airport

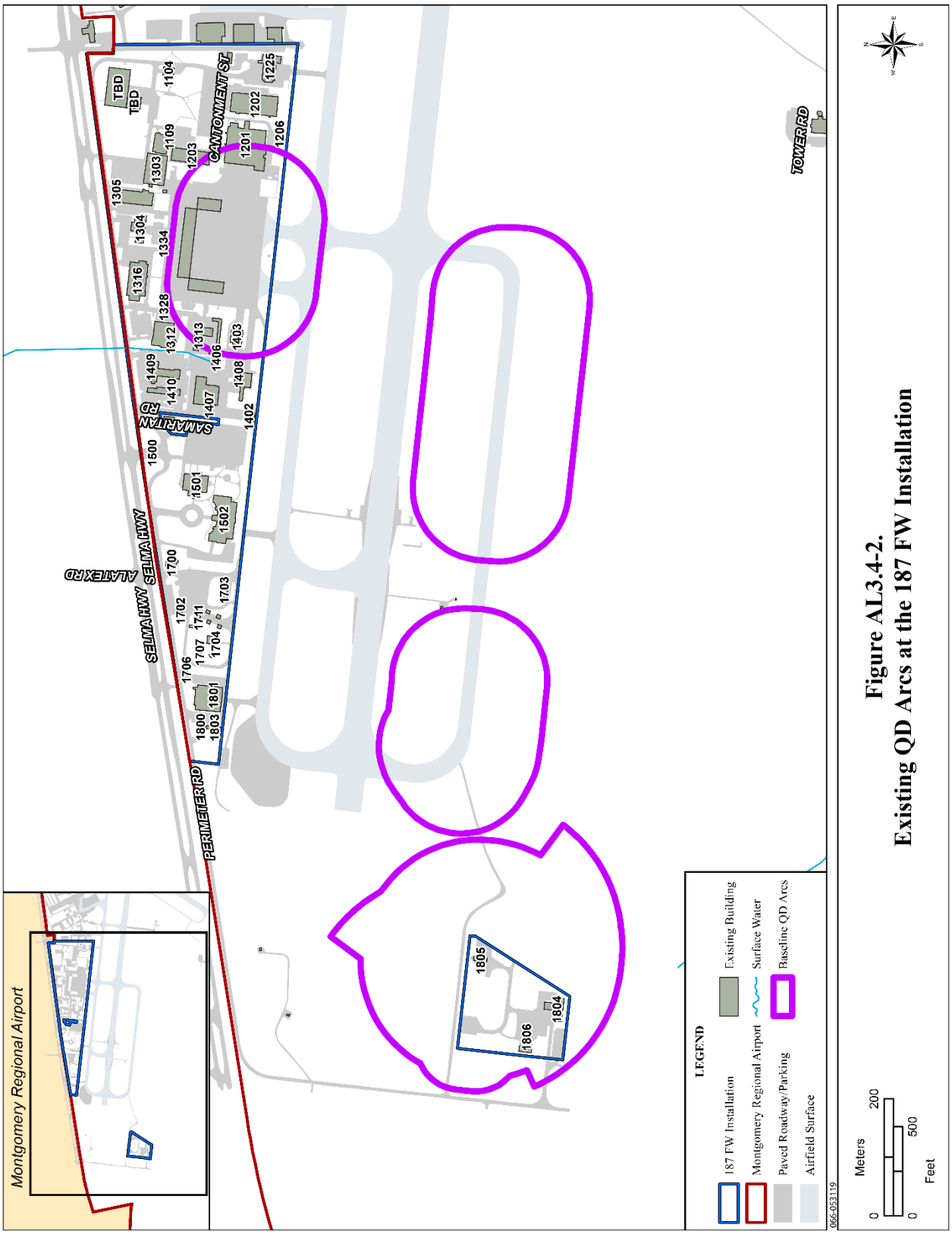

Figure AL3.4-2.
Existing QD Arcs at the 187 FW Installation

AL3.4.1.2 Environmental Consequences

Proposed Action

Existing facilities at the 187 FW installation for fire response and crash recovery meet F-35A beddown requirements (ANG n.d.).

Providing new and renovated facilities for the 187 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 187 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 187 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 AL3.4-3). 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.

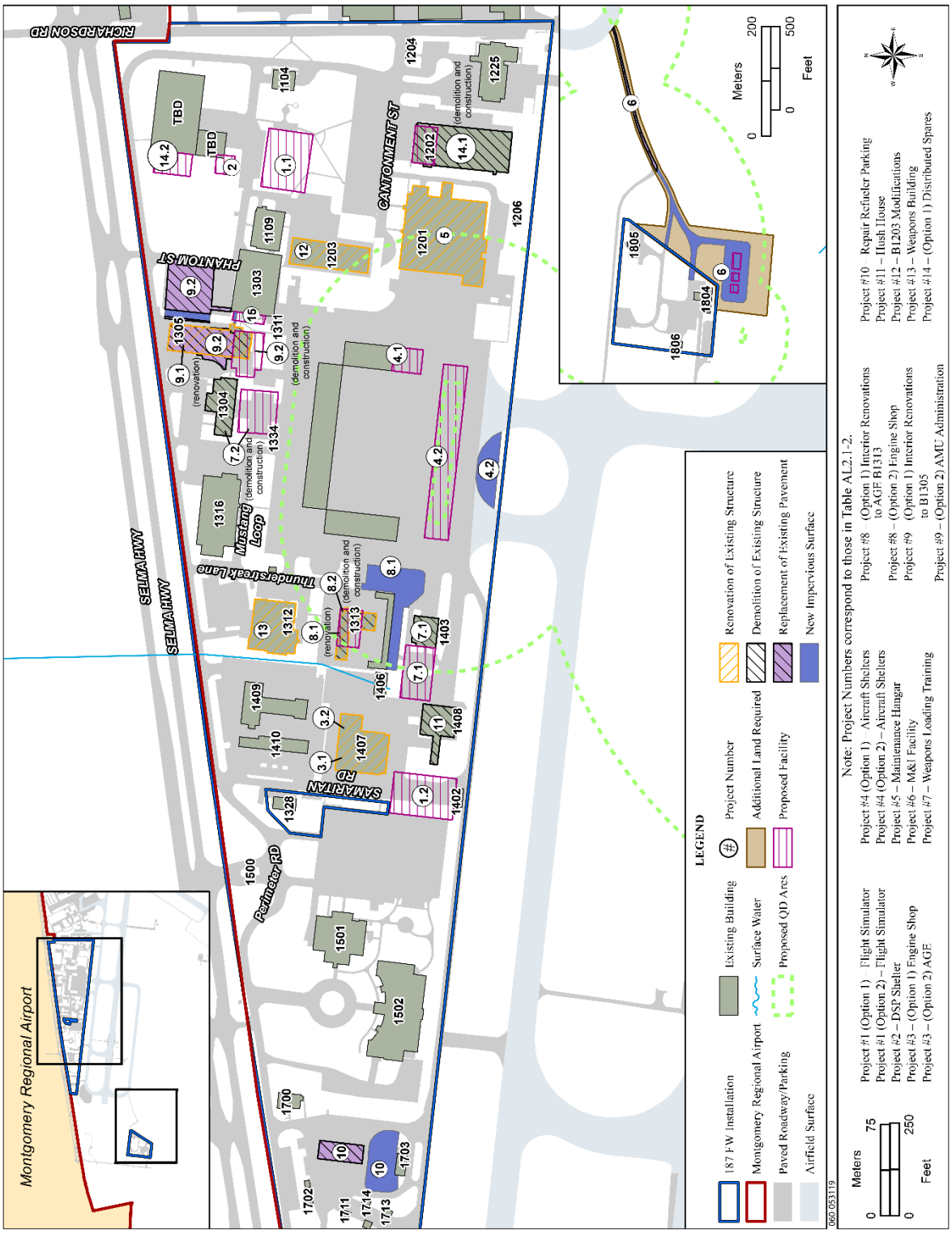

Figure AL3.4-3.
Proposed QD Arcs and Proposed Construction at the 187 FW Installation

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 187 FW F-35A beddown would not change these abilities. Additionally, 187 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 187 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 AL3.4.1.1. Therefore, there would be no significant impacts to safety under the No Action Alternative.

AL3.4.2 Airspace

AL3.4.2.1 Affected Environment

The airspace directly associated with the Proposed Action as it relates to the 187 FW includes Restricted Areas, MOAs, and ATCAAs (see Figure AL2.2-1). 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 Montgomery 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 (AFI 11-2F-16V3, *F-16 Operations Procedures*, 2016a) 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 187 FW has experienced two Class A mishap in the past 16 years; an inflight engine failure in 2002, and an aircraft departed the runway after landing in 2013 (187 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 187 FW of the ALANG has an ongoing BASH program through which information and assistance is freely shared between airfield users, the Montgomery Regional Airport staff, and the local air traffic controllers. Serious BASH-related accidents within the immediate Montgomery Regional Airport area are unusual and have never resulted in a Class A mishap (187 FW 2017a). Over the 11-year period from 2006 to 2017, the 187 FW has averaged 7.2 minor BASH incidents per year (187 FW 2017a).

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 F-16 can only jettison fuel by jettisoning the external mounted fuel tanks.

AL3.4.2.2 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 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 AL3.4-1.

Table AL3.4-1. F-22A Class A Flight Mishap History

Year	*Class A Number of Mishaps*	*Class A Rate*[1]	*Destroyed A/C*	*Destroyed Rate*	*Fatal Pilot*	*Fatal All*	*Hours Flown per Year*	*Cumulative Flight Hours*
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
Lifetime	**26**	**7.32**	**4**	**1.13**	**1**	**2**	**-**	**355,390**

Note: [1]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 AL3.4-4) (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.

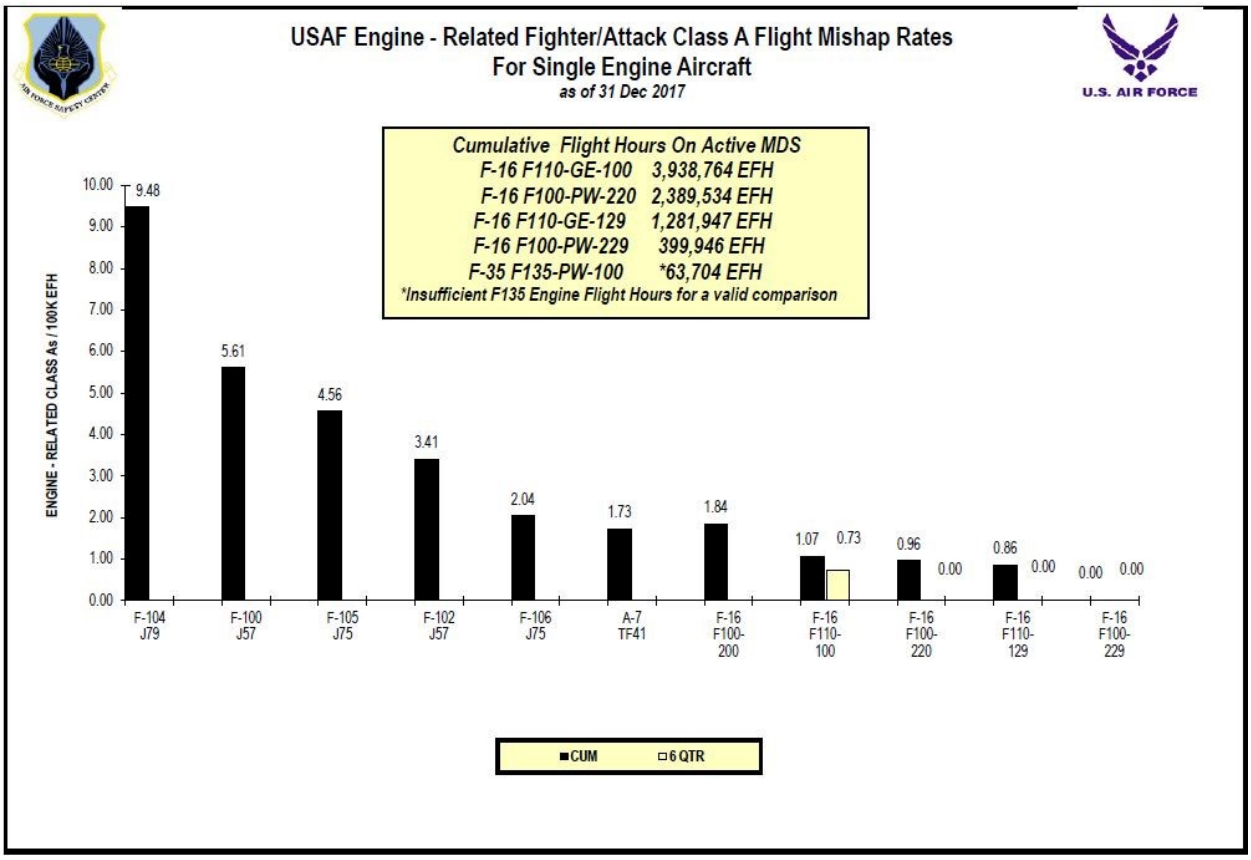

Figure AL3.4-4. USAF Engine-Related Mishap Rates

Note: "Engine-related" excludes mishaps caused by foreign object damage, BASH, or failure of *s*upport 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 187 FW installation, there would be an increase of less than 1 percent in total Montgomery Regional Airport airfield operations compared to the affected environment. The amount of take-offs, landings, proficiency training, and other flights does not change the 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 187 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-35 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 187 FW associated training airspace would be required to follow applicable procedures outlined in the 187 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 187 FW F-35A beddown would not change these abilities. Additionally, 187 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 187 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 AL3.4.2.1. Therefore, there would be no significant impacts to safety as a result of the No Action Alternative.

AL3.4.3 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 187 FW has a robust BASH program, and BASH incidents could be expected to decline with the F-35A as described. The 187 FW would continue to use the same SUA that they currently use. Under the Proposed Action at the 187 FW installation, impacts to safety would not be significant.

AL3.5 LAND USE

AL3.5.1 Installation

The following section describes the affected environment and examines the extent to which the beddown of the F-35A at the 187 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 AL3.5-1 provides a cross-reference between the City of Montgomery classifications and those used in this analysis.

Table AL3.5-1. Zoning Categories

City of Montgomery Zoning Classification	*EIS Land Use Classification*
Very Low Density Residential, Single Family Residential, Townhouse, Mobile Dwellings, Patio-Garden Home	Residential
Residential Agriculture, General Agriculture	Agriculture
Central Business District, Business District (Single Stories), Highway Commercial District, Planned Commercial	Commercial
Light Industry, General Industry, Industrial Park, Office Complex, Office District	Industrial
Flood Hazard District	Flood Hazard
Planned Unit Development	Planned/Current Mobile Home Park
Institutional Area	School

Legend: EIS = Environmental Impact Statement.

AL3.5.1.1 Affected Environment

The 187 FW of the ALANG is located on property owned by the Montgomery Regional Airport (also known as Dannelly Field) that is leased by the federal government and then licensed back to the State of Alabama for use by the ALANG. The installation is approximately 7 miles southwest of downtown Montgomery, Alabama, in western Montgomery County (Figure AL1.0-1). The 187 FW main cantonment area comprises 64 acres north of the airport's Runway 10/28. The remainder of the property lies south of the runway and includes a 7-acre MSA Complex and two CZ arcs covering an approximate 65-acre easement surrounding the MSA Complex.

The City of Montgomery Planning Commission adopted its Zoning Ordnance in 1985 to establish comprehensive zoning regulations for the city. The City of Montgomery has zoned the areas encompassing the 187 FW of the ALANG and the Montgomery Regional Airport as M-3: general industry. The area just north of the 187 FW installation boundary along Selma Highway (State Route 80) is zoned M-1: light industrial, which allows for uses such cold storage plants, bottling and central distribution plants; textile mills; warehouses; large dry cleaners and laundries; trucking terminals and similar types of uses (City of Montgomery 1985). North of this industrial area is a pocket of residential land and a school. A small Highway Commercial District (B-3) is located northwest of the installation boundary along Selma Highway and intersected by Old Hayneville Road. The commercial district is part of a planned unit development and requires that proposed development in that area be preceded by submission of a plan showing the proposed development in detail, beyond what it is zoned for (City of Montgomery 1985). Montgomery Regional Airport is bordered by agricultural land (AGR-1) almost completely to the south, with the exception of a small pocket of residential land (R-75-s and R-99-s) to the southeast. The area is zoned for both single family dwellings and mobile home subdivisions.

Land use activities most sensitive to noise typically include residential and commercial use, public services, and areas associated with cultural and recreational uses. 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 Montgomery Regional Airport exposes approximately 706 acres of off-airport areas of land zoned as school, industrial, commercial, agricultural, residential, and Mobile Home Park to noise levels between 65-85 dBA DNL. Section AL3.1, *Noise*, discusses existing noise levels on noise-sensitive receptors such as houses and churches located within the 65 dBA and 85+ dB DNL off-airport noise contour areas. Figure AL3.5-1 shows existing noise contours and the land use in the vicinity of Montgomery Regional Airport.

The current noise contours extend off-airport southeast and east of the airport where it overlaps with residential and industrial zoning, north of the airport, to include school, residential, agriculture, and commercial zoning, and industrial zoning to the east of the airport.

AL3.5.1.2 Environmental Consequences

Proposed Action

With the exception of Project #7 – Maintenance and Inspection Facility, all new construction would occur on previously disturbed land and would be totally within the fence line of the 187 FW installation. Project #7 would be on land within the boundaries of Montgomery Regional Airport, and leased back to the ALANG. 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.

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 AL3.5-2 and Figure AL3.5-2). The 187 FW Proposed Action would result in an overall off-airport increase in the area affected by noise levels between 65 and 85+ dB DNL by approximately 1,219 acres. Approximately 37 additional acres of residential land use would be included in the 65-75 dB DNL noise contours, rendering this acreage potentially incompatible for residential use (Figure AL3.5-2), resulting in significant impacts. 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.

