



Environmental Assessment

Addressing the Proposed C-146A
Aircraft Beddown at Duke Field

Eglin Air Force Base, Florida



April
2016



ACRONYMS AND ABBREVIATIONS

µg/m ³	micrograms per cubic meter	dB	decibel
524 SOS	524th Special Operations Squadron	dBA	A-weighted decibel
592 SOMXS	592nd Special Operations Maintenance Squadron	DNL	day-night sound level
919 SOW	919th Special Operations Wing	DoD	Department of Defense
ACM	asbestos-containing material	DZ	drop zone
ADP	Area Development Plan	EA	Environmental Assessment
AFB	Air Force Base	EAFBI	Eglin Air Force Base Instruction
AFI	Air Force Instruction	EIAP	Environmental Impact Analysis Process
AFRC	Air Force Reserve Command	EIS	Environmental Impact Statement
AFSOC	Air Force Special Operations Command	EISA	Energy Independence and Security Act
AGL	above ground level	EO	Executive Order
AMU	aircraft maintenance unit	ERP	Environmental Restoration Program
APE	Area of Potential Effect	ESA	Endangered Species Act
AST	aboveground storage tank	ESCP	Erosion and Sediment Control Plan
ATC	Air Traffic Control	ESQD	Explosive Safety-Quantity Distance
AQCR	air quality Control Region	°F	degrees Fahrenheit
AvFID	Aviation Foreign Internal Defense	F.S.	Florida Statute
BASH	Bird/Wildlife Aircraft Strike Hazard	FAA	Federal Aviation Administration
BCA	Business Case Analysis	F.A.C.	Florida Administrative Code
BMP	best management practice	FCMP	Florida Coastal Management Program
°C	degrees Celsius	FDEP	Florida Department of Environmental Protection
CAA	Clean Air Act	ft	foot/feet
CEQ	Council on Environmental Quality	FWC	Florida Fish and Wildlife Conservation Commission
CEW	Bob Sikes Airport	FY	fiscal year
CFR	Code of Federal Regulations	GHG	greenhouse gas
CO	carbon monoxide	GPT	Gulfport-Biloxi International Airport
CO ₂	carbon dioxide		
CWA	Clear Water Act		
CZMA	Coastal Zone Management Act		

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HRT	Hurlburt Field	PBO	Programmatic Biological Opinion
GRASI	Gulf Regional Airspace Strategic Initiative	PBG	potential breeding groups
IJTS	Initial Joint Training Site	PM _{2.5}	particulate matter less than or equal to 2.5 microns
IFR	Instrument Flight Rules	PM ₁₀	particulate matter less than or equal to 10 microns
JO	Joint Order	PNS	Pensacola Regional Airfield
JSF	Joint Strike Fighter	POM	Program Objective Memorandum
LBP	lead-based paint	PPE	personal protective equipment
L _{eq}	equivalent sound level	ppm	parts per million
LOS	level of service	RCRA	Resource Conservation and Recovery Act
LZ	landing zone	RCW	red-cockaded woodpecker
MBTA	Migratory Bird Treaty Act	ROI	Region of Influence
MGM	Montgomery Regional Airport	SO ₂	sulfur dioxide
MOA	Military Operating Area	SO _x	oxides of sulfur
msl	mean sea level	SOS	Special Operations Squadron
MTR	Military Training Route	SUA	Special Use Airspace
NAAQS	National Ambient Air Quality Standards	SWPPP	Stormwater Pollution Prevention Plan
NDAA	National Defense Authorization Act	TLH	Tallahassee International Airport
NEPA	National Environmental Policy Act	tpy	tons per year
NHPA	National Historic Preservation Act	USAF	U.S. Air Force
NO ₂	nitrogen dioxide	USFWS	U.S. Fish and Wildlife Service
NO _x	oxides of nitrogen	UTA	unit training assembly
NPDES	National Pollutant Discharge Elimination System	U.S.C.	United States Code
NRHP	National Register of Historic Places	USEPA	United States Environmental Protection Agency
NSAv	Non-Standard Aviation	UXO	unexploded ordnance
O ₃	ozone	VPS	Destin-Fort Walton Beach Airport
OSHA	Occupational Safety and Health Administration	WRF	Water Reclamation Facility
PAM	Tyndall Air Force Base	WWTP	Wastewater Treatment Plant
PBA	Programmatic Biological Assessment		

Cover Sheet

Environmental Assessment Addressing the Proposed C-146A Aircraft Beddown at Duke Field, Eglin Air Force Base, Florida

Responsible Agencies: U.S. Air Force (USAF), Air Force Special Operations Command, and Air Force Reserve Command.

Affected Location: Duke Field, Eglin Air Force Base (AFB), Florida.

Report Designation: Environmental Assessment (EA).

Abstract: This EA describes USAF's proposal to relocate personnel and beddown aircraft to support Air Force Special Operations Command training and operations capabilities at Duke Field, provide more flexible training for USAF personnel, and construct supporting facilities. The Proposed Action includes the relocation of the 524th Special Operations Squadron (approximately 169 personnel) currently at Cannon AFB, New Mexico, to Duke Field, and the associated restationing and beddown of 18 additional C-146A aircraft from Cannon AFB to Duke Field. The Proposed Action also includes construction of a Squadron Operations Facility, a one-bay hangar/aircraft maintenance unit, a temporary flight simulator facility, and, ultimately, a permanent flight simulator facility.

The analysis in this EA considers the Proposed Action and the No Action Alternative and helps determine whether a Finding of No Significant Impact can be prepared or an Environmental Impact Statement is required.

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**ENVIRONMENTAL ASSESSMENT
ADDRESSING THE
PROPOSED C-146A AIRCRAFT BEDDOWN
AT
DUKE FIELD, EGLIN AIR FORCE BASE, FLORIDA**



DEPARTMENT OF THE AIR FORCE

Eglin Air Force Base, Florida

APRIL 2016

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1. Purpose and Need for the Proposed Action

1.1 Introduction

The U.S. Air Force (USAF) proposes the beddown of C-146A aircraft, relocation of personnel, and construction of associated facilities at Duke Field within Eglin Air Force Base (AFB), Florida. This Environmental Assessment (EA) was prepared in accordance with the National Environmental Policy Act (NEPA); the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (Title 40 Code of Federal Regulations [CFR] §§ 1500-1508); and the USAF-implementing regulations for NEPA, the *Environmental Impact Analysis Process* (EIAP), (32 CFR § 989), as amended.

This EA is organized into five sections, plus appendices. **Section 1** of the EA provides historical and background information, the project location, and the purpose of and need for the Proposed Action. **Section 2** contains a description of the Proposed Action and alternatives, including the No Action Alternative. **Section 3** describes the existing conditions of the potentially affected environment and identifies the environmental consequences, including cumulative impacts, of implementing all reasonable alternatives. **Section 4** includes environmental management requirements and actions. **Section 5** provides the names of those who prepared the EA. **Section 6** lists the references used in the preparation of this document. **Appendices A, B, and C** include the Proposed Action recommendation memorandum, agency coordination, and air quality calculations, respectively.

1.2 Location and Background

Eglin AFB is located in the northwestern Florida panhandle, just north of Niceville and Fort Walton Beach, Florida. Eglin AFB encompasses over 726 square miles with several auxiliary airfields. The primary function of Eglin AFB is to support the research, development, testing, and evaluation of weapons and electronic systems. Current missions on Eglin AFB also support individual and joint training operational units. Duke Field, also known as Eglin AFB Auxiliary Field #3, is in the north-central portion of Eglin AFB and encompasses approximately 2,700 acres of land (see **Figure 1-1**). Duke Field is composed of runways and associated taxiways, aprons, and airfield operations and maintenance facilities (USAF 2012).