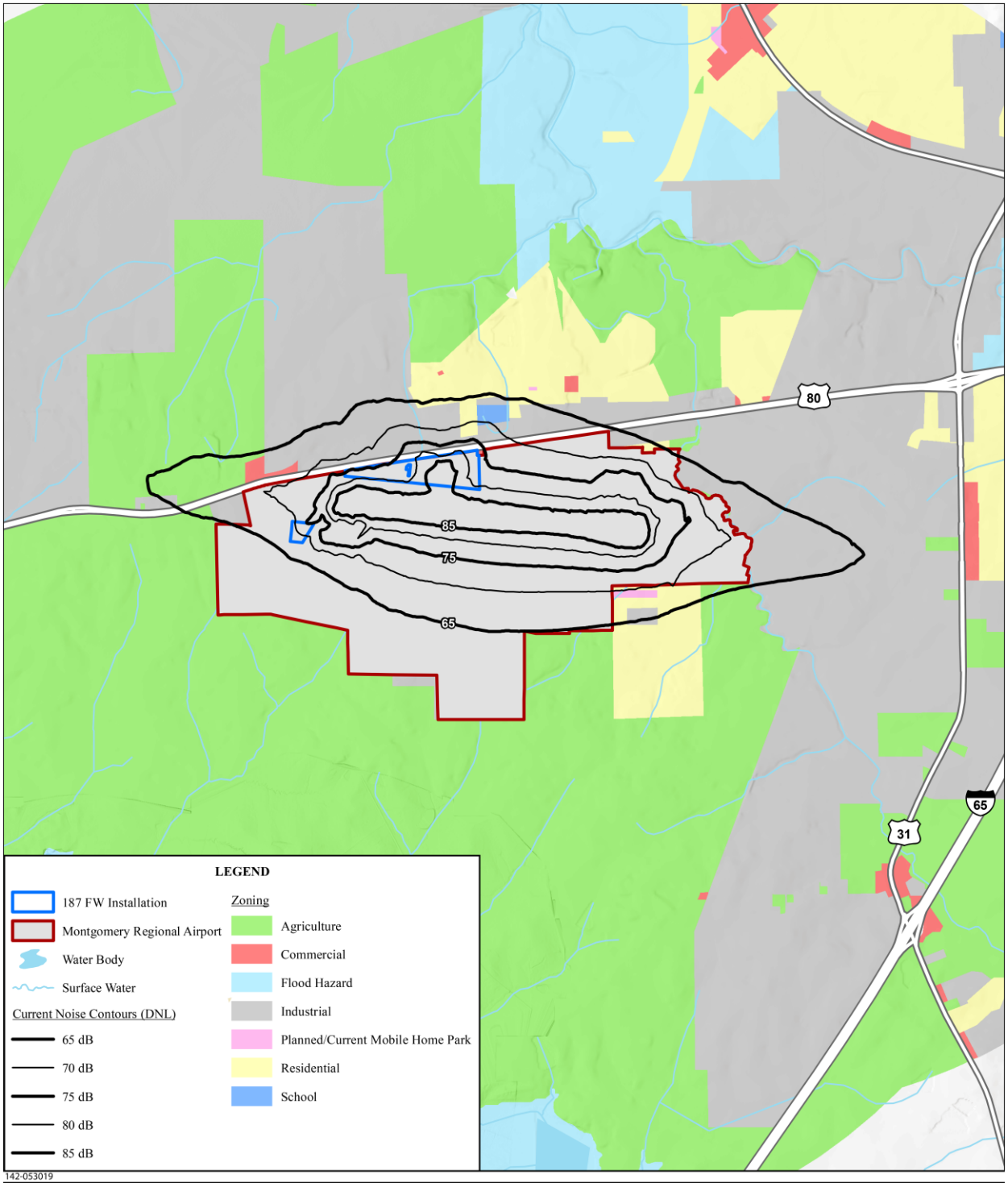

Figure AL3.5-1.
Current DNL Noise Contours and Land Use within the Vicinity of Montgomery Regional Airport

Table AL3.5-2. Off-Airport Land Uses Affected by Noise Levels 65 dB DNL and Greater under Proposed Action

Land Use Category	*65-70 (C)*	*65-70 (P)*	*65-70 (AC)*	*70-75 (C)*	*70-75 (P)*	*70-75 (AC)*	*75-80 (C)*	*75-80 (P)*	*75-80 (AC)*	*80-85 (C)*	*80-85 (P)*	*80-85 (AC)*	*85+ (C)*	*85+ (P)*	*85+ (AC)*	*Totals (C)*	*Totals (P)*	*Totals (AC)*
Residential	61	91	29	8	15	7	0	0	0	0	0	0	0	0	0	69	106	37
Commercial	17	16	-1	<1	9	9	1	10	9	0	0	0	0	0	0	18	34	16
Industrial	409	829	421	64	321	257	16	62	46	1	1	1	0	0	0	490	1214	724
Agriculture	93	380	287	0	126	126	0	30	30	0	0	0	0	0	0	93	536	443
Planned/Current Mobile Home Park	7	<1	-7	<1	7	7	0	0	0	0	0	0	0	0	0	7	7	0
School	18	13	-5	6	4	-3	4	11	7	2	1	-1	0	<1	<1	29	28	-1
Total	**605**	**1329**	**724**	**78**	**481**	**403**	**21**	**113**	**92**	**2**	**3**	**<1**	**0**	**<1**	**<1**	**706**	**1,925**	**1,219**

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.

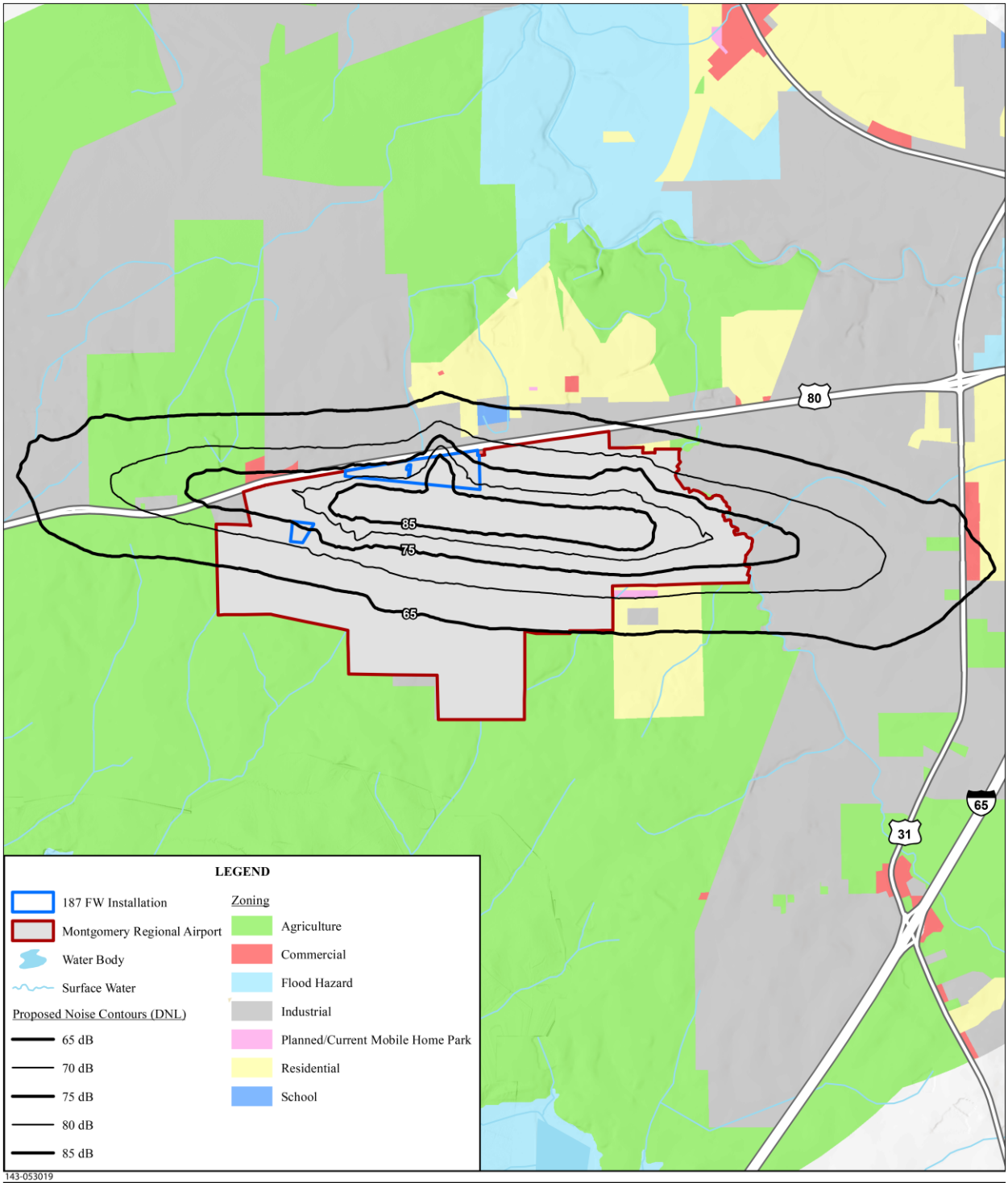

Figure AL3.5-2.
Proposed DNL Noise Contours and Land Use within the Vicinity of Montgomery Regional Airport

No Action Alternative

Under the No Action Alternative, no F-35A operational aircraft would be based at the 187 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 AL3.5.1.1. Therefore, there would be no significant impacts to land use under the No Action Alternative.

AL3.5.2 Airspace

AL3.5.2.1 Affected Environment

The 187 FW uses several airspace units within southwestern Alabama and southeastern Mississippi (see Table AL2.2-1 and Figure AL2.2-1). Airspace associated with the 187 FW includes Birmingham, Camden Ridge, and Pine Hill East and West MOAs, and to a lesser extent Bullseye 1, 2 and 3, and Desoto 1 and 2 MOAs. Birmingham, Camden Ridge, and Pine Hill MOAs support 61 percent of training operations by the 187 FW F-16s. Within these airspace units, the 187 FW accounts for about 20 percent of the activity. The remaining airspace receives much less use, contributing 39 percent to the total operations by the 187 FW. Over water units such as Warning Areas also receive use.

The northern half of Birmingham MOA overlies the Talladega National Forest, with various small cities and towns dispersed throughout the counties of Bib, Hale, Perry, and Dallas under its boundary (Figure AL3.5-3). The city of Selma lies adjacent to the land under its southeastern most corner. Camden Ridge and both Pine Hill MOAs share a boundary, with Chilatchee Creek Recreation Area and Roland Cooper Alabama State Park under the northeast portion of Pine Hill East MOA. Springs Alabama State Park and the Choctaw National Wildlife Refuge (NWR) lie under Pine Hill West MOA. Desoto National Forest, which includes Camp Shelby (DoD-owned land), lies under Bullseye 1, Desoto 1, and Desoto 2 MOAs in Mississippi, about 175 miles southeast of Montgomery Regional Airport. As with other airspace units, the land under these airspace units is generally rural, comprised of small towns across the counties of Stone, George, Perry, Forrest, and Greene in Mississippi. Bullseye 3 MOA also extends over Mobile County, Alabama.

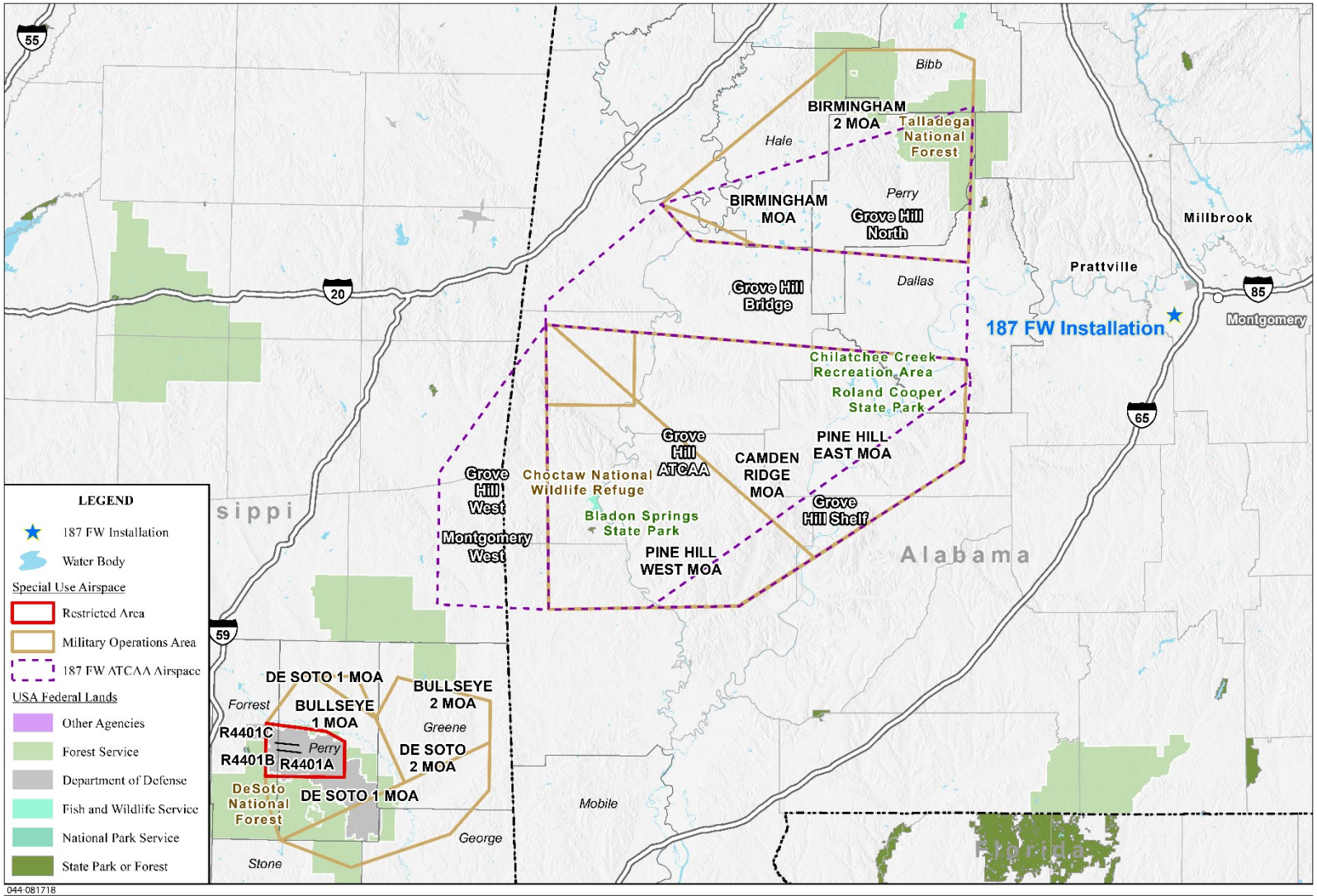

Figure AL3.5-3.
Land Use Underneath the Airspace Associated with the 187 FW

AL3.5.2.2 Environmental Consequences

Proposed Action

The Proposed Action would not require changes in SUA attributes, volume, exclusionary areas, or proximity; nor is it expected that there would be changes in the type and number of ordnance employed at the range. All F-35A flight activities would take place in existing airspace, so no airspace modifications would be required. Additionally, the 187 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 187 FW operations within the airspace would decrease under the 187 FW Proposed Action. The 187 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 differences in utilization of the existing airspace include use of higher altitudes overall and possibly different combinations of use of existing airspace. While general noise would increase, the F-35A would be expected to fly more of the time at higher altitudes than the F-16 currently used by the 187 FW, 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. Due to the F-35A's mission and the aircraft's capabilities, the USAF anticipates that approximately 10 percent of the time spent in air combat training would involve supersonic flight. Supersonic flight during air combat training would be performed in over water Warning Areas (more than 15 NM offshore) and in the existing over land airspace used by the 187 FW. All supersonic flight in the local training airspace would be conducted above 30,000 feet MSL and in the same airspace currently used by the F-16s. All airspace associated with the 187 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 National Forest or 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 187 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 AL3.5.2.1. Therefore, there would be no significant impacts to land use as a result of the No Action Alternative.

AL3.5.3 Summary of Impacts

Under the Proposed Action at the 187 FW installation, approximately 1,219 additional acres would be exposed to noise levels of 65 dB DNL and greater, including 37 additional acres of residential land use that 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.

AL3.6 SOCIOECONOMICS

AL3.6.1 Installation

The 187 FW installation is located at Montgomery Regional Airport in the city of Montgomery, Alabama. Also, within 6 miles of the airport are Lowndes County and Autauga County.

AL3.6.1.1 Affected Environment

Population

Population information for the state of Alabama, Montgomery County, Lowndes County, Autauga County, and the city of Montgomery is presented in Table AL3.6-1. The population of Montgomery increased by 4,196 from 2000 to 2010 and then decreased by 4,047 from 2010 to 2016. The overall change represents a 0.1 percent increase in population from 2000 to 2016. Montgomery County showed a slightly higher growth rate with a 1.7 percent increase, Lowndes County showed a 21.6 percent decrease, Autauga County showed a 26.1 percent increase, and Alabama as a whole showed a growth rate of 8.9 percent.

Table AL3.6-1. Population, 2000, 2010, and 2016

Area	*2000*	*2010*	*2016*	*Percent Change 2000-2016*	*Percent Change 2010-2016*
Alabama	4,447,100	4,779,736	4,841,164	8.9%	1.3%
Montgomery County	223,510	229,363	227,392	1.7%	-0.9%
City of Montgomery	201,568	205,764	201,717	0.1%	-2.0%
Lowndes County	13,473	11,299	10,565	-21.6%	-6.5%
Autauga County	43,671	54,571	55,049	26.1%	0.9%

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

Employment and Income

Table AL3.6-2 provides employment and income data for the state of Alabama, Montgomery County, Lowndes County, Autauga County, and the city of Montgomery. In 2016, Median household income and per capita income in the city of Montgomery were slightly lower than in Montgomery County. Compared to the state of Alabama, the city of Montgomery had a lower median household income and a higher per capita income while Montgomery County figures were higher than the state. Lowndes County had the lowest median household income and per capita income in the study area while Autauga County had the highest. The unemployment rate as of early 2018 for Alabama, Montgomery County, Lowndes County, and Autauga County were 4.3 percent, 4.2 percent, 7.4 percent, and 3.9 percent, respectively.

Table AL3.6-2. Employment and Income Statistics

Area	*Median Household Income (2016)*	*Per Capita Income (2016)*	*Labor Force (2016)*	*Employed (2018)*	*Unemployed (2018)*	*Unemployment Rate (2018)*
Alabama	$44,758	$24,736	2,169,875	2,077,644	92,231	4.3
Montgomery County	$45,358	$26,255	105,213	100,761	4,452	4.2
City of Montgomery	$43,440	$25,488	N/A	N/A	N/A	N/A
Lowndes County	$27,914	$18,434	3,709	3,434	275	7.4
Autauga County	$53,099	$26,168	25,828	24,830	998	3.9

Note: Employment data for the city of Montgomery 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 AL3.6-3, in 2016 there were an estimated 11,984 vacant housing units in the city of Montgomery and an estimated 13,296 vacant housing units in Montgomery County. The nearby counties of Lowndes and Autauga had 843 and 1,914 vacant housing units, respectively. The city of Montgomery had a 13.0 percent vacancy rate while Montgomery County had a rate of 12.8 percent, both below the rate for the state of Alabama (16.2 percent). Lowndes County had a vacancy rate of 16.6 percent, Autauga County had a vacancy rate of 8.4 percent, and the vacancy rate for Alabama was 16.2 percent.

Table AL3.6-3. Housing Characteristics, 2016

Area	*Housing Units*	*Vacant Housing Units*	*Housing Vacancy Rate*
Alabama	2,209,335	358,274	16.2%
Montgomery County	103,577	13,296	12.8%
City of Montgomery	92,270	11,984	13.0%
Lowndes County	5,081	843	16.6%
Autauga County	22,714	1,914	8.4%

Source: U.S. Census Bureau 2016c.

AL3.6.1.2 Environmental Consequences

Proposed Action

Planning estimates for the construction required under this alternative indicate construction costs of between $90 and $120 million from 2020 to 2023. 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 at the 187 FW installation would be decreased by eight personnel. However, up to 35 additional personnel would provide security and contract oversight for FMS and the ALIS. Overall, up to 27 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 27 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 71 people. This maximal impact scenario would lead to a population increase of less than 0.1 percent for the city of Montgomery. Assuming the 27 additional personnel (and their dependents) required one housing unit each, 27 additional housing units would be demanded, which could easily be absorbed by the areas vacant units, requiring less than 1 percent of vacant housing units in Montgomery County.

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 140 and 210 construction jobs. Based on 2017 construction industry salaries (Bureau of Labor Statistics 2018a), those jobs would generate a total of between $16.9 and $22.6 million in income over the 2020 to 2023 period.

An additional 27 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 $937,251 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 AL3.6-4 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 AL3.1-10, points of interest surrounding Montgomery Regional Airport would experience marginal noise increases ranging from 0 to 5 dB DNL.

Table AL3.6-4. Property Values and Property Tax Loss, 2017

*Area**	*Housing Units*	*Estimated Total Value***	*Potential Property Value Loss with an average of 4 dB DNL of Noise Increase Low (0.2%)*	*Potential Property Value Loss with an average of 4 dB DNL of Noise Increase High (2.0%)*	*Potential Annual Property Tax Loss (0.36% Property Tax Rate) Low*	*Potential Annual Property Tax Loss (0.36% Property Tax Rate) High*
Census Tract 59.01						
Block Group 5	318	$55,017,495	$440,140	$4,401,400	$1,585	$15,845
Census Tract 59.02						
Block Group 1	507	$31,788,900	$254,311	$2,543,112	$916	$9,155
Block Group 2	282	$20,219,400	$161,755	$1,617,552	$582	$5,823
Census Tract 60						
Block Group 4	435	$77,715,606	$621,725	$6,217,248	$2,238	$22,382
Census Tract 61						
Block Group 1	598	$38,032,800	$304,262	$3,042,624	$1,095	$10,953
Montgomery County Total	**103,967**	**$12,902,304,700**	**$1,782,194**	**$17,821,936**	**$6,416**	**$64,159**

Note: *See Figure AL3.7-2 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.
Source: U.S. Census Bureau 2017, Tax-rates.org 2019.

Overall, the potential lost property value would represent between 0.01 and 0.14 percent of the tax base of Montgomery County.

No Action Alternative

Under the No Action Alternative, no F-35A operational aircraft would be based at the 187 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

AL3.6.1.1. Therefore, there would be no significant impacts to socioeconomics under the No Action Alternative.

AL3.6.2 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.

AL3.6.3 Summary of Impacts

Under the Proposed Action at the 187 FW installation, the population of Montgomery 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 permanent increases in employment (up to an estimated 27 jobs) and income (approximately $937,251 per year) associated with operations. There is sufficient housing in the County for the potential 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 Montgomery 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 187 FW installation would not be significant overall.

AL3.7 ENVIRONMENTAL JUSTICE AND THE PROTECTION OF CHILDREN

AL3.7.1 Installation

AL3.7.1.1 Affected Environment

Minority and Low-Income Populations

Figure AL3.7-1 highlights the census block groups in Montgomery County, Lowndes County, and Autauga County that are considered environmental justice low-income or minority areas. Out of a total of 243 census blocks in the three counties, 143 are classified as minority population areas, 109 are classified low-income population areas, and 90 are classified as both minority and low-income population areas (U.S. Census Bureau 2016d, 2016e).

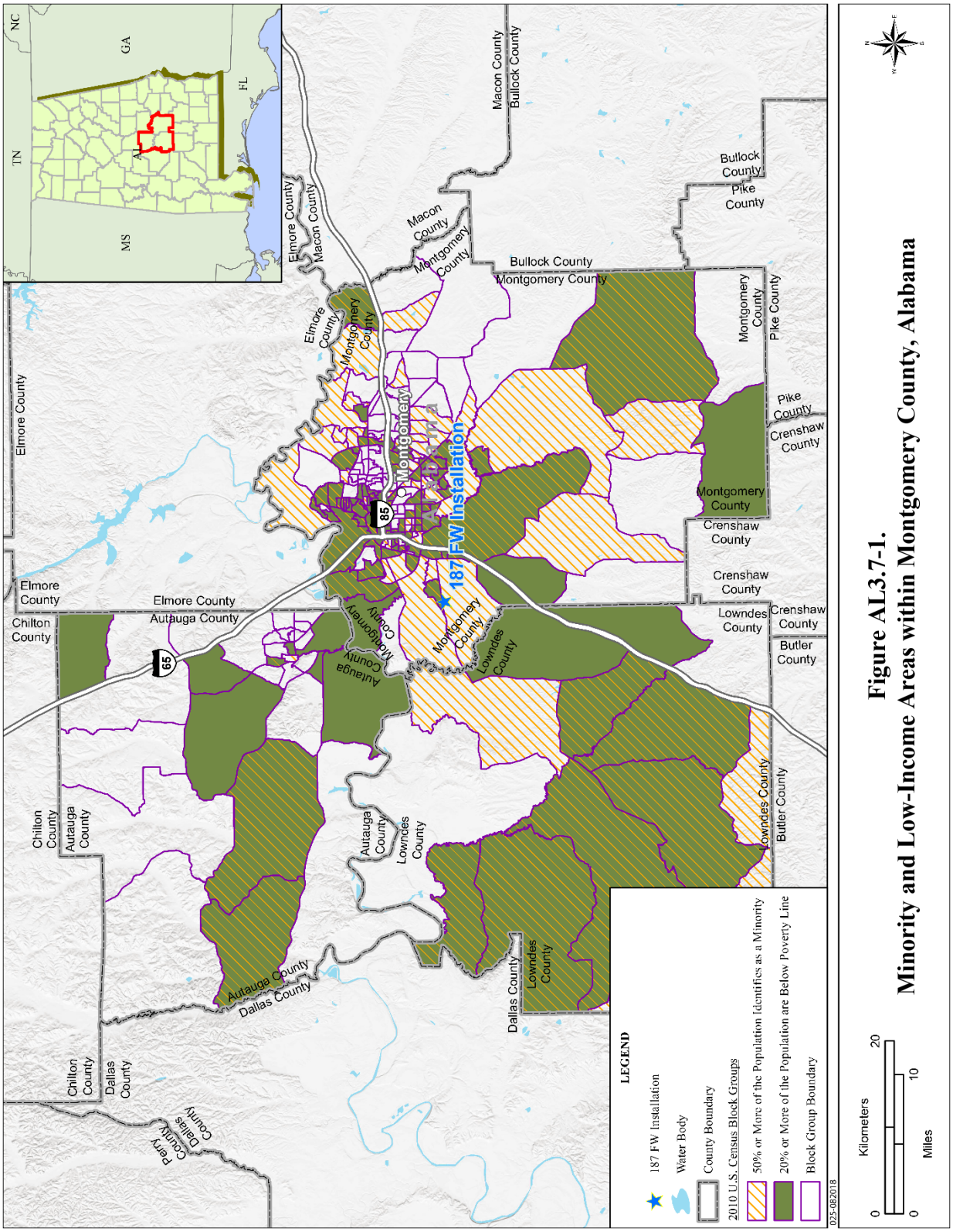

Figure AL3.7-1.
Minority and Low-Income Areas within Montgomery County, Alabama

Protection of Children

The city of Montgomery has an estimated 47,703 children under the age of 18, which is approximately 23.6 percent of the population (U.S. Census Bureau 2016a). This rate is higher than the rate for Montgomery County (23.2 percent), Lowndes County (23.2 percent), and the state of Alabama (22.8 percent), but lower than Autauga County (25.2 percent). According to the National Center for Education Statistics (2016), there are a total of 56 schools in Montgomery County with a total of 31,615 students, 8 schools with 1,562 students in Lowndes County, and 15 schools with 9,609 students in Autauga County.

Elderly Populations

An estimated 26,921 people in Montgomery, or 13.4 percent of the population, are 65 years of age or older and considered elderly (U.S. Census Bureau 2017). In Montgomery County, 13.7 percent of the population is elderly (31,204 people) and in the state of Alabama it is 15.7 percent (762,032 people).

AL3.7.1.2 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 AL3.7-2 shows the census block groups around the 187 FW installation that would be exposed to noise levels of 65 dB DNL or higher during current and proposed conditions. Table AL3.7-1 lists the five census block groups that would be exposed to noise levels between 65 and 80 dB DNL under current or proposed conditions and indicates the block groups that would be newly exposed under the Proposed Action. Two block groups that do not currently experience noise levels over 65 dB DNL would be newly exposed to these noise levels although one of these block groups is only slightly crossed by the 65 dB DNL contour in an unpopulated area. All five of the block groups under the contours are considered minority population areas. Additionally, three of the block groups are considered low-income population areas. The majority of the area under the expanded noise contours of the Proposed Action is rural farm land and there are few residences, although some residences would experience increases in noise levels and one of the newly affected block groups contains a residential area that would experience noise levels above 65 dB DNL under the Proposed Action. In addition, a Mobile Home Park area east of the airport would be exposed to a DNL of 69 dB. This would be an increase of 4 dB relative to the affected environment. Because all of the block groups surrounding the airport and under the noise contours are considered environmental justice communities and there would be increased impacts, there would be significant and disproportionate impacts on low-income and minority populations under the Proposed Action.

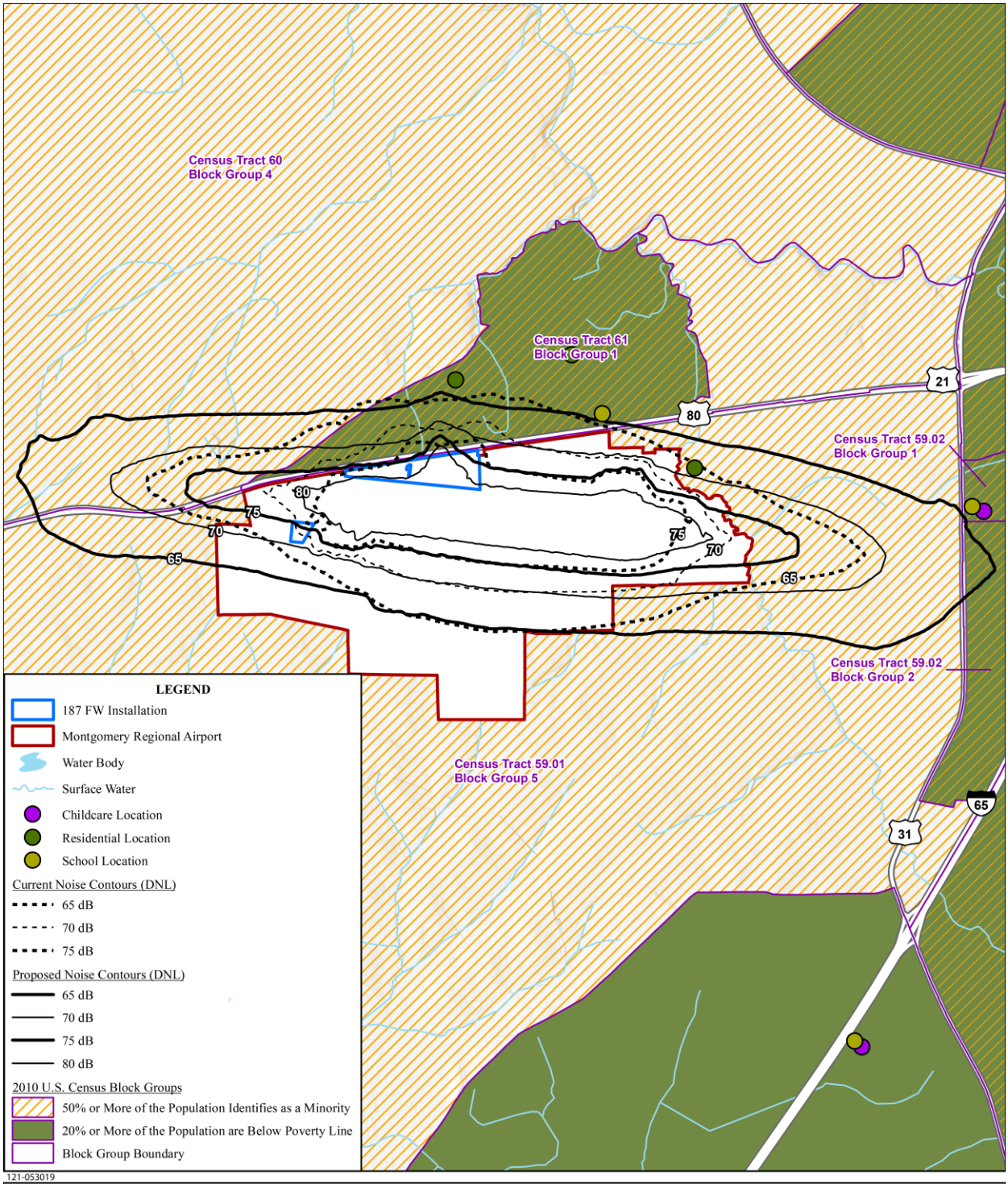

Figure AL3.7-2.
Current and Proposed DNL Noise Contours and Minority and Low-Income Areas near Montgomery Regional Airport

Table AL3.7-1. Census Block Groups Exposed to Noise Levels above 65 dB DNL Under Current and Proposed Action Conditions

Area	*Minority Population*	*Poverty Rate*	*Population under the age of 18*	*Elderly Population (Aged 65 years or older)*	*Newly Exposed to Proposed Contours*
Alabama	33.8%	17.1%	22.8%	15.7%	N/A
Montgomery County	64.1%	18.8%	23.2%	13.7%	N/A
City of Montgomery	66.9%	22.6%	23.6%	13.4%	N/A
Census Block Groups					
Census Tract 59.01					
Block Group 5	50.1%	8.5%	0.0%	50.7%	No
Census Tract 59.02					
Block Group 1	97.6%	28.4%	26.4%	19.9%	Yes
Block Group 2	100.0%	40.1%	26.4%	24.0%	Yes
Census Tract 60					
Block Group 4	63.4%	8.6%	4.3%	17.6%	No
Census Tract 61					
Block Group 1	97.4%	28.8%	23.8%	16.3%	No

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

Protection of Children

As discussed in Section AL3.1, under the Proposed Action Alternative, four schools would experience increases in L_{eq} of 2 to 5 dB and the remaining three would experience no change. The largest increase in L_{eq} of 5 dB would occur at the South Lawn Middle School, reaching 66 dB. This would equate to interior levels of 51 and 46 dB L_{eq} for windows open and windows closed. However, the number of speech interfering events would not change substantially from the affected environment. These increases in classroom L_{eq} could further impact student learning at four schools (including low-income and minority students).

Three of the five block groups with noise levels above 65 dB DNL under the Proposed Action have a higher proportion of children than Montgomery County as a whole. Together with the increased impacts at Martin Luther King Elementary School, there would be a significant and disproportionate impact to children, to include low-income and minority children under 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 AL3.1.1.2. 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.

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 AL3.7-1 shows the percent of the populations of the block groups that are

elderly. All of the five block groups that would be exposed to noise levels of 65 dB DNL or higher have a higher percentage of elderly people than the city of Montgomery and Montgomery County as a whole. As described above, a large portion of the area under the expanded noise contours of the Proposed Action is unpopulated rural farm land and there are few residences, but the residences that are there would likely have a higher proportion of elderly people than the region 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 all of the impacted block groups contain a higher proportion of elderly residents than the surrounding region, 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 187 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 AL3.7.1.1. Therefore, there would be no significant disproportionate impacts to low-income populations, minorities, or children under the No Action Alternative.

AL3.7.2 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.

AL3.7.3 Summary of Impacts

Noise levels would rise relative to the affected environment for some residents of low-income and minority areas, which would represent a significant and disproportionate impact. Some schools would be affected by increased noise levels, with associated adverse impacts of interrupted speech and hindrance of learning. Therefore, there would be a significant and disproportionate impact to children. There would be a disproportionate but minor impact to the elderly.

AL3.8 INFRASTRUCTURE

AL3.8.1 Installation

AL3.8.1.1 Affected Environment

Potable Water

Potable water for the 187 FW installation is provided by Montgomery Water Works. Approximately 60 percent of Montgomery's water supply comes from the C.T. Perry Water Purification Plant on the Tallapoosa River and has the capacity of 60 million gallons per day. The Day Street Pump Station (20 million gallons per day), the Hanan Water Treatment Plant (12.5 million gallons per day), and several groundwater wells account for the remaining 40 percent (Montgomery Water Works and Sanitary Sewer Board 2017). In FY2017, 3,284,000 gallons of potable water were supplied to the 187 FW installation (187 FW 2017b).

Wastewater

The 187 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 187 FW installation is conveyed into the municipal sewage system to the Catoma Wastewater Treatment Plant. The city owns two wastewater treatment plants, which have a capacity to treat 30 million gallons of wastewater daily.

Stormwater

A high percentage of the installation is paved or roofed. The 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 AL3.10, *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. There are five drainage basins on the installation that discharge through a network of ditches and in-ground conveyances north under U.S. 80 into tributaries of Catoma Creek.

The ADEM issued a general permit (ALG340056) for industrial discharges to the 187 FW installation in January of 2017 (ALANG 2016). A BMP Plan has been prepared to comply with the USEPA NPDES program. The industrial-type activities at the 187 FW installation warrant consideration of control for reduction or elimination of the discharge of pollutants to the stormwater system. The BMP Plan addresses those activities, identifies appropriate controls, and

was prepared to provide stormwater pollution prevention guidance to the 187 FW installation. The BMP Plan also complies with AFI 32-10671, *Water and Fuel Systems*.

Electrical and Natural Gas Systems

Electricity is supplied to the 187 FW installation by Alabama Power and natural gas is supplied by Alabama Gas Company. Electricity consumption for FY2017 at the 187 FW installation was 3,673,793 kilowatt-hours. Natural gas consumption for FY2017 at the 187 FW installation was 72,048 hundred cubic feet (187 FW 2017b).