Duke Field is home to the 919th Special Operations Wing (919 SOW), which is a reserve unit under the Air Force Reserve Command (AFRC). When activated, the 919 SOW reports to the Air Force Special Operations Command (AFSOC) at Hurlburt Field, Florida (USAF 2012). Currently, the 919 SOW has five C-145A aircraft and five C-146A aircraft assigned at Duke Field. In response to the 2011 Budget Control Act (Public Law 112-25), which directed reductions in discretionary Department of Defense (DoD) spending, USAF reduced the number of C-145A aircraft at Duke Field from 16 to 5 in fiscal year (FY) 2014. The beddown of the five C-146A aircraft at Duke Field was directed by the FY15 National Defense Authorization Act (NDAA) and evaluated through categorical exclusion in August 2014 (AFRC 2014). No construction of facilities was associated with the FY15 beddown because the necessary infrastructure already existed. The 919 SOW currently uses existing C-145A aircraft maintenance personnel (592 Special Operations Maintenance Squadron [SOMXS]) to maintain



Source: ESRI Streetmap 2010

Figure 1-1. Location of Duke Field

the assigned five C-145A and five C-146A aircraft at Duke Field. There is available reserve duty manpower at Duke Field due to the divestiture of the C-145A aircraft.

The 524th Special Operations Squadron (524 SOS), currently under the 27th SOW at Cannon AFB, New Mexico, operates C-146A aircraft, which are maintained through contractor logistical support. Projected USAF-wide reductions in C-146A aircraft maintenance funding, as dictated in the AFSOC FY15 Program Objective Memorandum (POM), driven by reductions in military spending under the Budget Control Act, required an identification of other more economical alternatives for C-146A aircraft maintenance. The USAF conducted a Business Case Analysis (BCA) in April 2015 to identify and analyze various C-145A and C-146A aircraft maintenance alternatives that could be implemented at Cannon AFB and Duke Field (AFSOC 2015). To resolve budget restrictions due to reductions in funding and realize efficiencies as described in its BCA, USAF proposes to establish a C-146A aircraft squadron at Duke Field on Eglin AFB. In addition, the 524 SOS would relocate to Duke Field and operate the C-146A aircraft under the Air Force Special Operations Air Warfare Center, in a USAF Non-Standard Aviation (NSAv) classic association with the 919 SOW under the AFRC (AFSOC and AFRC 2015). This action includes the relocation and beddown of an additional 18 C-146A aircraft and approximately 169 personnel from Cannon AFB to Duke Field beginning in FY16, which would result in a total of 23 C-146A aircraft at Duke Field by FY18.

The USAF NSAv program supports worldwide medium special operations forces mobility requirements, providing intra-theater mobility and cargo aircraft to provide the flexible, rapid, responsive operational movement of small special operations teams required to support the Theater Special Operations Command's operational plans and overseas contingency operations (AFSOC 2015). AFSOC and AFRC identified the strategy for the association and integration of AFRC personnel with AFSOC personnel within the NSAv operations and maintenance mission via the USAF's Total Force Integration process in accordance with Air Force Instruction (AFI) 90-1001, *Responsibilities for Total Force Integration* (AFSOC and AFRC 2015). The USAF approved the BCA findings and recommended this proposed NSAv association at Duke Field as part of the Proposed Action in February 2016 (see **Appendix A**). The Proposed Action is projected to save \$35 million in contract maintenance support.

1.3 Purpose and Need

The purpose of the Proposed Action is to consolidate AFSOC training and operations capabilities with newer and improved aircraft at a single location. The Proposed Action would enhance the training of USAF personnel and consolidate facilities to optimize operational and maintenance facility efficiency at Duke Field while also enabling the necessary support facilities to meet current environmental, safety, and security standards.

The Proposed Action is needed to meet the requirements of the AFSOC POM, and operate within the available budget in a manner to meet training and mission requirements. It is also needed to provide more flexible training for AFRC (reserve duty) and AFSOC (active duty) personnel, improve existing infrastructure, and retain USAF maintenance personnel affected by divestiture of C-145A aircraft.

1.4 NEPA Compliance Requirements

NEPA is a federal law requiring the analysis of potential environmental impacts associated with proposed federal actions before the actions are taken. The intent of NEPA is to make informed decisions based on the identification of potential environmental consequences and take appropriate actions to protect, restore, or enhance the environment. NEPA established CEQ, which is responsible for ensuring federal agency compliance with NEPA. The process for implementing NEPA is outlined in 40 CFR §§ 1500–1508, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act. CEQ regulations on implementing NEPA specify that an EA be prepared to determine whether to prepare a Finding of No Significant Impact or the preparation of an Environmental Impact Statement (EIS) is necessary. An EA can aid in an agency's compliance with NEPA when an EIS is unnecessary and facilitate preparation of an EIS when one is required.

The CEQ regulations mandate all federal agencies to use a prescribed approach to environmental impact analysis. The approach includes an evaluation of the potential environmental consequences associated with a Proposed Action and considers alternative courses of action.

Air Force Policy Directive 32-70, *Environmental Quality*, states USAF will comply with applicable federal, state and local environmental laws and regulations, including NEPA. If significant impacts are predicted under NEPA, USAF would decide whether to conduct mitigation to reduce impacts below the level of significance, prepare an EIS, or abandon the Proposed Action. This EA would also be used to guide USAF in implementing the Proposed Action in a manner consistent with USAF standards for environmental stewardship should the Proposed Action be approved for implementation.

1.5 Intergovernmental and Stakeholder Contribution

NEPA requirements help ensure environmental information is made available to the public during the decision-making process and prior to an action's implementation. A premise of NEPA is that the quality of federal decisions will be enhanced if the public is involved in the planning process. The Intergovernmental Coordination Act and Executive Order 12372, *Intergovernmental Review of Federal Programs*, require federal agencies to cooperate with and consider territorial and local views when implementing a federal proposal.

In compliance with NEPA, Eglin AFB notifies relevant stakeholders about the Proposed Action and alternatives (see **Appendix B** for stakeholder coordination and public involvement materials). The notification process provides these stakeholders the opportunity to cooperate with Eglin AFB and provide comments on the Proposed Action.

2. Proposed Action and Alternatives

This section describes the Proposed Action and alternatives considered, including the No Action Alternative. Guidance for complying with NEPA requires an assessment of potentially effective and reasonably feasible alternatives for implementing the Proposed Action. Alternatives dismissed early in the planning process as not reasonable—including alternative beddown locations—are not carried forward for detailed analysis in this EA.

2.1 Proposed Action

The Proposed Action consists of C-146A aircraft beddown and associated personnel relocation at Duke Field and facilities construction and demolition to support the beddown. These elements are discussed in detail below.

2.1.1 C-146A Aircraft Beddown and Operations

The C-146A aircraft provides multi-configurable cabin combinations for passengers and cargo for USAF. The mission of the C-146A aircraft is to provide flexible, responsive, and operational movement of small teams required to support AFSOC operations. In addition, AFSOC uses the aircraft to conduct airlift operations to prepared and semi-prepared airfields around the world. The C-146A aircraft crew consists of two pilots and one loadmaster, and it is powered by two Pratt & Whitney turboshaft engines that provide 2,150 horsepower per engine (USAF 2013a, AFSOC 2014a).

The Proposed Action includes the beddown of 18 additional C-146A aircraft at Duke Field between FY16 and FY18, which would result in a total of 23 C-146A aircraft in FY18. **Table 2-1** displays the number of existing and proposed aircraft at Duke Field from now through FY18. Approximately 10 of the 23 C-146A aircraft at Duke Field would typically be deployed at any given time. Therefore, approximately 13 C-146A aircraft are anticipated to be located at Duke Field.