Solid Waste Management

Municipal solid waste at the 187 FW installation is managed in accordance with the 187 FW Integrated Solid Waste Management Plan (187 FW 2017c) 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 187 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 187 FW installation and transported by contractor to the City of Montgomery North Montgomery Landfill in Montgomery, Alabama.

Transportation

The 187 FW installation is located off of U.S. 80, which runs east and west and is within close proximity to Interstate 65 to the east which runs primarily north and south. The installation's main gate is accessed from U.S. 80, which can be accessed from Interstate 65 to the east. Within the installation, Perimeter Road is the main road for the installation and links every building and parking area from east to west with each other.

AL3.8.1.2 Environmental Consequences

Proposed Action

<u>Potable Water</u>

Water consumption would be expected to increase slightly under the Proposed Action at the 187 FW installation as a result of the small increase in personnel; however, an increase of up to approximately 27 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 27 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 at the 187 FW installation, there would be up to 208,570 SF (4.8 acres) of temporary soil disturbance and 124,589 SF (2.9 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 AL3.10, *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 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 remain consistent 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 187 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 27 under the Proposed Action (see Section AL2.1.4). The increase in personnel would create a potential 27 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 54 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 187 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 AL3.8.1.1. Therefore, there would be no significant impacts to infrastructure under the No Action Alternative.

AL3.8.2 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.

AL3.8.3 Summary of Impacts

Under the Proposed Action there would be no changes expected to potable water, wastewater systems, stormwater management, energy supply systems, solid waste management, or transportation routes. Impacts to infrastructure at the 187 FW installation as a result of the proposed F-35A beddown would not be significant.

AL3.9 EARTH RESOURCES

AL3.9.1 Installation

AL3.9.1.1 Affected Environment

Geology

The 187 FW installation is located in the Alabama River ancestral flood plain and underlain by Quaternary alluvial and terrace deposits that range in thickness from 20 to 80 feet. The Quaternary deposits generally consist of porous, poorly sorted sand, gravel, silt, and clay, which directly overlies the Cretaceous Formations. These formations include the Mooreville Chalk of the Selma Group, the Eutaw Formation, and the Tuscaloosa Group, which consists of the Gordo and Coker Formations. The Mooreville Chalk ranges in thickness from 0 to 260 feet and consists of clayey, sandy, fossiliferous chalk that yields little to no water. The Eutaw Formation consists of greenish-gray glauconitic clay interbedded with sand and ranges in thickness from 200 to 400 feet. Sand layers in the upper and lower part of the Eutaw Formation are good aquifers that yield moderate to large quantities of water. The Gordo Formation consists of medium to very coarse grained yellow sand, varied colored clay interbedded with sand, and beds of gravel in the lower part. The Gordo Formation ranges in thickness from 210 to 350 feet and the sands in the upper and middle part of the formation are good aquifers that supply water for municipal, industrial, and domestic use. The Coker Formation averages a thickness of 550 feet and consists of fine to medium grained sand and greenish-gray lignitic clay interbedded with sand. Sands in the upper part of the Coker

Formation are good aquifers and supply water for municipal use. Precambrian bedrock consisting of mica schist underlies the Coker Formation (ALANG 1991).

Topography

Topography at the 187 FW installation is classified as the East Gulf Coastal Plain, which is subdivided into three physiographic districts, including the Alluvial Plain, the Black Prairie, and the Chunnenuggee Hills. The 187 FW installation is specifically located in the southern part of the Alluvial Plain district and adjacent to the northern boundary of the Black Prairie district (Scott et al. 1987). Elevations on the 187 FW installation vary from 186 feet MSL to 225 feet MSL (ALANG 2010).

Soils

The majority of soil on the 187 FW installation has been disturbed by grading, cutting, and filling. The naturally occurring soils on the installation are mostly comprised of the Izagora and Wickham fine sandy loams and the Roanoke silty loam (ALANG 2015). The Natural Resources Conservation Service (NRCS) Soil Survey for Montgomery County, Alabama identifies four separate soil types on the 187 FW installation. However, for the majority of the installation, no digital data is available for soil types. Descriptions of the four soil types, within the area of the installation for which data is available, are given in order of highest to lowest percentage, as follows (U.S. Department of Agriculture 2017):

- Oktibbeha clay, clayey marine deposits over chalk, eroded and nearly level, 1 to 3 percent slope;
- West Point clay, clayey marine deposits derived from sedimentary rock, nearly level, 1 to 3 percent slope;
- Sumter clay, clayey residuum weathered from chalk, severely eroded and very gently sloping, 3-5 percent slope; and
- Sumter clay, clayey residuum weathered from chalk, eroded, very gently sloping, 3-5 percent slope.

AL3.9.1.2 Environmental Consequences

Proposed Action

Under this alternative, new construction would consist of 15 separate projects resulting in up to 208,570 SF (4.8 acres) of new construction footprint, including up to 124,589 SF (2.9 acres) of new impervious surface. There are two construction scenarios for the aircraft conversion under consideration. Only one of these options would be implemented for each project. The total construction footprint analyzed represents the largest possible footprint of each of the options

(Table AL2.1.2). 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 187 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 187 FW.

Soils

For the majority of the proposed construction area, the NRCS Web Soil Survey has no digital data available. The western corner of the 187 FW installation is the only part that has soil data which includes four soil types: Oktibbeha clay (1-3 percent slope), West Point clay (1-3 percent slope), Sumter clay severely eroded (3-5 percent slope), and Sumter clay eroded (3-5 percent slope). The Oktibbeha clay is rated by the NRCS Web Soil Survey as very limited for roads and small commercial building development due to a high shrink-swell potential. The West Point clay is also rated as very limited due to flooding, high shrink-swell potential, and shallow depth to the saturated zone. The Sumter clay severely eroded and the Sumter clay eroded are rated as somewhat limited, due to a high shrink-swell potential and slope. 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, the Oktibbeha clay and West Point clay are 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 Farmland Protection Policy Act, the USAF determined that the land is not farmland subject to the Farmland Protection Policy Act; therefore, the Farmland Protection Policy Act does not apply to this alternative.

The collective area impacted by the proposed construction activity would exceed 1 acre in size and therefore require coverage under Alabama's Construction General Permit. To minimize potential impacts to soil associated with erosion, runoff, and sedimentation during construction activity, proposed construction under this alternative would follow standard construction practices as described in Alabama's Construction General Permit. In compliance with coverage under this permit, a CBMPP would be implemented and prepared to maintain effective erosion and sediment controls. 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 Stormwater Pollution Prevention Plan (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 NOI would be

filed with the state of Alabama 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 would 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 would not be significant.

No Action Alternative

Under the No Action Alternative, no F-35A operational aircraft would be based at the 187 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 AL3.9.1.1. Therefore, there would be no significant impacts to earth resources under the No Action Alternative.

AL3.9.2 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.

AL3.9.3 Summary of Impacts

Under the Proposed Action at the 187 FW installation, proposed construction would result in up to 208,570 SF (4.8 acres) of new construction footprint, including up to 124,589 SF (2.9 acres) 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 187 FW installation would not be significant.

AL3.10 WATER RESOURCES

AL3.10.1 Installation

AL3.10.1.1 Affected Environment

Surface Water

The 187 FW installation is located within Montgomery Regional Airport and the Alabama River drainage basin. A large portion of the main cantonment area is either roofed or paved and surface drainage from these areas generally flows north through small, unnamed streams towards Catoma Creek, which is not on the state list of CWA Section 303(d) impaired waters (ADEM 2018). The

creek flows northwest towards the Alabama River, which is approximately 5 miles from the installation. Stream locations in the vicinity of the 187 FW installation main cantonment area and the MSA Complex are shown in Figure AL3.10-1. These streams are in highly developed areas that are generally maintained as open fields and agricultural lands. A 2019 wetland delineation was conducted within the airport boundaries outside the MSA area where project #6 is proposed. Results of this survey indicate that one Waters of the U.S. (WOTUS) occurs within this area (Figure AL3.10-1). NGB is currently working on obtaining a preliminary jurisdictional determination from the USACE.

The state of Alabama, through the ADEM, issued a general permit for industrial discharges to the 187 FW installation in October of 2011 (ALANG 2016). A BMP Plan has been prepared to comply with the USEPA NPDES program. The industrial-type activities at the 187 FW installation warrant consideration of control for reduction or elimination of the discharge of pollutants to the stormwater system. The BMP Plan addresses those activities and identifies appropriate controls and was prepared to provide stormwater pollution prevention guidance to the 187 FW installation. The BMP Plan also complies with AFI 32-10671, *Water and Fuel System*.

Groundwater

The principal aquifers used for drinking water in Montgomery County are the Eutaw, Gordo, and Coker Formations. Groundwater in each of these aquifers occurs under confined, or artesian, conditions. The Eutaw Formation, the uppermost of the three aquifers, occurs at a depth of approximately 140 feet from the land surface at the 187 FW installation, and is approximately 500 to 525 feet deep. The Mooreville Chalk, which is the uppermost geologic unit underlying the base, serves as an aquiclude overlying the Eutaw aquifer (ALANG 2013). The general direction of groundwater flow in the Eutaw Formation is due west towards the Alabama River.

Floodplains

Per the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Montgomery County, Alabama, Panels 191H and 192H (Map Numbers 01101C0191H and 01101C0192H, Effective February 4, 2014), the 187 FW installation is located outside of any area identified as being subject to inundation by 1-percent-annual-chance of flooding (i.e., 100-year floodplain) (FEMA 2014) (Figure AL3.10-1).

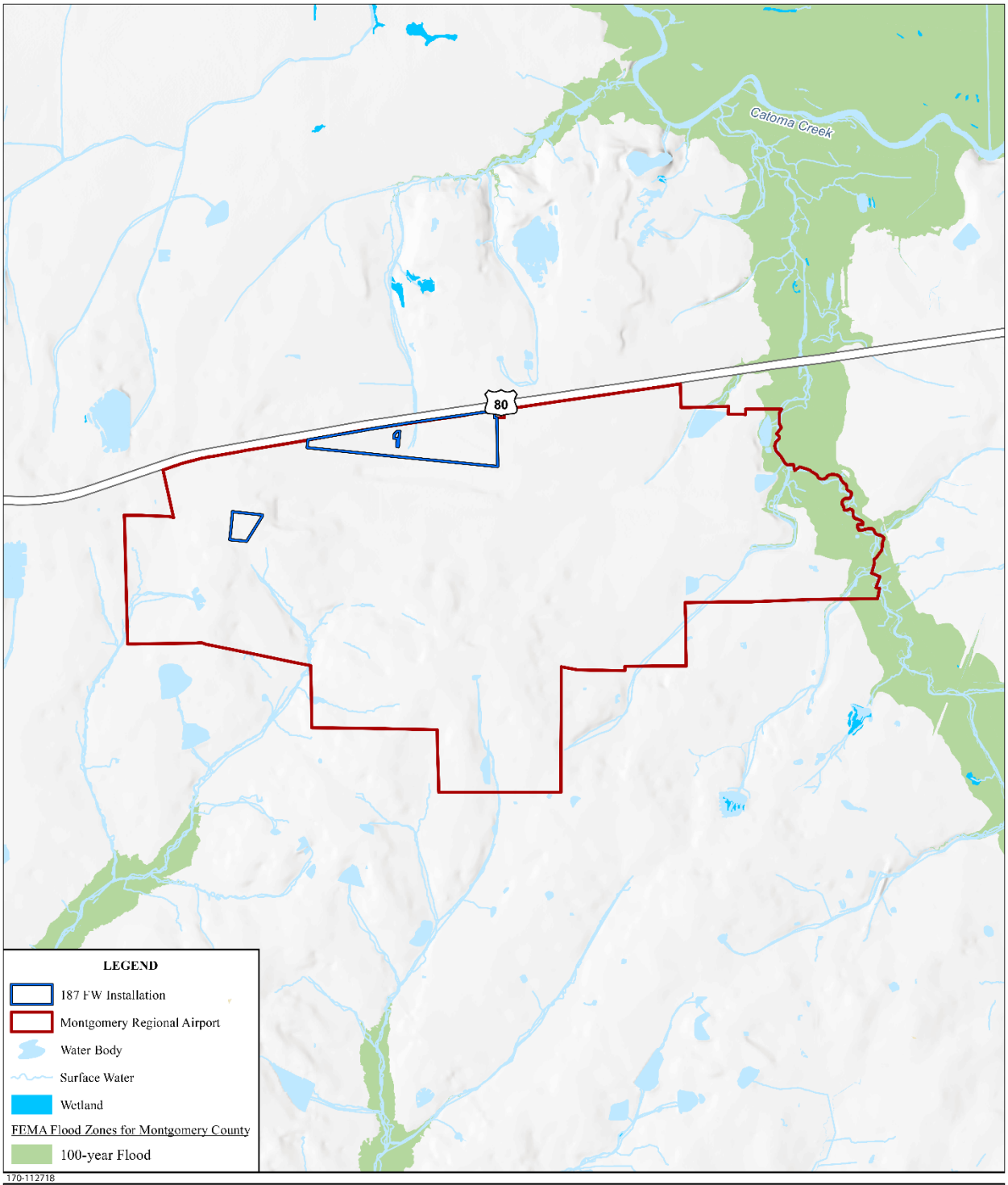

Figure AL3.10-1.
Water Resources and Wetlands within the Vicinity of the 187 FW Installation

Wetlands

According to a recent 2017 wetlands delineation, there are no wetlands on the 187 FW installation (U.S. Fish and Wildlife Service [USFWS] 2018a; 187 FW 2018a). However, a 2019 wetland delineation was conducted within the airport boundaries outside the MSA area where project #6 is proposed. Results of this survey indicate that two jurisdictional wetlands occur within this area (see Figure AL3.10-1). NGB is currently working on obtaining a preliminary jurisdiction determination from the USACE.

AL3.10.1.2 Environmental Consequences

Proposed Action

Surface Water

Under the Proposed Action at the 187 FW installation, construction and modification projects to support beddown of the F-35A would have the potential to impact surface water resources. The proposed 4,000 SF Maintenance and Inspection (M&I) Facility southeast of the MSA as well as the new access roads proposed (Project #6) would avoid the jurisdictional WOTUS identified during a 2019 wetland delineation. As identified in Table AL2.1-2, new construction would consist of 15 infrastructure improvement projects resulting in up to 208,570 SF (4.8 acres) of new construction footprint, including up to 124,589 SF (2.9 acres) 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 AL2.1-2). 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 coverage under Alabama's Construction General Permit. 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 CBMPP would be implemented and prepared to maintain effective erosion and sediment controls. The CBMPP would include erosion, sediment, and pollution controls used, periodic inspections, and maintenance of 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, 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.

In accordance with UFC 3-210-10, *LID* (as amended, 2015) 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 industrial BMP Plan (ALANG 2016) for the installation in compliance with the USEPA NPDES program would be amended as necessary to reflect post-construction operations and potentially new BMPs. This BMP Plan provides a management and engineering strategy to improve the quality of stormwater runoff from the 187 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 187 FW alternative, the stormwater management system would be designed in compliance with applicable stormwater regulations. In addition, the 187 FW installation is currently in compliance with its USEPA NPDES program and proposed facility designs would follow the USEPA NPDES program 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 at the 187 FW installation would not be significant.

Groundwater

Construction activities and operations under the Proposed Action at the 187 FW installation would include stormwater runoff protection measures that would also serve to protect groundwater quality. By adhering to the provisions of the Construction General Permit for stormwater discharges from construction sites; implementing BMPs; and amending the existing industrial BMP Plan, 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 27 at the 187 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 187 FW installation would not be significant.

Floodplains

The proposed projects would not occur within a 100-year flood plain zone (FEMA 2014) (Figure AL3.10-2). 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 that would result from construction activities or operations associated with the Proposed Action would not be significant.

Wetlands

According to the National Wetlands Inventory and a recent 2017 wetlands delineation, there are no wetlands on the 187 FW installation (USFWS 2018a; 187 FW 2018a). However, a 2019 wetland delineation was conducted within the airport boundaries outside the MSA area where Project #6 is proposed. Results of this survey indicate that two jurisdictional wetlands occur within this area (187 FW 2019b). The new 4,000 SF M&I Facility southeast of the MSA as well as the new access roads proposed (Project #6) would avoid the jurisdictional wetlands. The existing road that would be replaced is adjacent to the two wetlands, but would avoid any direct disturbance during this replacement. To minimize potential impacts associated with erosion, runoff, and sedimentation during construction activity, proposed construction under this alternative would be in compliance with and follow standard construction practices as described in Alabama's Construction General Permit. In compliance with coverage under this permit, a CBMPP would be implemented and prepared to maintain effective erosion and sediment controls. 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. Therefore, construction activities would have no significant impacts on wetlands (Figure AL3.10-2).

No Action Alternative

Under the No Action Alternative, no F-35A operational aircraft would be based at the 187 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 AL3.10.1.1. Therefore, there would be no additional impacts to water resources under the No Action Alternative.

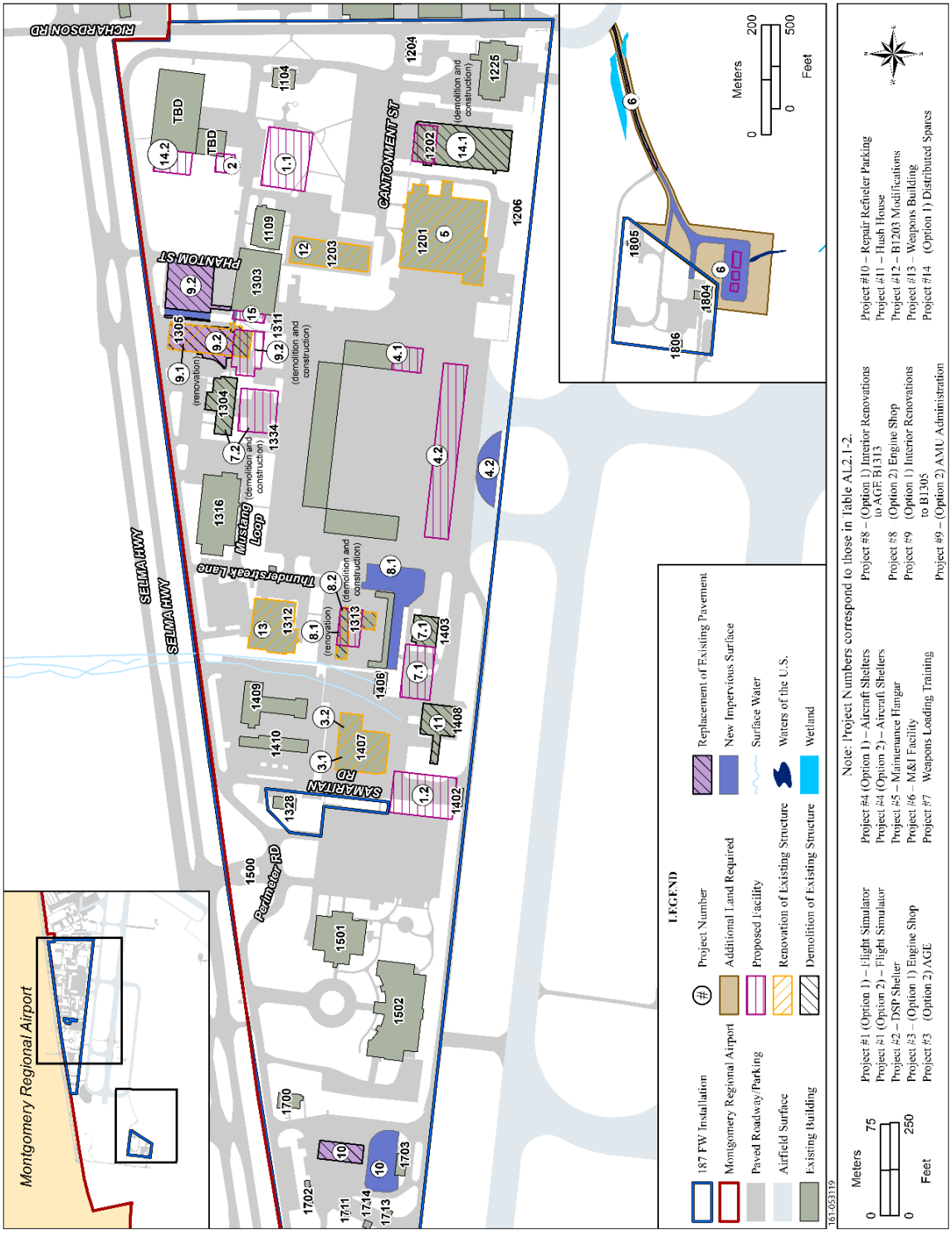

Figure AL3.10-2.
Water Resources and Wetlands within the Vicinity of the Proposed Construction at the 187 FW Installation

AL3.10.2 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.

AL3.10.3 Summary of Impacts

Under the Proposed Action at the 187 FW installation, proposed construction would result in up to 208,570 SF (4.8 acres) of new construction footprint, including up to 124,589 SF (2.9 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. 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 187 FW installation would not be significant.

AL3.11 BIOLOGICAL RESOURCES

AL3.11.1 Installation

AL3.11.1.1 Affected Environment

Vegetation

The majority of the 187 FW installation is developed or highly disturbed and vegetation is comprised primarily of landscaped areas such as lawns, ornamental trees, or maintained open fields of grass (187 FW 2018b).

Wildlife

The majority of the wildlife present at the airport and the 187 FW installations consists of species that are highly adapted to developed and disturbed areas. Common bird species observed on the installation during a recent 2017 fauna survey include the mourning dove (*Zenaida macroura),* killdeer (*Charadrius vociferous*), eastern meadowlark (*Sturnella magna*), eastern bluebird (*Sialia sialis*), and the Eurasian collared-dove (*Streptopelia decaocto*) (187 FW 2018b). Other common bird species observed on the installation include the American crow (*Corvus brachyrhynchos),* Carolina wren (*Thryothorus ludovicianus),* European starling (*Sturnus vulgaris*), American robin (*Turdus migratorius*), tufted titmouse (*Baeolophus bicolor),* and the brown-headed cowbird (*Molothrus ater*). Common mammals observed on the installation include the eastern gray squirrel

(*Sciurus carolinensis*) and the eastern cottontail (*Sylvilagus floridanus*) (ALANG 2013; 187 FW 2018b). Common amphibians and reptiles observed during the 2017 survey include the southern toad (*Anaxyrus terrestris*) and the southern leopard frog (*Lithobates sphenocephalus*) (187 FW 2018b).

Threatened, Endangered, and Special Status Species

Table AL3.11-1 lists federally threatened, endangered, candidate, and state-listed-species observed or potentially occurring in the vicinity of the 187 FW installation. No federally- or state-listed species have been observed at the 187 FW installation. A flora and fauna survey were conducted in 2017 on the installation, and no federally- or state-listed species were observed at the 187 FW installation (187 FW 2018b). However, there is potential for three federally-listed species (one bird and two plants) and an additional eight state-listed species (six birds, four reptiles/amphibians, and one mammal) to occur within the vicinity of the installation. There is no critical habitat on the installation. In addition, 16 migratory bird species have the potential to be located within the installation (Table AL3.11-2).

Table AL3.11-1. Federally- and State-Listed Species Potentially Occurring within the 187 FW installation and Under the Airspace
(Page 1 of 3)

Common Name	*Scientific Name*	*Status*	*Potential Occurrence on 187 FW Installation*	*Potential Occurrence Under the Airspace*
Birds				
American kestrel	*Falco sparverius*	SP	P	P
American oystercatcher	*Haematopus palliatus*	SP	-	P
Bachman's sparrow	*Peucaea aestivalis*	SP	P	P
Bewick's wren	*Thryomanes bewickii*	SP	-	P
Black skimmer	*Rynchops niger*	SP	-	P
Burrowing owl	*Athene cunicularia*	SP	-	P
Caspian tern	*Hydroprogne caspia*	SP	-	P
Common ground dove	*Columbina passerine*	SP	P	P
Forster's tern	*Sterna forsteri*	SP	-	P
Glossy ibis	*Plegadis falcinellus*	SP	-	P
Gray kingbird	*Tyrannus dominicensis*	SP	-	P
Groove-billed ani	*Crotophaga sulcirostris*	SP	-	P
Gull-billed tern	*Gelochelidon nilotica*	SP	-	P
Henslow's sparrow	*Ammodramus henslowii*	SP	-	P
Lark Sparrow	*Chondestes grammacus*	SP	-	P
Least bittern	*Ixobrychus exilis*	SP	-	P
Least tern	*Sternula antillarum*	SP	-	P
Le Conte's sparrow	*Ammodramus leconteii*	SP	-	P
Long-billed curlew	*Numenius americanus*	SP	-	P
Marsh wren	*Cistothorus palustris*	SP	-	P
Mottled duck	*Anas fulvigula*	SP	-	P
Nelson's sparrow	*Ammodramus nelson*	SP	-	P
Northern harrier	*Circus cyaneus*	SP	-	P

Table AL3.11-1. Federally- and State-Listed Species Potentially Occurring within the 187 FW installation and Under the Airspace
(Page 2 of 3)

Common Name	*Scientific Name*	*Status*	*Potential Occurrence on 187 FW Installation*	*Potential Occurrence Under the Airspace*
Painted bunting	*Passerina ciris*	SP	P	P
Piping plover	*Charadrius melodus*	T, SP	-	P
Red-cockaded woodpecker	*Picoides borealis*	E, SP	-	P
Reddish egret	*Egretta rufescens*	SP	-	P
Royal tern	*Thalasseus maximus*	SP	-	P
Sandwich tern	*Thalasseus sandvicensis*	SP	-	P
Scissor-tailed flycatcher	*Tyrannus forficatus*	SP	-	P
Seaside sparrow	*Ammodramus maritimus*	SP	-	P
Short-eared owl	*Asio flammeus*	SP	P	P
Snowy plover	*Charadrius nivosus*	SP	-	P
Swallow-tailed kite	*Elanoides forficatus*	SP	-	P
White ibis	*Eudocimus albus*	SP	-	P
Willet	*Tringa semipalmata*	SP	-	P
Wilson's plover	*Charadrius wilsonia*	SP	-	P
Wood stork	*Mycteria Americana*	T, SP	P	P
Yellow rail	*Coturnicops noveboracensis*	SP	-	P
Yellow warbler	*Setophaga petechial*	SP	P	-
Fish				
Atlantic sturgeon	*Acipenser oxyrinchus desotoi*	T, SP	U	N/A
Paddlefish	*Polyodon spathula*	SP	U	N/A
Invertebrates				
Southern clubshell	*Pleurobema decisum*	E, SP	U	N/A
Stirrupshell	*Quadrula stapes*	SP	U	N/A
Tulotoma snail	*Tulotoma magnifica*	T	U	N/A
Mammals				
Eastern spotted skunk	*Spilogale putorius*	SP	-	P
Gray bat	*Myotis grisescens*	E, SP	-	P
Indiana bat	*Myotis sodalist*	E, SP	-	P
Long-tailed weasel	*Mustela frenata*	SP	-	P
Northern long-eared bat	*Myotis septentrionalis*	T	-	P
Rafinesque's big-eared bat	*Corynorhinus rafinesquii*	SP	-	P
Southeastern myotis	*Myotis austroriparius*	SP	-	P
Southern pocket gopher	*Geomys pinetis*	SP	P	P
West Indian manatee	*Trichechus manatus*	T, SP	-	P
Reptiles and Amphibians				
Alabama map turtle	*Graptemys pulchra*	SP	P	P
Alabama red-bellied turtle	*Pseudemys alabamensis*	E	-	P
Alligator snapping turtle	*Macrochelys temminickii*	SP	P	P
Black pine snake	*Pituophis melanoleucus lodingi*	T, SP	-	P
Black-knobbed sawback	*Graptemys nigrinoda*	SP	P	P
Coachwhip	*Masticophis flagellum*	SP	-	P
Coal skink	*Plestiodon anthracinus*	SP	-	P
Delta map turtle	*Graptemys nigrinoda delticola*	SP	-	P
Dusky gopher frog	*Rana sevosa*	E, ME	-	P
Eastern coral snake	*Micrurus fulvius*	SP	-	P
Eastern indigo snake	*Drymarchon corais couperi*	T, SP	-	P

Table AL3.11-1. Federally- and State-Listed Species Potentially Occurring within the 187 FW installation and Under the Airspace
(Page 3 of 3)

Common Name	*Scientific Name*	*Status*	*Potential Occurrence on 187 FW Installation*	*Potential Occurrence Under the Airspace*
Eastern king snake	*Lampropeltis getula*	SP	-	P
Gopher tortoise	*Gopherus Polyphemus*	T/C, SP	P	P
Green sea turtle	*Chelonia mydas*	E, SP	-	P
Gulf saltmarsh water snake	*Nerodia clarkia*	SP	-	P
Kemp's Ridley sea turtle	*Lepidochelys kempii*	E, SP	-	P
Leatherback sea turtle	*Dermochelys coriacea*	E, SP	-	P
Loggerhead sea turtle	*Caretta caretta*	T, SP	-	P
Mimic glass lizard	*Ophisaurus mimicus*	SP	-	P
Mississippi diamondback terrapin	*Malaclemys terrapin pileata*	SP	-	P
Mississippi gopher frog	*Lithobates sevosa*	SP	-	P
One-toed amphiuma	*Amphiuma pholeter*	SP	-	P
Rainbow snake	*Farancia erytrogramma*	SP, ME	-	P
Red hills salamander	*Phaeognathus hubrichti*	T	-	P
Reticulated flatwoods salamander	*Ambystoma bishop*	SP	-	P
River frog	*Lithobates heckscheri*	SP	-	P
Seepage salamander	*Desmognathus aeneus*	SP	-	P
Seal salamander	*Desmognathus monticola*	SP	-	P
Southern dusky salamander	*Desmognathus auriculatus*	SP	-	P
Southeastern five-lined skink	*Plestiodon inexpectatus*	SP	-	P
Southern hognose snake	*Keterodon simus*	SP, ME	-	P
Speckled king snake	*Lampropeltis getula holbrooki*	SP	P	P
Yellow-blotched map turtle	*Graptemys flavimaculata*	T		P
Plants				
Alabama canebrake pitcher-plant	*Sarracenia rubra* ssp. *alabamensis*	E	P	N/A
Georgia rockcress	*Arabis georgiana*	T	P	N/A

Notes: 187 FW = 187th Fighter Wing; E = Federally Endangered; ME = State endangered in Mississippi; N/A = not applicable; O = Observed; P = Potential; SP = Alabama State Protected; T= Federally Threatened; U = Unlikely.

Source: USFWS 2017, 2018b; Alabama Natural Heritage Program 2018; 187 FW 2018b; Mississippi Museum of Natural Science 2014.

Table AL3.11-2. Migratory Birds that Could Potentially Occur within the 187 FW Installation and Under the Airspace

Common Name	*Scientific Name*	*Season*	*Potential Occurrence on the 187 FW Installation*	*Potential Occurrence Under the Airspace*
American oystercatcher	*Haematopus palliatus*	Breeding	-	P
Bald eagle	*Haliaeetus leucocephalus*	Breeding	P	P
Black rail	*Laterallus jamaicensis*	Breeding	-	P
Black skimmer	*Rynchops niger*	Breeding	-	P
Black-billed cuckoo	*Coccyzus erythrophthalmus*	Breeding	-	P
Bobolink	*Dolichonyx oryzivorus*	Breeding	-	P
Eastern bluebird	*Sialia sialis*	Breeding	O	-
Eastern meadowlark	*Strnella magan*	Breeding	O	-
Killdeer	*Charadrius vociferous*	Breeding	O	-
Eastern whip-poor-will	*Antrostomus vociferous*	Breeding	-	P
Golden eagle	*Aquila chrysaetos*	Winter	-	P
Golden-winged warbler	*Vermivora chrysoptera*	Breeding	-	P
Henslow's sparrow	*Ammodramus henslowii*	Breeding	-	P
King rail	*Rallus elegans*	Breeding	P	P
Le Conte's sparrow	*Ammodramus leconteii*	Winter	-	P
Lesser yellowlegs	*Tringa flavipes*	Summer/Fall/Winter	P	P
Marbled godwit	*Limosa fedoa*	Spring/Summer/Fall	-	P
Mourning dove	*Zenaida macroura*	Breeding	O	-
Nelson's sparrow	*Ammodramus nelson*	Fall	P	P
Prothonotary warbler	*Protonotaria citrea*	Breeding	P	P
Purple sandpiper	*Calidris maritima*	Winter	-	P
Red-headed woodpecker	*Melanerpes erythrocephalus*	Breeding	P	P
Red-throated loon	*Gavia stellate*	Spring	-	P
Rusty blackbird	*Euphagus carolinus*	Winter	P	P
Seaside sparrow	*Ammodramus maritumus*	Breeding	-	P
Semipalmated sandpiper	*Calidris pusilla*	Summer	P	P
Short-billed dowitcher	*Limnodromus griseus*	Summer/Fall	P	P
Swallow-tailed kite	*Elanoides forficatus*	Breeding	P	P
Whimbrel	*Numenius phaeopus*	Spring/Summer/Fall	-	P
Willet	*Tringa semipalmata*	Breeding	P	P
Wood thrush	*Hylocichla mustelina*	Breeding	P	P
Yellow rail	*Coturnicops noveboracensis*	Winter	-	P
Yellow-bellied sapsucker	*Sphyrapicus varius*	Breeding	-	P

Notes: 187 FW = 187th Fighter Wing; O = Observed; P = Potential; U = Unlikely.
Sources: USFWS 2017, 2018b.

AL3.11.1.2 Environmental Consequences

Proposed Action

Vegetation

Construction of new facilities under the Proposed Action at the 187 FW installation would occur primarily on currently paved areas or actively managed (i.e., mowed and landscaped) areas, and would result in an increase of up to 124,589 SF (2.9 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 187 FW installation, impacts to wildlife due to construction would not be significant.

Operational noise levels under the Proposed Action Alternative at the 187 FW installation would be expected to increase from current levels with the conversion to the F-35A aircraft. Under the Proposed Action Alternative at the 187 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 187 FW installation are proposed to increase by 68 operations (<1 percent). Under the Proposed Action at the 187 FW installation, only the number of aircraft operations would change; there would be no change in where or when individual aircraft operate. In addition, an additional 1,219 acres of land off the airport property would be exposed to DNL greater than 65 dB. The majority of this area would be agricultural, industrial, and residential 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, including those with migratory birds. Adherence to the existing BASH program would minimize the risk of bird/wildlife aircraft strikes (see Section AL3.4, *Safety*). The 187 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

Impacts to potentially occurring threatened, endangered, or candidate species on the 187 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 187 FW installation are projected to increase. However, no federally- or state-listed species have been observed on the installation and there is little to no habitat for these species. As a result, there would be no impacts to federally- or state-listed species from implementation of the Proposed Action Alternative at the 187 FW installation. 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 at the 187 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 AL3.4, *Safety*).

No Action Alternative

Under the No Action Alternative, no F-35A operational aircraft would be based at the 187 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 AL3.11.1.1. Therefore, there would be no significant impacts to biological resources as a result of the No Action Alternative.

AL3.11.2 Airspace

AL3.11.2.1 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 187 FW operations covers over 7,769 square miles of land within Alabama and Mississippi. Wildlife habitat within these areas are found within the Southeastern Mixed Forest Province and Outer Coastal Plain Mixed Forest Province. The Southeastern Mixed Forest Province is comprised primarily of forests of broadleaf deciduous and needleleaf evergreen trees, with 50 percent of stands made up of loblolly pine, shortleaf pine, and other southern yellow pine species, singly or in combination. The Outer Coastal Plain Mixed Forest Province is comprised of temperate rainforest, often called temperate evergreen forest and laurel forest. Common species include evergreen oaks and members of the laurel and magnolia families (Bailey 1995).

Wildlife typical of the Southeastern Mixed Forest Province vary by age of forest, density of forest, and percent of deciduous trees. However, common mammals include white-tailed deer, cottontail rabbit (*Sylvilagus floridanus*), fox squirrel (*Sciurus niger)*, gray squirrel (*Sciurus carolinensis)*, raccoon (*Procyon lotor),* and nine-banded armadillo (*Dasypus novemcinctus*). Common birds include the wild turkey (*Meleagris gallopavo)*, bobwhite (*Colinus virginianus)*, mourning dove (*Zenaida macroura)*, pine warbler (*Setophaga pinus*), cardinal (*Cardinalis cardinalis*), summer tanager (*Piranga rubra)*, Carolina wren (*Thryothorus ludovicianus)*, blue jay (*Cyonocitta cristata*), hooded warbler (*Setophaga citrina*), eastern towhee (*Pipilo erythrophthalmus)*, and tufted titmouse (*Baeolophus bicolor)*. Common reptiles and amphibians include cottonmouth (*Agkistrodon piscivorus*), copperhead (*Agkistrodon contortrix*), rough green snake (*Opheodrys aestivus*), glass lizards (*Ophisaurus* spp.), and slimy salamander (*Plethodon glutinosus*). Wildlife typical of the Outer Coastal Plain Mixed Forest Province is similar to the Southeastern Mixed Forest, with the addition of the American alligator (Bailey 1995).