Table 2-1. Existing and Anticipated C-145A and C-146A Beddown per Fiscal Year

Aircraft and Units on Duke Field	Existing Aircraft (FY15)	Proposed Additional Aircraft (FY16)	Proposed Additional Aircraft (FY17)	Proposed Additional Aircraft (FY18)	Number of Authorized Active Duty Personnel
C-145A (6 SOS/ 592 SOMXS)	5	0	0	0	286
C-146A (524 SOS)	5 ^a	3	12	3	169

Note: ^a These C-146A aircraft are associated with the 919 SOW/859 SOS.

The beddown at Duke Field would also include a total of 169 additional USAF personnel from the 524 SOS who would be restationed from Cannon AFB, New Mexico, to Duke Field, and the standup of the 859 SOS, a reserve aviation squadron. The 919 SOW maintenance manpower (592 SOMXS) currently servicing the existing C-145A and C-146A aircraft at Duke Field would be retained and used to replace the current contracted maintenance for the C-146A aircraft at

Cannon AFB once the aircraft and manpower are re-assigned to Duke Field. New training and operations facilities for the 524 and 859 SOS would be constructed.

The existing and proposed C-146A aircraft operations are detailed in **Table 2-2**. The five C-146A aircraft based at Duke Field currently conduct 644 training missions per year, half of which occur at night. Each mission is approximately 4 hours long and consists of numerous air operations (e.g., single takeoff or landing) at airfields and landing zones (LZs) both on and off the installation. These five C-146A aircraft conduct approximately 2,700 annual air operations at Duke Field, and approximately 2,200 annual air operations at nearby airfields including Hurlburt Field (HRT), Destin-Fort Walton Beach (VPS), and Bob Sikes Airport (CEW). They also conduct approximately 4,400 annual air operations at other airports and training sites outside the local airspace, but normally within 400 miles of the installation. There are approximately 256 training days per year, which primarily include weekdays and reserve unit training assembly (UTA) weekends.

Table 2-2. Existing and Proposed C-146A Aircraft Operations at Duke Field and Other Nearby Airfields

	Number of C-146A Aircraft	Total Number of Annual Training Missions	Average Duration of Training Mission (hours)	Annual C-146A Aircraft Operations	
				Hurlburt Field (HRT), Destin-Fort Walton Beach (VPS), Bob Sikes Airport (CEW)	Duke Field
Existing	5	644	4	2,200	2,700
Proposed Action	23	1,880	5	6,000	8,000
Increase Over Existing	18	1,236	1	3,800	5,300

Under the Proposed Action, the combination of the existing five and proposed 18 C-146A aircraft (i.e., 23 total aircraft) based at Duke Field would conduct 1,880 training missions per year, half of which would occur at night. Each mission would be approximately 5 hours long and consists of numerous air operations at airfields and LZs similar to those currently being used. They would conduct approximately 8,000 annual air operations at Duke Field and approximately 6,000 annual air operations at nearby airfields. They would also conduct approximately 8,200 annual air operations at other airports and other training sites within approximately 400 miles of Eglin AFB. The number of training days per year would remain unchanged, and would continue to primarily include weekdays and UTA weekends.

2.1.2 Facility Construction and Demolition

Under the Proposed Action, new construction and demolition of existing facilities would occur at Duke Field to facilitate and support the beddown of the C-146A aircraft, transfer of the 524 SOS, and standup of the 859 SOS. Proposed facilities include a C-146A one-bay hangar and collocated aircraft maintenance unit (AMU) facility; a squadron operations facility for the 524 and 859 SOS; and a temporary and ultimately a permanent flight simulation training facility for

C-146A aircraft. **Figure 2-1** shows proposed locations for facility and infrastructure construction and demolition associated with the Proposed Action, and **Table 2-3** lists the construction projects (and associated facility demolition and relocation requirements) that would be executed under the Proposed Action. The size, construction year, and exact location of some construction projects could change based on future funding and as designs develop in accordance with mission requirements. Each building site would be developed to provide optimum efficiency, adequate stormwater runoff detention, and compliance with all relevant federal and state safety regulations.

Table 2-3. Proposed Construction Projects

Project Number	Project Title	FY	Size (ft ²) ¹	Key Components
1	C-146A One-bay Hangar and AMU Shop	2021	17,026	<ul style="list-style-type: none"> • Construction of 10,200-ft² one-bay hangar with a minimum height-of-aircraft plus 10 feet clearance (23.75 feet plus 10 feet). • Demolition of Buildings 3018 and 3021. • Relocation of Building 3011 and a well house (Building 3204). • Demolition of Ford Avenue, Blake Street, and a portion of Clay Street. • Construction of 6,826-ft² AMU shop. • Construction of a 272,266-ft² apron. • Construction of 15,000-ft² vehicle parking.
2	524/859 SOS Squadron Operations Facility	2020	32,500	<ul style="list-style-type: none"> • Construction of 32,500 ft² of office space, storage areas, heritage room, planning and testing rooms, conference room, and locker rooms. • Construction of an access road, parking area with sidewalks, curbs, dumpster enclosure, landscaping, and fencing. • Construction of a 70,000 ft² parking area.
3	Temporary Flight Simulator	2016	4,665	<ul style="list-style-type: none"> • Construction of office space, area for the flight simulator system, computer room, maintenance area, supply/storage room, and utility rooms.
4	Permanent Flight Simulator	2019	6,850	<ul style="list-style-type: none"> • Construction includes road improvements, paved parking area, driveway, and sidewalks. • Construction of the temporary and permanent flight simulators would include similar features.

Note: ¹ These values are approximations.