Threatened, Endangered, and Special Status Species

Table AL3.11-1 lists federally threatened, endangered, candidate, and state-listed species observed or potentially occur under the proposed airspace. Eighteen federally-listed species (3 birds, 4

mammals, and 11 reptiles/amphibians) and an additional 63 state-listed species (36 birds, 5 mammals, and 22 reptiles/amphibians) have been observed or potentially occur under the proposed airspace. No critical habitat for these species is located under the airspace. In addition, 29 migratory birds that occur on the USFWS Birds of Conservation Concern list have the potential to occur under the airspace (see Table AL3.11-2).

AL3.11.2.2 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 remain the same or decrease from current levels conducted by F-16 aircraft and would occur within the same training areas. Current restrictions 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 Alternative at the 187 FW installation 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 5 to 15 dB within the airspace and would be up to 50 L_{dnmr}; well below the 112 dB shown to elicit major biological responses. Impacts to migratory birds under the MBTA would not be significant.

Section AL3.4, *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 at the 187 FW installation. 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 of 6 dB CDNL within the airspace units, with a maximum level at 44 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 threatened, endangered, or candidate species underlying the 187 FW airspace would be similar to those described within the wildlife section. Analysis presented in this section for wildlife species underlying the 187 FW training airspace would also apply to threatened and endangered species. Under the Proposed Action Alternative for the 187 FW, the amount of time the 187 FW would conduct operations in the associated airspace would decrease by approximately 17 percent. Additionally, the F-35As would fly higher than F-16s, which would reduce the potential impacts to species.

Overall, impacts to 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 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 of 6 dB CDNL within the airspace units, with a maximum level at 44 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 187 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 AL3.11.2.1. Therefore, there would be no significant impacts to biological resources as a result of the No Action Alternative.

AL3.11.3 Summary of Impacts

Construction of new facilities under the Proposed Action at the 187 FW installation would occur primarily on currently paved areas or actively managed, therefore impacts to flora on the installation would be negligible. 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 187 FW installation would not be significant.

AL3.12 CULTURAL RESOURCES

AL3.12.1 Installation

AL3.12.1.1 Affected Environment

Archaeological Resources

The 187 FW installation covers approximately 71 acres and 5 acres have been previously surveyed for archaeological resources. The remaining 66 acres that have not been surveyed are primarily part of the built environment, including paved and landscaped areas. All of the potentially undisturbed portions of the 187 FW installation were surveyed for archaeological resources in 2009. As a result of this survey, no archaeological sites were identified (NGB 2012).

Architectural Resources

The 187 FW installation includes approximately 45 buildings and structures. A comprehensive cultural resources survey of the 187 FW was completed in 2009 and included an inventory and evaluation of all architectural resources built prior to 1990 located at the installation. A total of 21 buildings and 2 objects were surveyed and evaluated (NGB 2012). Based on the results of this survey, all 23 architectural resources were determined to be not eligible for listing in the National Register of Historic Places (NRHP) (NGB 2012). The Alabama SHPO did not comment on the

determination of eligibility for the 187 FW's pre-1990 architectural resources, so the NGB assumed the SHPO's concurrence with its finding (NGB 2010, 2012).

An inventory and evaluation of post-1989 buildings and structures at the 187 FW installation was recently undertaken (NGB 2018). Twenty-three post-1989 buildings and structures at the installation were documented. Seven of the surveyed resources are petroleum operations and storage facilities, and five resources are munitions storage and shops. The other surveyed resources include a communications facility, a fuel systems maintenance dock, a hush house, a dining hall, administration buildings, vehicle maintenance facilities, and storage 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 NGB is consulting with the Alabama SHPO on the eligibility determination.

Traditional Resources

The 187 FW installation contains no known traditional resources; however, 20 federally-recognized Tribes that are historically, culturally, and linguistically affiliated with the area have been identified. These Tribes include the Poarch Band of Creek Indians, Absentee-Shawnee Tribe of Oklahoma, Alabama-Quassarte Tribal Town, Cherokee Nation of Oklahoma, Chickasaw Nation of Oklahoma, Choctaw Nation of Oklahoma, Coushatta Tribe of Louisiana, Alabama-Coushatta Tribe of Texas, Eastern Band of Cherokee Indians, Eastern Shawnee Tribe of Oklahoma, Jena Band of Choctaw Indians, United Keetoowah Band of Cherokee Indians, Kialegee Tribal Town, Miccosukee Tribe of Florida, Mississippi Band of Choctaw Indians, Muscogee (Creek) Nation of Oklahoma, Seminole Tribe of Florida, Seminole Nation of Oklahoma, Shawnee Tribe, and Thlopthlocco Tribal Town of Oklahoma.

AL3.12.1.2 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 1,469 to 1,496 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 187 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 187 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 187 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 (NGB 2012). Under these conditions, there would be no adverse effects to archaeological resources with implementation of this alternative.

Architectural Resources

Seven buildings (Buildings 1201, 1203, 1305, 1312, 1313, 1403, and 1407) at the 187 FW installation are proposed for additions, infrastructure improvements, and interior renovations. The 187 FW would also demolish the existing hush house (Building 1408) and Fuel System Maintenance Dock (Building 1304). The 187 FW may demolish Building 131 if Option 2 of Project 8 is chosen. Buildings 1201, 1304, 1305, 1312, 1313, 1403, and 1407 were previously inventoried and evaluated (NGB 2010). The NGB determined the buildings were not eligible for listing in the NRHP. The inventory recommended that if the 187 FW decided to renovate or demolish these structures, that they would first formally consult with the Alabama Historical Commission by letter, citing the results of the 2010 inventory (that none of the buildings inventoried meet NRHP-eligibility standards and that a National Register Historic District is not present at the 187 FW installation) and seek concurrence or a Determination of No Effect for any Proposed Action that may affect structures at the installation (NGB 2010). Buildings 1203 and 1408 were recently inventoried and evaluated (NGB 2018). The NGB determined both of these properties are not eligible for listing in the NRHP and is consulting with the Alabama SHPO on its eligibility finding. Under these conditions, it is anticipated there would be no adverse effects to architectural resources as a result of implementation of this alternative.

Traditional Resources

No traditional resources have been identified at the 187 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 187 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 the 20 federally-recognized American Indian Tribes with ancestral ties to the 125 FW installation in February 2018. 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.

The Seminole Nation of Oklahoma responded via e-mail that they would like to be included in any consultation pursuant to the Proposed Action, and also requested that a full flora inventory be conducted in each area of interest. The Seminole Nation of Oklahoma also requested a face-to-face meeting to discuss the project (Isham 2018).

To date, no other responses have been received from federally-recognized American Indian Tribes associated with the 187 FW installation.

No Action Alternative

Under the No Action Alternative, no F-35A operational aircraft would be based at the 187 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 AL3.12.1.1. Therefore, there would be no significant impacts to cultural resources under the No Action Alternative.

AL3.12.2 Airspace

AL3.12.2.1 Affected Environment

There are 76 NRHP-listed cultural resources located under the airspace used by the 187 FW, including private residences, businesses, U.S. post offices, courthouses, depots, churches, plantations, parks, historic districts, schools, farms, a military fort, and a river landing site that was used by Napoleonic exiles (National Park Service 2014). Three of the NRHP-listed cultural resources are also designated National Historic Landmarks. These include Gaineswood (a plantation mansion), St. Andrew's Church, and Kenworthy Hall (an Italian style villa). 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 187 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 20 federally-recognized American Indian Tribes with ancestral ties to lands beneath the associated airspace in February 2018. These 20 American Indian Tribes included Alabama-Coushatta Tribe of Texas, Alabama-Quassarte Tribal Town of the Creek Nation, Kialegee Tribal Town of the Creek Nation of Oklahoma, Mississippi Band of Choctaw Indians, Absentee-Shawnee Tribe of Indians of Oklahoma, Coushatta Tribe of Louisiana, Eastern Shawnee Tribe of Oklahoma, Jena Band of Choctaw Indians, Shawnee Tribe, Thlopthlocco Tribal Town of Oklahoma, Miccosukee Tribe of Indians, Muscogee (Creek) Nation, Poarch Band of Creek Indians, The Seminole Tribe of Florida, Cherokee Nation of Oklahoma, Eastern Band of Cherokee Indians, Choctaw Nation of Oklahoma, Chickasaw Nation of Oklahoma, Seminole Nation of Oklahoma, and United Keetoowah Band of Cherokee 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. No American Indian reservations underlie the airspace associated with the 187 FW. Correspondence sent to the Tribes is located in Appendix A.

The Seminole Nation of Oklahoma responded via e-mail that they would like to be included in any consultation pursuant to the proposed project, and also requested that a full flora inventory be conducted in each area of interest. The Seminole Nation of Oklahoma also requested a face-to-face meeting to discuss the project (Isham 2018).

To date, no other responses have been received from the federally-recognized American Indian Tribes associated with the lands under the airspace associated with the 187 FW installation.

AL3.12.2.2 Environmental Consequences

Proposed Action

Under the Proposed Action Alternative for the 187 FW, the amount of time the 187 FW would conduct operations in the associated airspace would decrease by approximately 17 percent. Further, the F-35As would fly higher than the F-16s in general, which would reduce the potential to impact cultural resources. Aircraft operations in the airspace would decrease under this alternative. However, 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.

Changes in L_{dnmr} would be the greatest in the Birmingham MOA with an increase in subsonic noise of up to 15 dB L_{dnmr}. However, even with this increase, the overall L_{dnmr} would remain relatively low at 50 dB. All other subsonic noise in the other MOAs would have an L_{dnmr} less than 50 dB. Supersonic noise would increase up to 6 dBC, although the CDNL would remain low at 44 dBC.

No damage to historic structures is anticipated because overpressures would not exceed current levels found with the F-16 using the airspace (2.5 pounds per square foot [psf]). Impacts to structures would be 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 Alabama and Mississippi 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 187 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 AL3.13.2.1. Therefore, there would be no significant impacts to cultural resources as a result of the No Action Alternative.

AL3.12.3 Summary of Impacts

There are no archaeological sites within any of the proposed construction footprints at the 187 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. None of the buildings that would be associated with proposed construction are considered eligible for listing in the NRHP. No traditional cultural resources have been identified at the 187 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 187 FW installation would not be significant.

AL3.13 HAZARDOUS MATERIALS AND WASTES, AND OTHER CONTAMINANTS

AL3.13.1 Installation

AL3.13.1.1 Affected Environment

Hazardous Materials

Hazardous materials and petroleum products are used at the 187 FW installation for aircraft and vehicle maintenance operations, liquid fuel services, and general housekeeping. The hazardous materials and petroleum products used include POL products such as Jet-A jet fuel, motor vehicle gasoline, motor oils, greases, lubricants, hydrazine, and diesel fuel; solvents, degreasers, paints, thinners, acids, bases, pesticides, and housekeeping-related cleaning products.

There are currently 17 aboveground storage tanks (ASTs), 2 underground storage tanks (USTs), and 2 product recovery tanks at the 187 FW including:

- Two 157,000-gallon steel ASTs containing Jet-A fuel at Building 1707 and 1708 surrounded by concrete dikes.
- Three 5,000-gallon double-walled steel ASTs containing Jet-A, Diesel, and gasoline in Buildings 1411, 1412, and 1413, respectively.
- Two steel ASTs in Building 1408 containing 2,500 gallons of Jet-A and 600 gallons of 10/10 Oil, respectively. Containment provided by concrete dike.
- Five double-walled steel ASTs ranging in size from 100 to 200 gallons containing Diesel and located in Buildings 1109, 1225, 1316, 1705, and 1804.
- One 500-gallon double-walled steel AST containing Jet-A fuel in Building 1203.
- Two 134-gallon steel ASTs containing Penetrant Fluid located in Building 1407. Containment provided by closed sump.
- Two double-walled steel and fiberglass USTs storing 8,000 gallons and 10,000 gallons of Gasoline in Building 1328.
- One 2,500-gallon double-walled steel and fiberglass Jet-A Recovery Tank in Building 1700.
- One 600-gallon double-walled steel Oil Recovery Tank in Building 1409.

The two product recovery tanks are used as emergency spill or overflow containment USTs that are emptied immediately after use (187 FW 2018c).

Toxic Substances

Regulated toxic substances typically associated with buildings and facilities include asbestos, LBP, and polychlorinated biphenyls (PCBs). The ANG Technical Services Center Asbestos Management Team conducted an asbestos survey at the 187 FW on 12-21 May 2008. ACM is known to occur in four buildings, including Buildings 1202, 1305, 1317, and 1319. The Base Civil Engineer is continually updating the asbestos management program and is responsible for inspecting, repairing, and/or removing ACM at all installation-owned/operated facilities with the assistance of other installation organizations (ANG Civil Engineering Technical Services Center 2017).

Based on the age of many of the facilities at the 187 FW installation, a considerable number of buildings are expected to contain LBP. In order to take precaution, any buildings constructed prior to 1978 are presumed to contain LBP and would be tested for LBP prior to demolition or renovation. The 187 FW has maintained a Lead-Based Paint Operations and Management Plan since 2013 until the present. The Lead-Based Paint Operations and Management Plan details the procedures for demolishing, renovating, and abating risk for buildings with LBP; breaks down the duties of staff on the installation; and details the health hazardous associated with LBP (187 FW 2017d).

The 187 FW manages all PCB items in accordance with USEPA regulations, including 40 CFR 761. The 187 FW is considered PCB-free. Other potential PCB-contaminated equipment within the installation includes small capacitors and ballasts for light fixtures. All known PCBs and PCB-containing capacitors and ballasts not specifically labeled as PCB-free are disposed of as PCB-containing material (187 FW 2017e).

Hazardous Waste Management

The 187 FW Final Hazardous Waste Management Plan outlines procedures for controlling and managing hazardous wastes from the point where they are generated until they are disposed. It includes guidance for compliance with all federal, state, and local regulations pertaining to hazardous waste. There is also a section dedicated to detailing the governing regulations for spill prevention and describes specific protocols for preventing and responding to releases, accidents, and spills involving oils and hazardous materials. In addition, the Hazardous Waste Management Plan includes a Waste Minimization and Pollution Prevention Plan that details the Pollution Prevention program. The Pollution Prevention program aims to reduce the use of toxic and hazardous substances and the generation of wastes wherever possible through source reduction and environmentally sound recycling (187 FW 2017e).

The 187 FW is regulated as a Small Quantity Generator (SQG) of hazardous waste and maintains USEPA Identification Number ALD000648014. SQGs generate more than 100 kilograms, but less than 1,000 kilograms of hazardous waste in a calendar month. 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 14 SAPs (where a waste is initially accumulated) on the installation in Buildings 1201, 1203, 1312, 1313, 1409, 1407, 1316, 1110, and 1201 and the maximum volume of hazardous waste permitted at each SAP is 55 gallons of each waste stream. If an additional SAP is needed, an area near the location where the waste is generated will be selected by the SAP manager and the Environmental Coordinator. There is one CAP on the installation located at the Hazardous Materials Pharmacy in the northeast corner of the installation, where hazardous waste can accumulate in containers for up to 180 days or for up to 270 days if the Treatment, Storage, and Disposal facility is more than 200 miles away (187 FW 2017e).

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 six active OWSs (VM-1409-1-OWS, PO-1716-1-OWS, FD-1225-1-OWS, FC-1203-1-OWS, AG-1313-1-OWS, and VM-1408-1-OWS) on the 187 FW installation located at Buildings 1203, 1225, 1313, 1408, 1409, and 1716. The OWSs range in capacity from 110 to 10,000 gallons; five of the OWS discharge to the sanitary sewer that is connected to a publicly owned treatment works and one, PO-1716-1-OWS, discharges to a containment basin (ALANG 2017d).

Environmental Restoration Program

There are five potentially contaminated ERP sites on the 187 FW installation. The installation has been investigated under the ERP from 1986 to the present (ALANG 1994). All five sites have been recommended for no further action (NFA) under the ERP and one site, Site 4 Edge of Aircraft Parking Apron, was closed. Two of the five ERP sites (Site 1 The Petroleum, Oils, and Lubricant Facility [POL]; and Site 2 OWS and Tank – Building 1304) are located in areas of planned construction and one ERP site (Site 4 Edge of Aircraft Parking Apron) is located adjacent to an area of planned construction to support the proposed F-35A operations discussed in Section AL2.1.3. Table AL3.13-1 provides details for the three ERP sites located in the planned construction areas and Figure AL3.13-1 shows their locations (ALANG 2010).

Table AL3.13-1. ERP Sites within the 187 FW Installation

ERP Site	Materials of Concern	Status
1: The Petroleum, Oil, and Lubricants Facility	This site was the former location of the POL Facility and is now a parking area. After a Site Investigation that found that the potential human health risk from contaminants was low, Site 1 was recommended for NFA and removed from the ERP in 2000.	NFA
2: OWS and Tank – Building 1304	This site consists of a former OWS and tank to the south of Building 1304. Solvents (Petroleum Distillate-680), lacquer thinners, paint strippers, waste oil, and jet propulsion fuel #4 were all filtered through the OWS from 1961 until 2000 when the OWS and tank were removed. The site was recommended for NFA.	NFA
4: Edge of Aircraft Parking Apron	This site consists of the southwest edge of the aircraft parking apron where hydraulic fluid, Petroleum Distillate-680, and jet propulsion fuel #4 were routinely leaked from routine aircraft procedures and maintenance from 1953 until site closure. The site was closed in 1998.	Closed

Legend: ERP = Environmental Restoration Program; OWS = Oil/Water Separator; NFA = No Further Action; POL = Petroleum, Oil, and Lubricant.

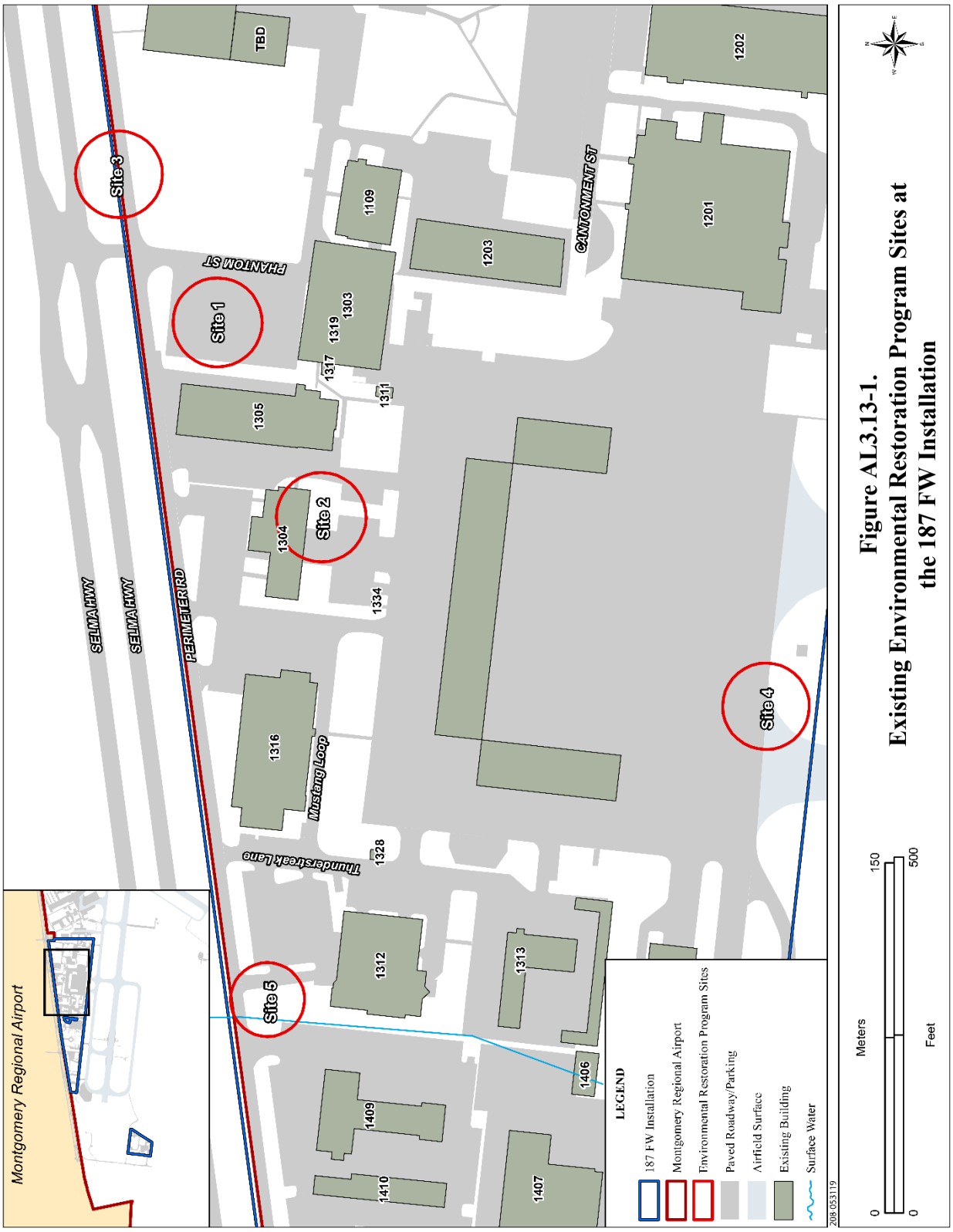

Figure AL3.13-1.
Existing Environmental Restoration Program Sites at the 187 FW Installation

The *Technical Memorandum – Remedial Investigation Summary for OW004, OW005, OW006 and TU007* describes the results of the Event 1 Remedial Investigation field work conducted from August – September 2016 (ALANG 2018). The four areas of concern (AOCs) that are under current investigation in the Remedial Investigation include the Fire Station OWS (OW006), Vehicle Lifts – Building 1409 (TU007), Hush House OWSs (OW005), and Building 1304 OWSs (OW004). Figure AL3.13-2 shows the locations of the AOCs that are under current investigation. Of the four sites, one of the sites, OW004, is located in areas of planned construction to support the proposed F-35A operations. The location of OW004 corresponds to the location of ERP Site 2 OWS and Tank – Building 1304. OW004has elevated concentrations of trichloroethylene in groundwater from the shallow perched aquifer and in soil from 5-50 feet below ground surface. The groundwater and soil contamination at OW004 extends past Building 1304 and is currently not delineated. The trichloroethylene contamination in groundwater and soil at OW004 is considered a risk to human health and is expected to be recommended for remedial action (ALANG 2018). The current Remedial Investigation is ongoing and the final report is expected before September 2019.

A Site Investigation for Per- and Polyfluoroalkyl Substances was performed between December 2017 and March 2018 at the 187 FW installation (NGB 2019). Seven potential release locations (PRLs) of perfluorinated compounds were investigated. Six of the seven PRLs were recommended for further investigation. The six PRLs include:

- PRL 1 Hangar 1201 – Main Hangar,
- PRL 2 Building 1304 – Former Fuel Cell Maintenance Hangar,
- PRL 3 Building 1225 – Current Fire Station,
- PRL 4 Former Building 1205 – Former Fire Station,
- PRL 6 Aircraft Parking Ramp/Apron, and
- PRL 7 Stormwater Outfall 002.

Three of the six PRLs (PRL 1 Hangar 1201, PRL 2 Building 1304, and PRL 6 Aircraft Parking Ramp/Apron) are located in areas of planned construction to support the proposed F-35A operations discussed in Section AL2.1.3. The highest concentrations of PFOS/PFOA in any single sample found during the Site Investigation in the three PRLs within the planned areas of construction are presented in Table AL3.13-2.

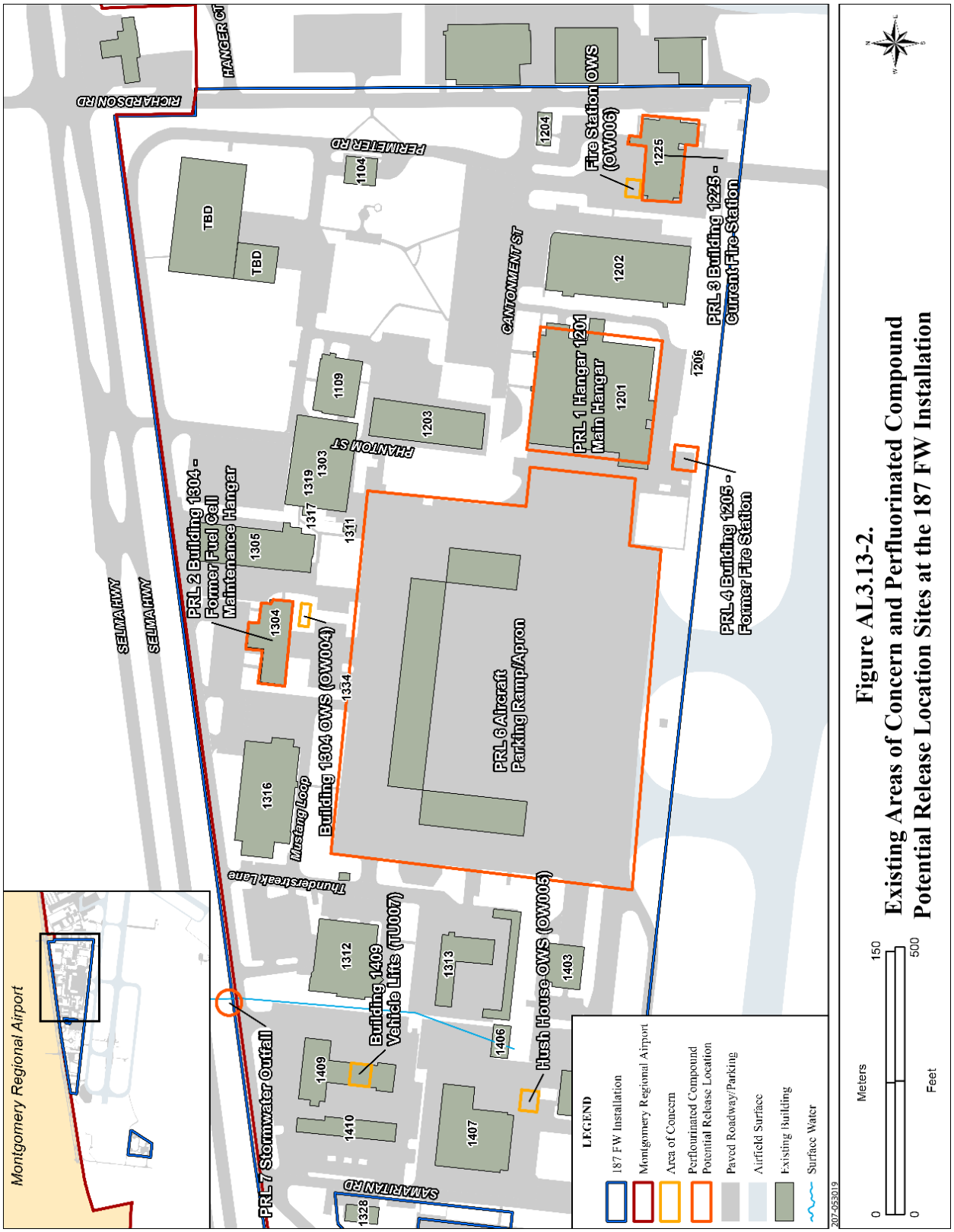

Figure AL3.13-2.
Existing Areas of Concern and Perfluorinated Compound Potential Release Location Sites at the 187 FW Installation

Table AL3.13-2. PFOS/PFOA Potential Release Locations that Intersect Proposed Construction

Building	*Max. Soil (PFOS/PFOA) mg/kg*	*Max. Groundwater (PFOS/PFOA) µg/l*
Hangar 1201 (PRL 1)	0.062 / 0.0031	0.017 / 0.064
Building 1304 (PRL 2)	0.015 / 0.099	0.070 / 0.77
Aircraft Pkg Apron (PRL 6)	0.24 / 0.021	0.0017 U / 0.0023 U

Notes: 1 µg/l = 1 part per billion = 1,000 parts per trillion.
U = Not detected at concentration shown.
Legend: µg/l = microgram per liter; mg/kg = milligram per kilogram; PFOA = Perfluorooctanoic Acid; PFOS = Perfluorooctane Sulfonate; PRL = Potential Release Location.

AL3.13.1.2 Environmental Consequences

Proposed Action

Hazardous Materials

Training activities and other functions related to the current F-16C/D program would be expected to remain similar for the F-35A beddown. 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 7,094 from 7,026 F-16C/D operations or less than 0.01 percent which would represent virtually no change in total aircraft operations at the airfield. With virtually no change in airfield operations, there would be no noticeable change in throughput of petroleum substances (e.g., fuels, oils) used during F-35A operations. A short-term increase of fuels used during construction activities (e.g., diesel, gasoline) would be expected to run earth-moving equipment and power tools and provide electricity and lighting.

Procedures for hazardous material management established for the 187 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, 15 construction projects are proposed to accommodate the beddown of the F-35As, including interior modification at Buildings 1201, 1203, 1312, and 1407; new construction at Buildings 1104, 1303, 1305, 1403, 1408, on the airfield apron, and outside of the installation fence to the southeast of the MSA. ACM is known to occur in Building 1305. A LBP survey has not been conducted at the 187 FW installation. 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 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, Alabama 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 F-16C/D 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, there would be virtually no change to the total number of aircraft operations for the 187 FW; therefore, hazardous waste generation associated with aircraft operations would be expected to have minimal change. Hazardous waste 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.

Three ERP sites (Site 1 The POL Facility; Site 2 OWS and Tank – Building 1304; and Site 4 Edge of Aircraft Parking Apron) overlap or are adjacent to the proposed construction under this alternative (Figure AL3.13-3). All three ERP sites have been recommended for NFA or have been closed. ERP Sites 1 and 4 do not pose a threat to human health or the environment. Although, ERP Site 2 (OWS and Tank – Building 1304) corresponds to the AOC, Building 1304 OWS (OW004) does pose a threat to human health and the environment. Site 2 OWS and Tank has significant vapor intrusion potential associated with the trichloroethylene in soil and groundwater. This risk will require additional subslab alternatives for any construction until the site has been fully remediated.

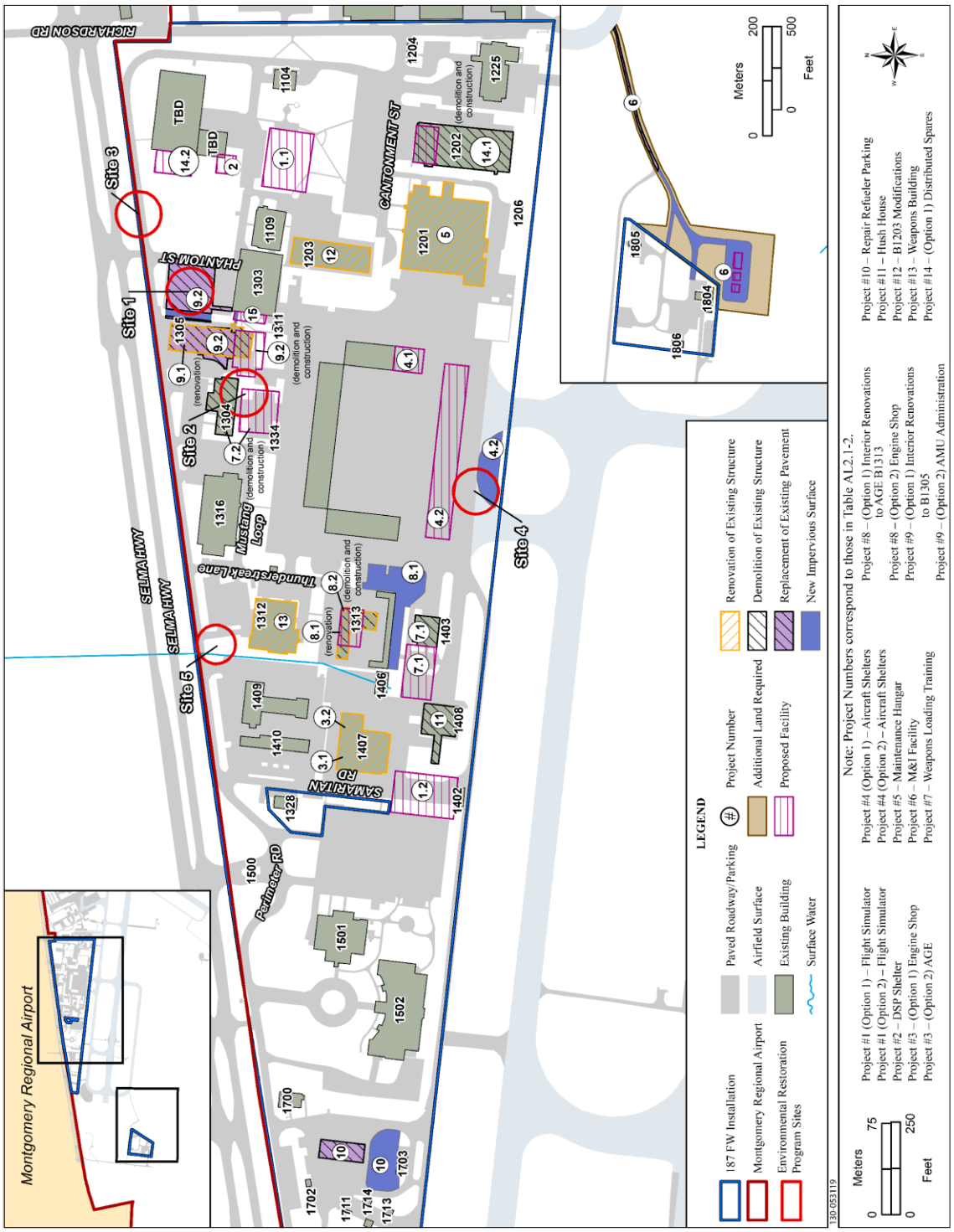

Figure AL3.13-3.
Environmental Restoration Program Sites within the Vicinity of the Proposed Construction at the 187 FW Installation

One AOC under active investigation (Building 1304 OWS [OW004]) and three PFOS/PFOA PRLs (PRL 1 Hangar 1201 – Main Hangar, PRL 2 Building 1304 – Former Fuel Cell Maintenance Hangar, and PRL 6 Aircraft Parking Ramp/Apron) overlap with the proposed construction under this alternative (Figure AL3.13-4). OW004 and PRL 2 are adjacent to the planned construction at and around Buildings 1304 and 1305, PRL 1 overlaps the renovation of Hangar 1201, and PRL 6 overlaps the construction at the Aircraft Parking Ramp/Apron. The 187 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 samples exceeded the risk-based screening level for PFOS/PFOA within the planned construction area. The combined PFOS/PFOA groundwater sample at PRL 1 and PRL 2 exceeded the USEPA Lifetime Health Advisory for drinking water of 70 parts per trillion (ppt). 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. Since contaminated media is confirmed in the AOC areas and there is potential contamination at the PFOS/PFOA PRLs, construction project managers would coordinate with the 187 FW environmental manager to establish an appropriate course of action for the construction project to ensure that federal and state agency notification requirements are met. As applicable, the 187 FW would coordinate with the ADEM regarding proposed construction near ERP sites, AOCs.

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 187 FW environmental manager establishes an appropriate course of action for the construction project to ensure that federal and state agency notification requirements are met, and to arrange for agency consultation as necessary if existing ERP sites, or AOCs are affected.