Key: ft² = square feet

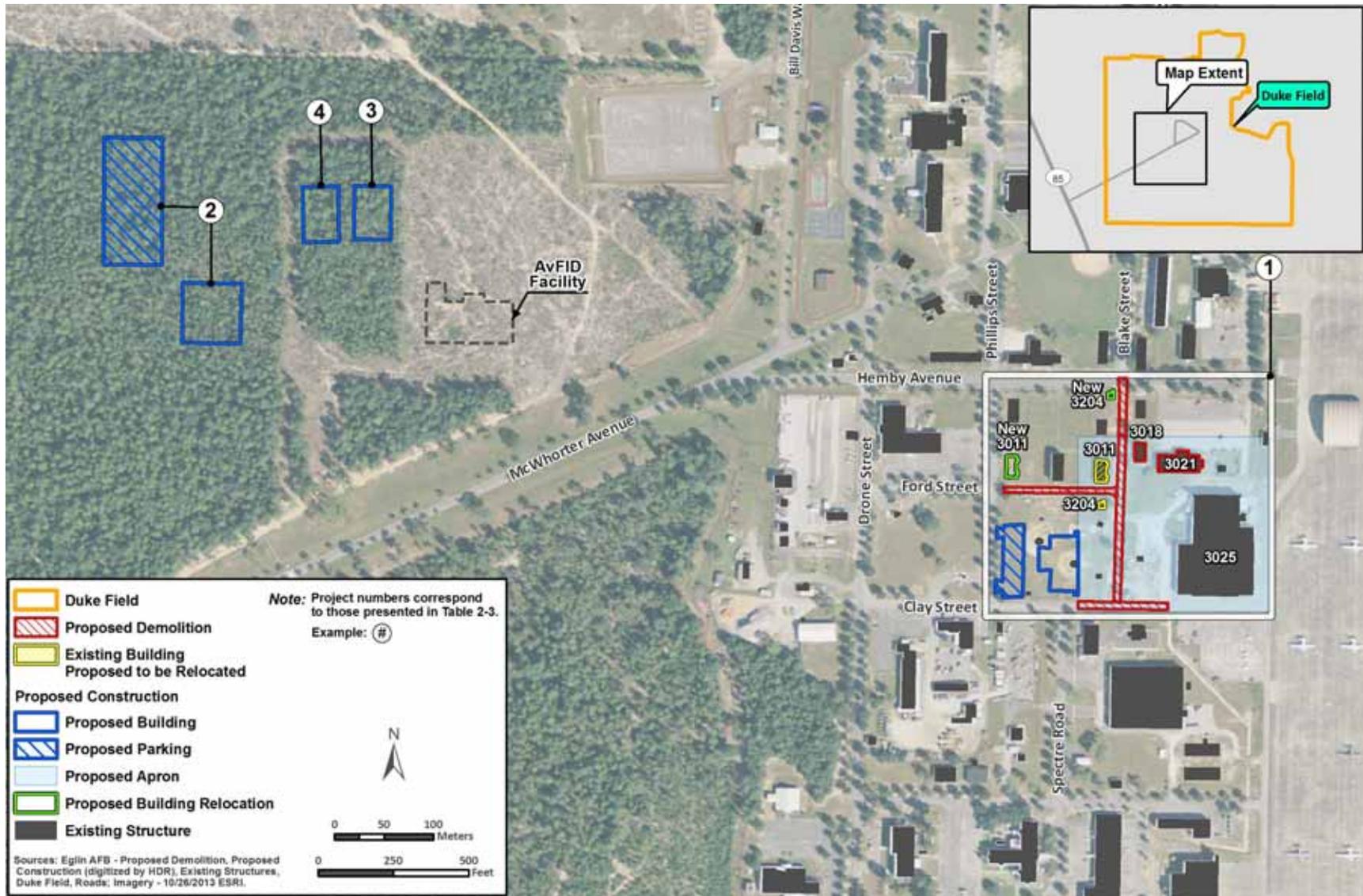


Figure 2-1. Location of the Proposed Action

1) C-146A One-bay Hangar and AMU Shop

The new one-bay hangar and AMU facilities for C-146A aircraft are proposed to be located between the Duke Field runways and Phillips Street. The hangar would be approximately 10,200 square feet (ft²) and capable of being expanded in phases. Due to the height of the aircraft, the hangar would be at least 33.75 feet in height. An aircraft apron connecting the hangar to the Duke Field runways and covering approximately 272,266 ft² would be constructed east of the hangar. The approximately 6,826-ft² AMU facility would be collocated with the hangar. An approximately 15,000-ft² vehicle parking area associated with the hangar and AMU would be constructed between the AMU and Philips Street.

To allow for construction of the new facilities, apron, and parking area, demolition of Buildings 3018 and 3021, Ford Avenue, Blake Street, and a portion of Clay Street totaling 38,730 ft² would occur. In addition, the demolition and relocation of Building 3011 and a well house (Building 3204) (totaling approximately 2,500 ft²) would be required. The existing Building 3011, at the corner of Fort Avenue and Blake Street, would relocate to the west side of Building 3013 at the intersection of Phillips Street and the existing Ford Avenue. The well house would be relocated from its current location at the corner of Ford and Blake Street to the intersection of Hemby Avenue and the existing Blake Street. Buildings 3018 and 3021 are east of Building 3011 and the existing Blake Street. The construction window for this project would be 12 months starting in FY21. Existing hangars (Buildings 3020, 3029, and 3087) would be used for transitioning C-146A aircraft maintenance until construction of the C-146A aircraft hangar is complete. Construction of the hangar and AMU, demolition of Buildings 3018 and 3021, and relocation of Buildings 3011 and 3204 would be consistent with the Duke Field Area Development Plan (ADP) (Atkins 2012).

2) 524/859 SOS Squadron Operations Facility

In order to accommodate the addition of the 524 and 859 SOS to Duke Field, a new 32,500-ft² squadron operations facility with an associated 70,000-ft² parking area would be constructed to the west of the Aviation Foreign Internal Defense (AvFID) facility currently under construction for 6 SOS/711 SOS/19 SOS/5 SOS. This site is north of McWhorter Avenue and west of Bill Davis Way. The squadron operations facility would consist of office spaces, storage areas, a heritage room, planning and testing rooms, a conference room, and locker rooms, and would be constructed in accordance with the Duke Field ADP (Atkins 2012). New construction would include an access road, 70,000-ft² parking area with sidewalks, curbs, landscaping, and fencing. The squadron operations facility would be accessed by roads currently under construction or planned for the AvFID facility. The construction window for this project would be 12 months starting in FY20. The transitioning 524 and 859 SOS personnel would be stationed temporarily in Building 3078 until the 524/859 SOS Squadron Operations Facility is operational following construction.

3) Temporary Flight Simulator

The temporary C-146A aircraft flight simulator would be approximately 4,665 ft² and contain an area for the flight simulator system, office space, computer room, maintenance area,

supply/storage room, and utility rooms. The temporary flight simulator may be a modular facility and would require an adequate concrete pad to support the facility with utilities connected.

Construction of the temporary flight simulator would take place over 9 months starting in FY16 for operation starting in FY17 and would be located to the west of the AvFID facility.

4) Permanent Flight Simulator

The permanent flight simulator would be approximately 6,850 ft² and would include an area for the flight simulator system, office space, computer room, and utility rooms, similar to those in the temporary flight simulator. The permanent flight simulator would be constructed in a location near the proposed temporary flight simulator (see **Figure 2-1**). Construction for the permanent flight simulator would start in FY19 with a 12-month window for construction.

2.2 Selection of Alternatives to the Proposed Action

Considering alternatives helps to avoid unnecessary impacts and allows for an analysis of reasonable ways to achieve a purpose. To warrant detailed evaluation, an alternative must be reasonable. To be considered reasonable, an alternative must be suitable for decision making, capable of implementation, and sufficiently satisfactory with respect to meeting the purpose of and need for the action. NEPA regulations define reasonable alternatives as economically and technically feasible, and show evidence of common sense.

The following selection criteria were used to determine whether or not alternative locations were considered reasonable for the proposed beddown of C-146A aircraft and associated squadron personnel. In evaluating alternative sites for the Proposed Action, USAF considered whether each location met the following selection criteria:

- Ability to meet AFSOC FY15 POM mandate to reduce aircraft maintenance funding
- Compatibility with the AFRC and AFSOC mission
- Operational feasibility and efficiency for integration of the aircraft and personnel
- Compatibility with direct access or proximity to a flight line
- Availability of reserve duty personnel to support action
- Adequate proximity of suitable flight training areas
- Capacity of airspace and air traffic control
- Availability of substantial infrastructure
- Avoidance of environmental, operational, and land use/space constraints
- Minimization of noise impacts.

In its BCA, AFSOC considered five courses of action that analyzed various combinations of C-145A and C-146A maintenance manpower reallocation at Cannon AFB and Duke Field. All courses of action or alternatives were examined using standard USAF and DoD techniques and procedures for BCAs. Cost, benefit, risk, and stakeholder analyses were conducted as part of the BCA (AFSOC 2015). The results of the BCA were also evaluated for the C-146A aircraft beddown alternatives analysis.