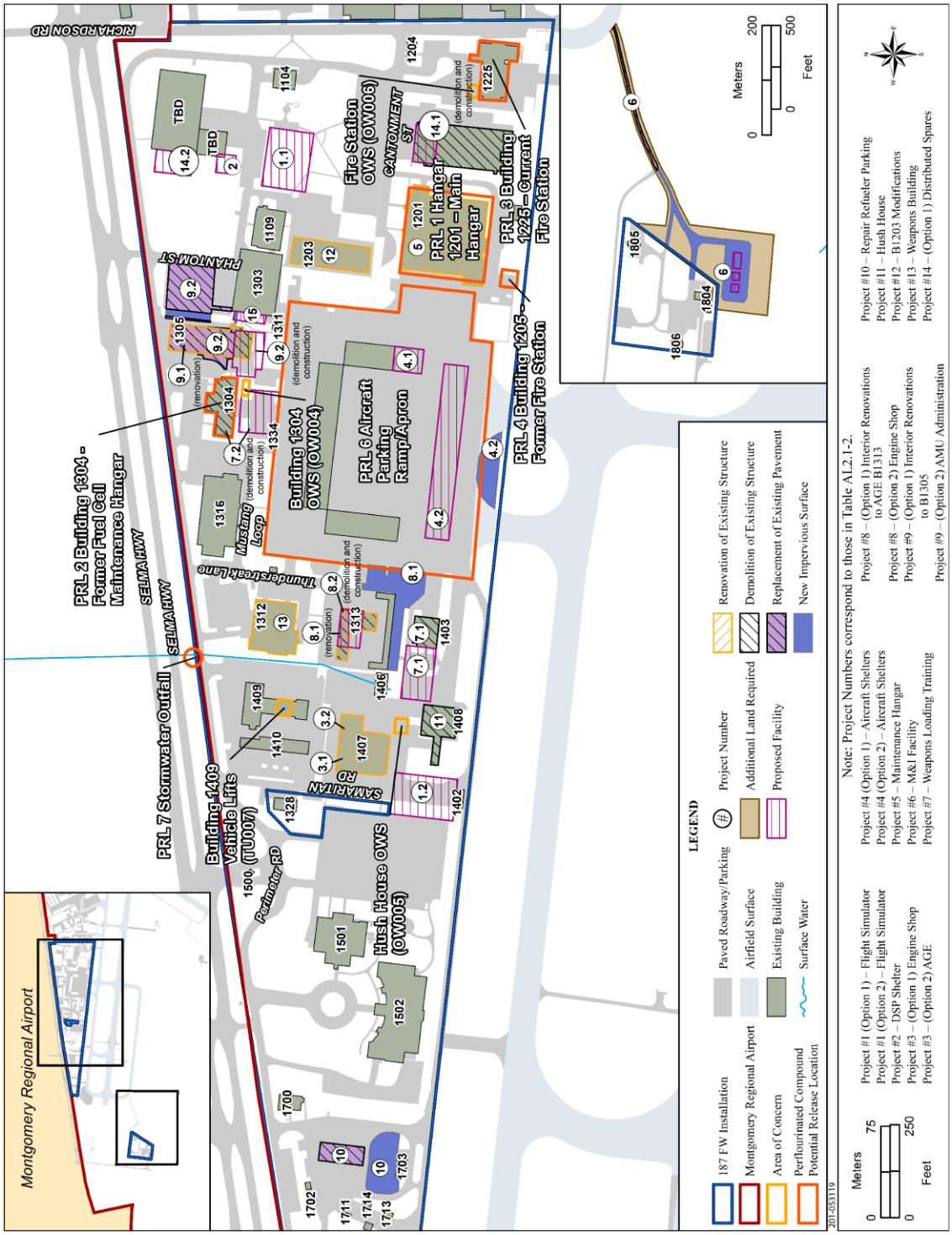

Figure AL3.13-4.
Environmental Restoration Program Sites within the Vicinity of the Proposed Construction at the 187 FW Installation

There would not be an increased risk of hazardous waste releases or exposure from this alternative. Any LBP or ACM that may be found in buildings that are proposed for construction activities would be managed per applicable USAF regulations. There is a potential of impact from AOC OW004 (which also corresponds to ERP Site 2) due to the elevated concentrations of trichloroethylene detected in groundwater and soil at the site. A construction plan would be created for the proposed Weapons Loading Training Facility construction that overlaps OW004 and the adjacent renovations to Building 1305 to protect human health and environment. If additional contaminated media were encountered during the course of site preparation or site development, work would cease until the 187 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. Impacts relative to hazardous materials and wastes would be negligible.

No Action Alternative

Under the No Action Alternative, no F-35A operational aircraft would be based at the 187 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 AL3.13.1.1. Therefore, there would be no significant impacts to hazardous materials and waste under the No Action Alternative.

AL3.13.2 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.

AL3.13.3 Summary of Impacts

Under the Proposed Action at the 187 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. Three ERP sites (Site 1 The POL Facility; Site 2 OWS and Tank – Building 1304; and Site 4 Edge of Aircraft Parking Apron) overlap with the proposed construction under this alternative. However, all three ERP sites have been recommended for NFA or have been closed and do not pose a threat to human health or the environment.

Two ERP sites under active investigation overlap with the proposed construction under this alternative: ERP Site OW005 (Hush House Oil Water Separator), ERP Site OW004 (Building 1304 OWSs)

Two AOCs under active investigation (Building 1304 OWS [OW004] and Hush House OWS [OW005]) and three PFOS/PFOA PRLs (PRL 1 Hangar 1201 – Main Hangar, PRL 2 Building 1304 – Former Fuel Cell Maintenance Hangar, and PRL 6 Aircraft Parking Ramp/Apron) overlap with the proposed construction under this alternative. Since contaminated media is confirmed in the AOC areas, construction project managers would coordinate with the 187 FW environmental manager to establish an appropriate course of action for the construction project to ensure that federal and state agency notification requirements are met. As applicable, the 187 FW would coordinate with the ADEM regarding proposed construction near ERP sites and AOCs. 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).

If additional contaminated media were encountered during the course of site preparation or site development, work would cease until the 187 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.

AL4.0 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.

AL4.1 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 187 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 187 FW installation and training in associated SUA.

The 187 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 the alternative selected. These projects could have cumulative impacts on resources within the ROI and are listed in Table AL4.1-1. Other

ongoing maintenance and repair activities would occur within the same footprint as current activities (i.e., repairing existing pavements, curbs, sidewalks, and fences; interior building renovations); therefore, they would not introduce any newly disturbed or impervious surfaces and are not included herein.

Table AL4.1-1. Current and Reasonably Foreseeable Actions at 187 FW Installation (Page 1 of 2)

Year	*Action*	*Total Area of New Ground Disturbance (SF)*	*New Impervious Surface (SF)*
Communications			
2020	Renovations to the exterior of B1109 to include removing the metal exterior and adding brick. In addition, 200 SF of new sidewalks would be added.	200	200
Weapons Release			
2020	Interior renovations to B1312 including installation a new HVAC system, electrical systems, fire suppression, and interior finishes. In addition the roof would be replaced.	26,000	0
Medical and Dining			
2021	Interior renovations to B1501 to include general space renovation and facility upgrades.	0	0
Hush House Floor			
2021	The cracked concrete floor in B1408 would be repaired. Project would address FOD issues.	0	0
Security Forces			
2021	A covered shelter and concrete pad would be added to the south side of B1502.	2,800	2,800
Main Gate Complex			
2021	Construct a new guard shack, covered truck inspection area, and awning to the main gate area.	57,000	57,000
Base Supply Complex			
2021	A new 36,300 SF facility and associated parking and dry retention pond would be constructed. In addition, B1202 (current base supply complex) would be demolished.	116,500	78,100
Renovation of Fire Suppression Systems			
2022	Interior renovations of fire suppression systems of B1201, 1203, and 1206.	0	0
Perimeter Fencing			
2022	Approximately 1,900 LF of chain-linked perimeter fencing would be replaced by AT/FP compliant fencing similar to other fencing that is already in place.	1,900	1,900
M&I Facility			
2022/2024	Construction of a new M&I facility southeast of the MSA outside the existing fence line.	86,000	76,200
Aircraft Shelters			
2025	Construct five new F-16 aircraft shelters.	20,000	0

Table AL4.1-1. Current and Reasonably Foreseeable Actions at 187 FW Installation (Page 2 of 2)

Year	*Action*	*Total Area of New Ground Disturbance (SF)*	*New Impervious Surface (SF)*
Fire Crash/Rescue Station			
2026-2027	Interior renovations to B1225 and a 7,200 SF addition to the west side of B1225 for more bays and dormitories.	7,200	7,200
Highway 80 Gate Removal			
2026	The gate located on Highway 80 would be removed. This gate would no longer be needed with the new gate under Project #6 being constructed. In addition, the road and fencing that currently curves around the gate entry road would be straightened out and a parking lot would be added to the extra space that is gained.	64,800	39,200

Legend: FOD = foreign object debris; HVAC = heating, ventilation, and air conditioning; LF = linear foot/feet; M&I = Maintenance and Inspection; MSA = Munitions Storage Area; SF = square foot/feet.

In addition to the ANG construction projects on the installation, the County's extension of Runway 3/21 to the south, would also have the potential to interact with the Proposed Action at the 187 FW installation.

AL4.2 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 187 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 187 FW installation 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. As such, the analysis of impacts in this section addresses cumulative effects at the installation only; no other airspace actions were identified that would interact with the Proposed Action at the 187 FW installation.

AL4.2.1 Noise

Installation. Under the Proposed Action Alternative, 1,219 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 AL4.1-1 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 AL4.2.5 for discussion of land use compatibilities.

Airspace. No airspace projects (e.g., modifications or operational changes) were identified that would have the potential to interact with the Proposed Action at the 187 FW installation; therefore, no significant cumulative airspace impacts would be anticipated.

AL4.2.2 Airspace

No airspace projects (e.g., modifications or operational changes) were identified that would have the potential to interact with the Proposed Action at the 187 FW installation; therefore, cumulative impacts to airspace would not be significant.

AL4.2.3 Air Quality

Based on the ACAM calculations, the emissions associated with construction activities described in Table AL4.1-1 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 small net changes to annual criteria pollutant emissions from the proposed F-35A beddown, it is unlikely that significant impacts to air quality, such as violation of 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 AL3.3.1.2. All of the projects listed in Table AL4.1-1 and in the bulleted text would generate GHGs and all 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 storm events of increasing frequency and severity involving flood and wind damage, which could produce negative impacts on mission activities and installation infrastructure.

Montgomery County is in attainment for all criteria pollutants and has no designated maintenance areas. Construction and operational emissions would be well below the PSD threshold selected as the potential indicator of significance for criteria pollutant emissions. There would be little change in operations at the airfield, and a decrease in operations below the mixing height in the SUA. Impacts to air quality associated with the proposed beddown of the F-35A at the 187 FW installation would be slightly beneficial, but not significant.

AL4.2.4 Safety

Risk of a catastrophic event occurring during construction activities under this alternative or those activities described in Table AL4.1-1 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 187 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 187 FW installation. Proposed renovation and infrastructure improvement projects listed in Table AL4.1-1 would not impact aircraft take-offs 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 IHBs 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 187 FW is sufficient to meet all requirements. Cumulative impacts to ground or flight safety would be negligible at the airfield. Repairs and construction projects identified in Table AL4.1-1 would be beneficial to safety; therefore, implementation of the Proposed Action at the 187 FW installation would not result in significant cumulative effects when considered with past, present, and reasonably foreseeable future actions.

AL4.2.5 Land Use

Under the Proposed Action at the 187 FW installation, acreage off-installation property experiencing noise levels at or above 65 dB DNL would increase by approximately 1,219 acres, which would be a significant impact. As mentioned in Section AL4.2.1, construction projects are located inside the 187 FW installation boundaries and would introduce short-term noise increases; however, these would not generate noise levels that would 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.

AL4.2.6 Socioeconomics

Economic activity associated with proposed construction activities described as a component of this alternative and those shown in Table AL4.1-1, 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 27 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 187 FW installation and those projects listed in Table AL4.1-1 would not be significant on a regional scale.

AL4.2.7 Environmental Justice and the Protection of Children

None of the projects listed in Table AL4.1-1 would be expected to impact environmental justice communities or children individually. Although the projects listed in Table AL4.1-1 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.

AL4.2.8 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 187 FW installation, short- and long-term demand for all services would increase by a minor degree when considered regionally. The Proposed Action at the 187 FW installation 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 expected 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 at the 187 FW installation. It is assumed that any new 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 187 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 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 associated with military actions 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 187 FW installation and reasonably foreseeable future projects would not be significant.

AL4.2.9 Earth Resources

Total acreage disturbed by the F-35A beddown would be up to 208,570 SF (4.8 acres) of new construction footprint, including up to 124,589 SF (2.9 acres) of new impervious surface such as roofs and paved areas. New construction associated with projects listed in Table AL4.1-1 would result in up to 382,400 SF (8.8 acres) of new construction footprint and up to 262,600 SF (6.0 acres) of new impervious surface. All proposed construction is within the footprint of the developed 187 FW installation. As such, minimal impacts to geology or topography are expected under the Proposed Action at the 187 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 AL4.1-1 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 Farmland Protection Policy Act 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 187 FW installation nor the present/reasonably foreseeable projects) are proposed on lands under the Farmland Protection Policy Act. In summary, implementing the Proposed Action at the 187 FW installation, along with other anticipated projects, would not result in significant cumulative impacts to earth resources.

AL4.2.10 Water Resources

Surface Water. Those projects that exceed 1 acre in size under the Proposed Action at the 187 FW installation or other projects, would require coverage under Alabama's Construction General Permit. In compliance with coverage under this permit, a 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. The new M&I Facility southeast of the MSA indicated in Table AL4.1-1 would avoid the jurisdictional wetlands delineated in the 2019 wetland delineation. NGB is currently seeking a Preliminary Jurisdictional Determination from USACE regarding the wetland delineation. To minimize potential impacts associated with erosion, runoff, and sedimentation during construction activity, proposed construction would be in compliance with and follow standard construction practices as described in Alabama's Construction General Permit. In compliance with coverage under this permit, a CBMPP would be implemented and prepared to maintain effective erosion and sediment controls. 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. Through compliance with Alabama's Construction General Permit, cumulative effects would not be significant when considering the Proposed Action at the 187 FW installation and other projects listed in Table AL4.1-1.

Groundwater. Construction and demolition impacts to groundwater under the Proposed Action at the 187 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 the Proposed Action at the 187 FW installation.

Stormwater. Construction and demolition activities associated with the Proposed Action at the 187 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, *LID* (as amended, 2015) 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 187 FW installation is considered along with present and reasonably foreseeable projects.

Wetlands. None of the construction activities would impact wetlands. Therefore, cumulative impacts to wetlands would not be significant when the Proposed Action at the 187 FW installation is considered along with present and reasonably foreseeable projects.

AL4.2.11 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/wildlife 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 187 FW installation or Montgomery Regional Airport within the land area under the projected noise contours. Construction-related impacts to the vegetation at the 187 FW installation and in the vicinity of projects identified in Table AL4.1-1 would be minor due to the lack of sensitive vegetation in the project areas. In general, construction activities at the 187 FW installation and at Montgomery Regional 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 187 FW installation; therefore, cumulative impacts to biological resources would not be significant.

AL4.2.12 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 187 FW installation or those listed in Table AL4.1-1 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 187 FW installation.

AL4.2.13 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 F-16C/D fleet. Under this alternative, there would be virtually no change in the total number of airfield operations; therefore, throughput of petroleum substances and hazardous waste streams would not be expected to change appreciably. It is expected that there would be short-term increases in the quantity of fuel used during construction activities for this action and the other reasonably foreseeable project. 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 and prevention program would be continued as detailed in the Hazardous Waste Management Plan and would include any construction-related materials or wastes associated with aircraft operations. Additionally, no changes to the installation's SQG status would be expected to occur due to 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. Cumulative impacts as a result of the Proposed Action at the 187 FW installation and present/reasonably foreseeable projects would not be significant.

AL4.3 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 187 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.

CHAPTER 5

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5.0 REFERENCES

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A.A., General Education, 1994
Years of Experience: 30

Isla Nelson, Cardno
B.A., Anthropology, 2001
Years of Experience: 20

Geoff Olander, Cardno
B.S., Mechanical Engineering, 1990
Years of Experience: 29

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B.S., Environmental Economics, Policy, 2003
Years of Experience: 10

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B.A., Geology, 2014
Years of Experience: 6

Susan Ratliff, Cardno
Years of Experience: 33

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M.A., Anthropology, 1981
B.A., Anthropology, 1975
Years of Experience: 43

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M.S., Natural Resources, 1996
M.A., International Affairs, 1983
B.A., German and Political Science, 1980
Years of Experience: 37

Lori Thursby, Cardno
MArch History, Architectural History and Historic Preservation, 1999
B.S., Environmental Design in Architecture, 1993
Years of Experience: 25

Kim Wilson, Cardno
Years of Experience: 39

Ethan Bright, LG^2 Environmental Solutions, Inc.
P.S.M., Aquatic Environmental Science, 2015
B.S., Environmental Studies, 2013
Years of Experience: 3

Hayley DiGiano, LG^2 Environmental Solutions, Inc.
Graduate Certificate in Aquaculture and Fish Health, 2018
B.S., Biology, Coastal Environmental Science, 2016
Years of Experience: 3.5

Lisa Heise, LG^2 Environmental Solutions
B.S., Biology, 2012
Years of Experience: 7

Pete Johnson, LG^2 Environmental Solutions, Inc.
B.S., Limnology, 1995
Years of Experience: 24

Robert C. Oney, Jackson Group
B.S., Wildlife Management, 2003
Years of Experience: 17

Shane Roberts, Jackson Group
M.S., Biology, 2008
B.S., Wildlife Management, 2005
Years of Experience: 17

JEA	Jacksonville Electric Authority
LBP	lead-based paint
L_{dnmr}	Onset-Rate Adjusted Day-Night Average Sound Level
L_{eq}	Equivalent Noise Level
$L_{eq(8)}$	8-hour Equivalent Noise Level
LID	Low Impact Development
L_{max}	Maximum Sound Level
LOA	Letter of Agreement
LUC	Land Use Control
MAJCOM	Major Command
MBTA	Migratory Bird Treaty Act
MEA	Minimum Enroute Altitude
MHRC	Mountain Home Range Complex
MIANG	Michigan Air National Guard
MILCON	Military Construction
mm	millimeter
MOA	Military Operations Area
MSA	Munitions Storage Area
MSGP	Multi-Sector General Permit
MSL	mean sea level
NA	Number of Events Above
NAAQS	National Ambient Air Quality Standards
NAVAIDS	Navigational Aids
NDI	Noise Depreciation Index
NEM	Noise Exposure Map
NEPA	National Environmental Policy Act
NEWQD	Net Explosive Weight Quantity-Distance
NFA	No Further Action
NGB	National Guard Bureau
NHPA	National Historic Preservation Act
NIOSH	National Institute for Occupational Safety and Health
NIPTS	Noise-Induced Permanent Threshold Shift
NM	nautical mile
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NOA	Notice of Availability
NOI	Notice of Intent
NOTAM	Notice to Airmen
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
O_3	Ozone
OSHA	Occupational Safety and Health Administration
OWS	oil/water separator
PAA	Primary Aircraft Authorized
PACAF	Pacific Air Forces
PAL	Project Action Limit
PCB	Polychlorinated biphenyl
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PHL	Potential for Hearing Loss
PM	particulate matter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
PM_{10}	particulate matter less than or equal to 10 microns in diameter
POI	Point of Interest
POL	Petroleum, Oil, and Lubricant
ppm	parts per million
ppt	parts per trillion
PRL	Potential Release Location
psf	pounds per square foot
PTRD	Public Traffic Route Distance
PTSD	Post-traumatic Stress Disorder
QD	Quantity-Distance
R-	Restricted Area
RCRA	Resource Conservation and Recovery Act
RNAV	Area Navigation
ROAA	Record of Air Analysis
ROD	Record of Decision
ROI	Region of Influence
RPZ	Runway Protection Zone
SAP	Satellite Accumulation Point
SEL	Sound Exposure Level
SEMCOG	Southeast Michigan Council of Governments
SF	square feet
SHPO	State Historic Preservation Office(r)
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
SQG	Small Quantity Generator
STOVL	Short Take-Off, Vertical Landing
SUA	Special Use Airspace
SWPPP	Stormwater Pollution Prevention Plan
U.S.	United States
UFC	Unified Facilities Criteria
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USAFE	U.S. Air Force in Europe
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
VFR	Visual Flight Rules
VHF	Very High Frequency
VOC	Volatile Organic Compound
W-	Warning Area
WDNR	Wisconsin Department of Natural Resources
WIANG	Wisconsin Air National Guard
WOTUS	Waters of the United States
WPDES	Wisconsin Pollutant Discharge Elimination System