2.3 Alternatives Carried Forward for Analysis

Potential beddown alternatives were evaluated against the selection criteria described in **Section 2.2**. During the early planning stages for this project, multiple beddown alternative locations were evaluated against the selection criteria. AFI 90-1001 and AFI 10-503, *Strategic Basing*, state that USAF components, including active and reserve functions, will associate to improve productivity, increase or retain mission capabilities, and achieve synergy in the use of Total Force equipment, manpower, and infrastructure. This association can be best achieved using the personnel already present at Duke Field. The proposed C-146A aircraft beddown and associated demolition and construction of facilities for relocated personnel would take advantage of the availability of the reserve duty and 592 SOMXS maintenance personnel already located at Duke Field, existing C-145A/C-146A aircraft maintenance equipment and hangars, and developable space available at Duke Field to support the action. In addition, Duke Field currently has five C-146A aircraft and these aircraft are operationally similar to the C-145A aircraft historically and currently stationed at Duke Field. Noise from additional C-146A aircraft would be below historical noise levels at Duke Field due to the recent divestiture of C-130 aircraft stationed at the airfield. Therefore, implementing the Proposed Action at Duke Field is the only action alternative that meets the operational and technical selection criteria and will be carried forward for analysis in this EA.

Additional alternatives considered that were evaluated against the selection criteria, and the corresponding analyses that determine these alternatives should be eliminated from further analysis in this EA, are described in **Section 2.5**.

2.4 No Action Alternative

The EIAP (32 CFR § 989.8[d]) requires consideration of the No Action Alternative. In addition, CEQ guidance recommends inclusion of the No Action Alternative in an EA to assess any environmental consequences that may occur if the Proposed Action is not implemented. Therefore, this alternative is carried forward for detailed analysis in the EA. The No Action Alternative also provides a baseline against which the Proposed Action can be compared. Under the No Action Alternative, USAF would not conduct a beddown of 18 C-146A aircraft and associated personnel at Duke Field on Eglin AFB, and these aircraft and personnel would remain at Cannon AFB. Additionally, there would be no new construction or demolition of facilities for C-146A aircraft at Duke Field, five C-145A and five C-146A aircraft would remain at Duke Field, and conditions at Duke Field would remain as they are under this alternative.

2.5 Alternatives Considered but Eliminated from Detailed Analysis

Through the BCA and review of beddown location options, AFSOC determined that the Proposed Action is the only reasonable alternative that meets the selection criteria. Specifically, no alternative C-146A aircraft beddown locations were identified that could meet the selection criteria. Other alternatives that were considered but eliminated from consideration early in the planning process included the following:

- Implement the aircraft beddown elsewhere on Eglin AFB
- Implement the aircraft beddown at Hurlburt Field
- Leave the aircraft at Cannon AFB and relocate the five C-146A aircraft currently at Duke Field to Cannon AFB.

Elsewhere on Eglin AFB. Under this alternative, the C-146A aircraft and associated squadron personnel would relocate to a location on Eglin AFB other than Duke Field. However, this alternative has been eliminated from further detailed analysis because it does not meet the following selection criteria for the Proposed Action:

- Operational feasibility and efficiency – Other locations at Eglin AFB have no C-146A or similar aircraft maintenance personnel and no C-146A aircraft equipment for interim maintenance.
- Availability of substantial infrastructure – Other locations at Eglin AFB have limited or no available aircraft parking capacity, no C-146A or similar aircraft interim maintenance areas, no available aircraft hangars and limited operational space for interim use by 524 and 859 SOS personnel.
- Avoidance of environmental, operational, and land use/space constraints – Other locations at Eglin AFB have limited space available for new development that is not already constrained.
- Minimization of noise impacts – Noise impacts at airfields on Eglin AFB other than Eglin Main Base (used by F-22 and F-35 aircraft) could potentially be greater because of the increased total number of flight training missions above those contributing historical and current noise levels.

Hurlburt Field. Under this alternative, the C-146A aircraft and associated squadron personnel would relocate to Hurlburt Field, Florida. However, this alternative has been eliminated from further detailed analysis because it does not meet the following selection criteria for the Proposed Action:

- Operational feasibility and efficiency – Hurlburt Field has no C-146A or similar aircraft maintenance personnel and no C-146A aircraft equipment for interim maintenance.
- Availability of substantial infrastructure – Hurlburt Field has limited aircraft parking capacity, no C-146A or similar aircraft interim maintenance areas, no available aircraft hangars, and no operational space for interim use by 524 and 859 SOS personnel.
- Avoidance of environmental, operational, and land use/space constraints – Hurlburt Field has limited space available for new development that is not already constrained.
- Minimization of noise impacts – Noise impacts under this alternative could potentially be greater because of the increased total number of training missions above those contributing to historical and current noise levels.

Cannon AFB. Under this alternative, the 18 C-146A aircraft and associated squadron personnel would remain at Cannon AFB and consolidate with the five C-146A aircraft to be relocated from Duke Field. However, converting maintenance functions from contractors to USAF personnel to meet the mandate under this alternative would require relocating the 592 SOMXS from Duke Field to Cannon AFB. These maneuvers would result in substantially less cost savings incurred by relocating the aircraft to Duke Field. Also, relocating approximately 169 personnel from the 524 SOS from Cannon AFB to Duke Field under the Proposed Action would be more efficient than relocating over 400 reserve duty and maintenance personnel from Duke Field to Cannon AFB. In addition to these drawbacks, this alternative has been eliminated from further detailed analysis because it does not meet the following selection criteria for the Proposed Action:

- **Availability of reserve duty personnel to support action** – Operations and maintenance reserve units would be required to move from Duke Field, where they already generally have civilian jobs, to Cannon AFB. Cannon AFB is in an isolated location in New Mexico with very limited opportunities for recruitment of reserve duty personnel, primarily due to the lack of civilian jobs and military installations in the area. AFRC has confirmed that reserve duty personnel cannot be retained or recruited at Cannon AFB.

As a result, none of the alternative beddown locations listed above appropriately satisfied the selection criteria identified in **Section 2.2**.

2.6 Identification of the Preferred Alternative

The Preferred Alternative is to implement the Proposed Action, as described in **Section 2.1**.

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3. Affected Environment and Environmental Consequences

All potentially relevant resource areas were initially considered in this EA. In compliance with NEPA, CEQ, and EIA 32 CFR § 989 guidelines, the following discussion of the affected environment and environmental consequences focuses only on those resource areas considered potentially subject to impacts or with potentially significant environmental issues. This section includes air quality, airspace management, biological resources, cultural resources, geological resources, hazardous materials and wastes, infrastructure and transportation, land use/coastal zone management, noise, safety, socioeconomics and environmental justice, and water resources.

This section presents a description of the environmental resources and baseline conditions that could be affected from implementing the Proposed Action. In addition, this section presents an analysis of the potential environmental consequences of implementing the Proposed Action, and the consequences of selecting the No Action Alternative. Each alternative was evaluated for its potential impacts on the resource areas in accordance with CEQ guidelines at 40 CFR § 1508.8.

The impact analyses consider all alternatives discussed in **Section 2** that have been identified as reasonable for meeting the purpose of and need for action. These alternatives include the following:

- The Proposed Action (described in **Section 2.1**)
- The No Action Alternative (described in **Section 2.4**).

All environmental resource areas were initially evaluated for potential consequences. Visual and aesthetic resources were not analyzed in detail because they would not be impacted or would have clearly insignificant impacts. The Proposed Action would not involve any activities that would result in long-term changes to the visual or aesthetic qualities of the area or landscape and would be consistent with the current characteristic features of the area and landscape. **Sections 3.1** through **3.13** discuss potential environmental, socioeconomic, and cumulative impacts on the affected environment.

3.1 Air Quality

3.1.1 Definition of the Resource

Air pollution is the presence in the outdoor atmosphere of one or more contaminants (e.g., dust, fumes, gas, mist, odor, smoke, or vapor) in quantities and of characteristics and duration such as to be injurious to human, plant, or animal life, or to interfere unreasonably with the comfortable enjoyment of life and property. Air quality as a resource incorporates several components that describe the levels of overall air pollution within a region, sources of air emissions, and regulations governing air emissions. The following sections include a discussion of the existing conditions, a regulatory overview, and a summary of greenhouse gases and global warming.

3.1.2 Affected Environment

The United States Environmental Protection Agency (USEPA) Region 4 and Florida Department of Environmental Protection (FDEP) regulate air quality in Florida. The Clean Air Act (CAA) (42 United States Code [U.S.C.] § 7401-7671q), as amended, assigns USEPA responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR § 50) that specify acceptable concentration levels of six criteria pollutants: particulate matter (measured as both particulate matter less than 10 microns in diameter [PM_{10}] and particulate matter less than 2.5 microns in diameter [$PM_{2.5}$]), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead. Short-term NAAQS (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term NAAQS (annual averages) have been established for pollutants contributing to chronic health effects. While each state has the authority to adopt standards stricter than those established under the federal program, the State of Florida has accepted the federal standards.

Federal regulations designate Air Quality Control Regions (AQCRs) in violation of the NAAQS as *nonattainment* areas. AQCRs with levels below the NAAQS as are designated as *attainment* areas. Duke Field is located within Okaloosa County. Okaloosa County (and therefore the area associated with the Proposed Action) is within the Mobile (Alabama)-Pensacola-Panama City (Florida)-Southern Mississippi Interstate AQCR (40 CFR § 81.68). USEPA has designated Okaloosa County as in attainment for all criteria pollutants (USEPA 2015a). USEPA monitors levels of criteria pollutants at representative sites in each region throughout Florida. For reference purposes, **Table 3-1** shows the monitored concentrations of criteria pollutants at the monitoring locations closest to Eglin AFB.

Regulatory Overview. FDEP oversees programs for permitting the construction and operation of new or modified stationary source air emissions in Florida. FDEP air permitting is required for many industries and facilities that emit regulated pollutants. These requirements include, but are not limited to Title V permitting of major sources, New Source Review, Prevention of Significant Deterioration, New Source Performance Standards for selected categories of industrial sources, and the National Emission Standards for Hazardous Air Pollutants. Air permitting in Florida is required for many industries and facilities that emit regulated pollutants. Based on the size of the emission units and type of pollutants, FDEP sets permit rules and standards for emissions sources.

Eglin AFB is a major source for the purposes of air permitting and holds a Title V operating permit (#0910031-017-AV) which expires May 26, 2019 (FDEP 2015a). The permit requirements include a periodic inventory of all significant stationary sources of air emissions, as well as monitoring and recordkeeping requirements. Primary sources of air emissions at the installation include burning of fossil fuels (coal, oil, and natural gas), aircraft engine testing and operation, munitions testing, open burning/open detonation, fire training, prescribed burning, government and privately owned vehicles, aerospace ground support equipment, marina operations, and solid waste landfills (Eglin AFB 2014a). **Table 3-2** outlines the 2014 installation-wide air emissions for Eglin AFB's Annual Operating Report. They do not include emissions from mobile sources like cars and trucks.

Table 3-1. Air Quality Standards and Monitored Data

Pollutant	NAAQS	2012	2013	2014
CO				
1-hour Maximum ^a (ppm)	35	No Data	No Data	No Data
8-hour Maximum ^a (ppm)	9	No Data	No Data	No Data
NO₂				
1-hour (ppb)	100	No Data	No Data	No Data
O₃				
8-hour Maximum ^b (ppm)	0.075	0.064	0.062	0.067
SO₂				
1-hour Maximum ^e (ppb)	75	14	29	33
24-hour Maximum ^a (ppb)	140	3	5	4
PM_{2.5}				
24-hour Maximum ^c (µg/m ³)	35	No Data	No Data	17
Annual Arithmetic Mean ^d (µg/m ³)	12	No Data	No Data	8.3
PM₁₀				
24-hour Maximum ^a (µg/m ³)	150	No Data	37	61

Source: 40 CFR § 50.1-50.12, USEPA 2015b

a Not to be exceeded more than once per year.

b The 3-year average of the fourth highest daily maximum 8-hour average O₃ concentrations over each year must not exceed 0.075 ppm.

c The 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor must not exceed 35 µg/m³.

d The 3-year average of the weighted annual mean PM_{2.5} concentrations from must not exceed 12.0 µg/m³.

e 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years.

ppm = parts per million

µg/m³ = micrograms per cubic meter

NO₂ = nitrogen dioxide

Table 3-2. Annual Emissions for Significant Sources at Eglin AFB

Pollutant	Emissions (tpy)
Carbon monoxide (CO)	27.1
Nitrogen oxides (NO _x)	37.9
Volatile organic compounds (VOCs)	101.2
Fine particulate matter (PM ₁₀ /PM _{2.5})	3.1
Sulfur dioxide (SO ₂)	1.3

Source: FDEP 2015b

Clean Air Act Conformity. The 1990 amendments to the CAA require federal agencies to ensure that their actions conform to the State Implementation Plan in a nonattainment area. USEPA developed two distinctive sets of conformity regulations: one for transportation projects and one for non-transportation projects. Non-transportation projects are governed by general

conformity regulations (40 CFR § 93, Subpart B), and the State of Florida has adopted the federal regulations by reference (§ 62-204.800(a)(5) Florida Administrative Code [F.A.C.]). In 2010, USEPA amended the federal General Conformity Rule and eliminated 40 CFR § 51, Subpart W, with the exception of areas that had previously adopted provisions and required the state or local authority to revise its conformity rule accordingly. Florida has not made such a revision; nevertheless, general conformity does not apply to this action because Duke Field, and the areas where the aircraft are proposed to operate, are in attainment for all criteria pollutants.

Greenhouse Gases and Climate Change. Greenhouse gases (GHGs) are components of the atmosphere that trap heat relatively near the surface of the earth, and therefore, contribute to the greenhouse effect and climate change. Most GHGs occur naturally in the atmosphere, but increases in their concentration result from human activities such as the burning of fossil fuels. Global temperatures are expected to continue to rise as human activities continue to add carbon dioxide (CO₂), methane, nitrous oxide, and other greenhouse (or heat-trapping) gases to the atmosphere. Whether or not rainfall will increase or decrease remains difficult to project for specific regions (USEPA 2015c, IPCC 2007).

Executive Order (EO) 13693, *Planning for Federal Sustainability in the Next Decade*, outlines policies intended to ensure that federal agencies evaluate climate-change risks and vulnerabilities, and to manage the short- and long-term impacts of climate change on their operations and mission. The EO specifically requires agencies within DoD to measure, report, and reduce their GHG emissions from both their direct and indirect activities. DoD has committed to reducing GHG emissions from non-combat activities 34 percent by 2020 (DoD 2010). In addition, CEQ recently revised draft guidance on when and how federal agencies should consider GHG emissions and climate change in NEPA analyses. The draft guidance includes a presumptive reference point of 27,563 tons per year (tpy) (25,000 metric tons per year) of CO₂ equivalent emissions for discussion and disclosure of such emissions from a federal action (CEQ 2014).

Historically, the average high temperature is 91.3° Fahrenheit (°F) (32.9° Celsius [°C]) in the hottest month of July, and an average low temperature of 36.7°F (2.6°C) in the coldest month of January. The region has an average annual precipitation of 69.2 inches (175.8 centimeters) per year. The wettest month of the year is July with an average rainfall of 9.4 inches (23.9 centimeters) (Idcide 2015).

3.1.3 Environmental Consequences

The environmental impacts to air quality are determined based on any increases in emissions of regulated pollutants when compared to existing conditions. Impacts would be considered significant if the Proposed Action were to exceed the General Conformity Rule *de minimis* thresholds, would exceed the GHG reference point in the draft CEQ guidance, or would contribute to a violation of any federal, state, or local air regulations. Although the area within and around Duke Field is in attainment for the NAAQS and the General Conformity rule doesn't apply, the *de minimis* thresholds have been utilized as a surrogate to determine the level of impacts under NEPA.

3.1.3.1 PROPOSED ACTION

The Proposed Action would have short- and long-term, minor, adverse impacts on air quality. Short-term increases in emissions would be due to generating airborne dust and other pollutants during construction. Long-term increases in emissions would be due to the increase in mobile source emissions such as commuter vehicles and aircraft, and less significantly due to heating of buildings. Increases in emissions would be below the general conformity rule *de minimis* thresholds, would not exceed the GHG reference point in the draft CEQ guidance, and would not contribute to a violation of any federal, state, or local air regulations.

Direct and Indirect Emissions. Table 3-3 lists total direct and indirect emissions resulting from the Proposed Action. Emissions would be below the *de minimis* threshold of 100 tpy of each pollutant; therefore, the level of impacts would be minor. Detailed emissions calculations are provided in **Appendix C**. Moderate changes in quantity and types of equipment used would not substantially change these emissions estimates, and would not change the level of impacts under NEPA.

Table 3-3. Annual Air Emissions Compared to De Minimis Thresholds (in tpy)

Activity/ Source	CO	NO_x	VOC	SO_x	PM₁₀	PM_{2.5}	<i>de minimis</i> Threshold	<i>Exceeds de minimis</i> Thresholds? [Yes/No]
Construction	5.6	9.3	1.5	1.7	3.6	0.8	100	No
Operations	8.8	2.1	6.1	0.3	<0.1	<0.1	100	No

Regulatory Review. There are no new stationary sources of air emissions as part of the Proposed Action at this time; therefore, no air permitting requirements have been identified. It is possible that some minor new stationary source emissions may become required such as heating boilers or emergency generators. Any new stationary sources of air emissions would fully comply with FDEP permitting requirements. In addition, the F.A.C. does outline other non-permitting requirements, such as controlling fugitive dust and open burning. All persons responsible for any operation, process, handling, transportation, or storage facility that could result in fugitive dust would take reasonable precautions to prevent such dust from becoming airborne. Reasonable precautions might include using water to control dust from building construction, road grading, or land clearing. The Proposed Action would proceed in full compliance with current F.A.C. requirements, with compliant practices and products. These requirements include the following:

- Air Pollution Control - General Provisions (62-204 F.A.C.)
- Particulate Matter Emissions (62-296 F.A.C.)
- Open Burning (62-256 F.A.C.)
- Gasoline Vapor Control (62-252 F.A.C.).

This listing is not all-inclusive; USAF and any contractors would comply with all applicable air pollution control regulations.

Greenhouse Gases and Climate Change. No activities under the Proposed Action would generate GHG emissions above the CEQ reference point. These impacts would be minor. **Table 3-4** lists the approximate CO₂ emissions by activity in comparison to the CEQ reference point.

Table 3-4. Annual GHG Emissions Compared to CEQ Thresholds

Activity/Source	CO ₂ Emissions [metric tpy]	CEQ Reference Point [metric tpy]	Exceeds CEQ Reference Point? [Yes/No]
Construction	763	25,000	No
Operations	1,145	25,000	No

3.1.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, beddown of the additional C-146A aircraft would not occur at Duke Field and no demolition or construction associated with the beddown would occur. Ambient air quality would remain unchanged when compared to existing conditions, and five C-145A and five C-146A aircraft would continue to operate from Duke Field, resulting in continued negligible emissions and impacts on air quality. Selecting the No Action Alternative would result in no additional impacts on air quality. There would be no long-term emissions changes due to the Proposed Action.

3.2 Airspace Management

3.2.1 Definition of the Resource

Airspace management is defined by USAF as the coordination, integration, and regulation of the use of airspace of defined dimensions (Eglin AFB 2014a). The objective is to meet military training requirements through the safe and efficient use of available navigable airspace in a peacetime environment while minimizing the impact on other aviation users and the public (AFI 13-201, *Air Force Airspace Management*). AFI 13-201 provides guidance and procedures for developing and processing Special Use Airspace (SUA), and covers the efficient planning, acquisition, use, and management of airspace required to support USAF air operations. Federal Aviation Administration (FAA) Joint Order (JO) 7400.2 is also a document that defines procedures for handling airspace matters including SUA. JO procedures apply to both civilian and military activities and are recognized as a source document for civilian and military activities. SUA consists of airspace within which specific activities must be confined, or wherein limitations are imposed on aircraft not participating in those activities. With the exception of Controlled Firing Areas, SUA is depicted on aeronautical charts, including hours of operation, altitudes, and the agency controlling the airspace. All SUA descriptions are contained in FAA JO 7400.8, *Special Use Airspace*.

SUAs within and proximal to Eglin AFB include Restricted Area airspace, Military Operating Areas (MOA), Military Training Routes (MTR), and access corridors, other nearby civilian and military airports and airfields, remote LZs, and drop zones (DZs) (Eglin AFB 2014a). Restricted Area airspace is a block of airspace reserved for military operations that cannot be entered by

private or commercial aircraft without permission from the controlling agency when that airspace is active. An MOA is a block of airspace jointly used by military, private, and commercial aircraft. Military missions may also use other types of airspace that are not categorized as SUA but where limitations may still be imposed on nonparticipating aircraft. This type of airspace is slightly less restrictive than SUA, but its purpose is also to minimize negative interactions between a military mission and nonparticipating aircraft. For example, MTRs are low-altitude routes that permit flights to exceed a speed of 250 knots below 10,000 feet (ft) above ground level (AGL) (FAA 2014). Nonparticipating aircraft may enter a MTR but should practice caution. MTRs can operate under visual flight rules or instrument flight rules. Additionally, access corridors, such as the North-South Corridor and East-West Corridor shown on **Figure 3-1** are used by military as well as private and commercial aircraft to access airports within and near Eglin AFB; Eglin AFB or an appropriate Air Traffic Control Facility controls the use of these corridors.

Eglin AFB Instruction (EAFBI) 11-201, *Air Operations*, implements aircraft rules and procedures that apply to all air operations at Eglin AFB. USAF also uses FAA JO 7110.65R, *Air Traffic Control*, and FAA JO 7610.4, *Memorandum of Agreement between Department of the Air Force and Federal Aviation Administration on Safety for Space Transportation and Range Activities*.

3.2.2 Affected Environment

Eglin Airspace. Eglin AFB airspace extends from the AFB outward to approximately 3 nautical miles offshore into the Gulf of Mexico to the northern boundary of the Eglin Gulf Test and Training Range warning areas. It consists of several SUAs including Restricted Area Airspaces, MOAs and Air Traffic Control Assigned Airspace (Eglin AFB 2014a) (see **Figure 3-1**). These SUAs were established, in a coordinated effort with the FAA, to maintain safety by separating military and civilian flights.

Restricted Area Airspace. Eglin AFB is the controlling agency for its Restricted Area Airspaces (Eglin AFB 2014a). Restricted areas are located mostly over the land portion of the Eglin Reservation, and are used primarily for air-to-surface and surface-to-air testing and training operations. Eglin AFB's Restricted Area Airspaces include: R-2914A and B; R-2915A, B, and C; R-2917 (within R-2914A); R-2918; and R-2919A and B. The restricted areas such as R-2914, R-2915, and R-2919 are primarily used by various military tenants for extensive multi-use air-to-surface, surface-to-air, ground detonations, and test and evaluation activities. The vertical limits of Restricted Airspaces R-2914A, R-2915A, R-2915B, and R-2119A extend from the surface into an unlimited ceiling. Restricted Airspaces R-2914B, R-2914C, R-2915C, and R-2919B extend from 8,500 ft above mean sea level (msl) to an unlimited ceiling.

The Gulf Regional Airspace Strategic Initiative (GRASI) was started by the USAF in 2008 to alleviate air traffic congestion and optimize use of airspace in the Gulf region amid projected increases in aircraft operations. GRASI was first proposed by Eglin AFB following recognition by the 2005 Base Realignment and Closure Commission that Eglin AFB, with its large land ranges and associated SUA and nearby installations in northwest Florida, has the highest military value of all installations nationwide (FCRC 2012, Eglin AFB 2015). The Committee for a Sustainable Emerald Coast, facilitated by the Florida Conflict Resolution Consortium, also recommended such an effort in 2008 due to the regional population and development growth

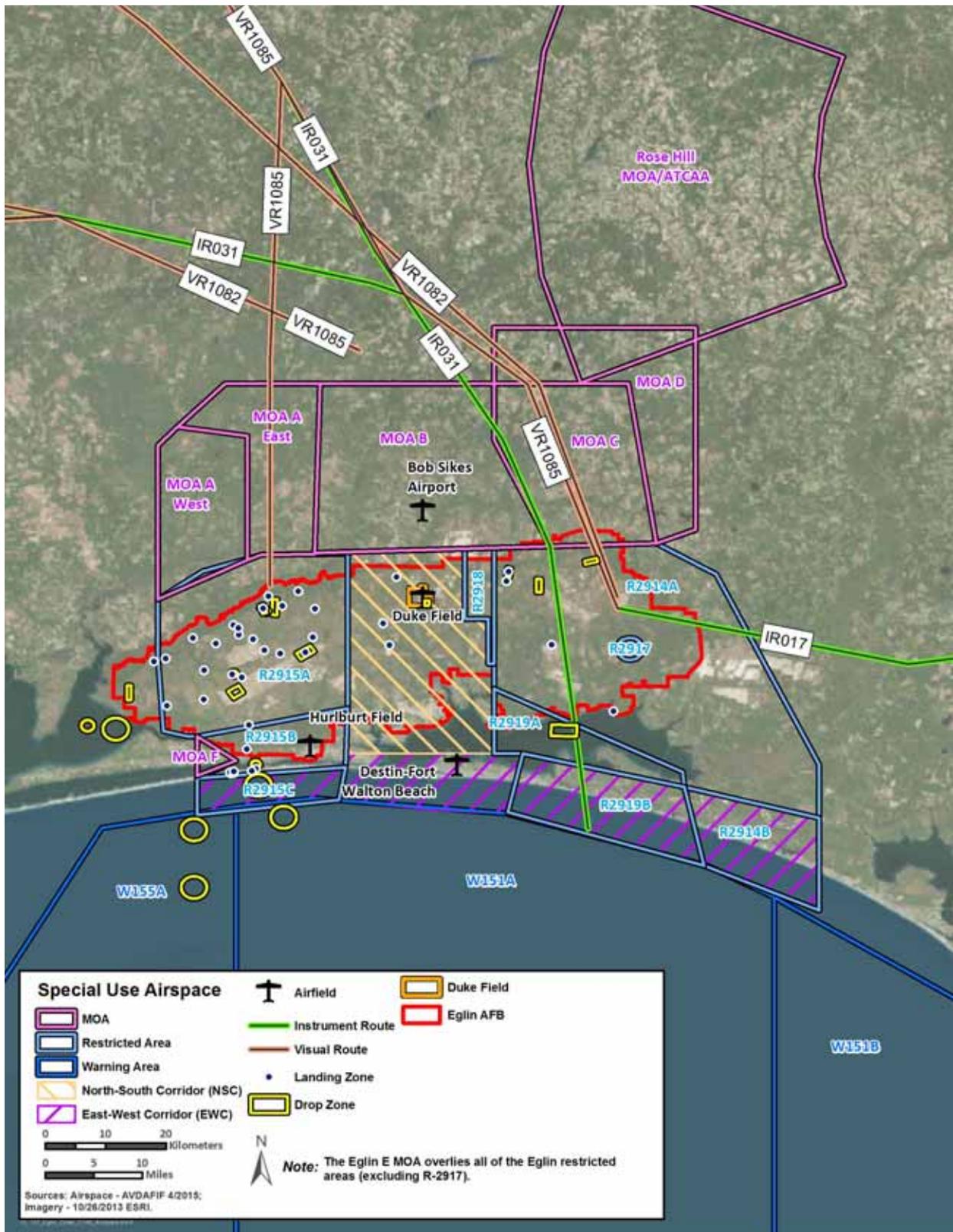


Figure 3-1. Key Airfields and Airspaces Proximal to the Proposed Action

and the concurrent expansions of regional civil air operations and military aircraft (e.g., F-35) training operations in the Gulf Coast region. Based on the results of airspace modeling efforts and input from stakeholders, a GRASI working group developed 11 key strategies to be integrated into the planning and conduct of military and civilian aircraft operations in the region's airspace. The GRASI strategies were finalized in 2011 and are being incorporated, as applicable, into all projected near-term Eglin AFB air operations (Eglin AFB 2014a).

MOAs. The Jacksonville Air Traffic Control Center controls Eglin MOAs A East and West, MOA B, and MOA C, above 11,000 ft above msl. Eglin AFB controls MOAs A East and West, MOAs B and C, up to 10,000 ft above msl, and MOAs D, E, and F. Rose Hill MOA/ Air Traffic Control Assigned Airspace is controlled by the Jacksonville Air Traffic Control Center; Eglin AFB schedules this airspace. The vertical limits of MOAs A East and West, B, C, D, E, and F are from 1,000 ft AGL to 18,000 ft above msl. Rose Hill MOA extends from 8,000 ft above msl to 18,000 ft above msl.

Eglin AFB Airfields. Eglin AFB has four active airfields: Eglin Main Base, Choctaw, Duke Field, and Camp Rudder (Eglin AFB 2014a). Between 100,000 and 110,000 annual air operations can be flown on a single runway airfield at Eglin AFB (e.g., Duke Field) (Eglin AFB 2014a). There are several assault LZs on Eglin AFB; however, only Landing Zone East and Rockhill Landing Zone are currently active. These assault LZs, or assault landing strips, are composed mostly of clay and are used intermittently for touchdown and takeoff exercises, primarily by fixed-wing aircraft. These areas are varied in shape and range in size from less than an acre to several hundred acres. Eglin AFB also encompasses several parachute DZs that are cleared areas used for paradropping troops and equipment.

Other Nearby Airfields. The other nearby airfields planned for use by the C-146A aircraft program include Hurlburt Field (FAA identifier: HRT), Eglin AFB/Destin-Fort Walton Beach Airport (VPS), and Bob Sikes Airport (CEW) (see **Figure 3-1**).

HRT is a military airfield with one runway located on the Gulf of Mexico in Mary Esther, Florida, approximately 35 miles east of Pensacola, and is part of the greater Eglin AFB reservation. HRT airspace extends upward from the surface to and including an altitude 2,500 ft above msl within a 5.3-nautical mile radius of the center of the airfield). Conventional flight patterns in Hurlburt Field airspace are flown at altitudes ranging between 1,200 ft and 1,700 ft above msl with a 3-mile visibility. Jet operations typically fly at altitudes ranging between 1,700 ft above msl to approximately 2,200 ft above msl (AirNav.com 2016).

VPS is a joint military/civilian airport with two runways located approximately 3 miles north of Eglin AFB and is also part of the greater Eglin AFB reservation. CEW is a public airport with one runway located approximately 39 miles north of Eglin AFB in the City of Crestview (AirNav.com 2016).

Remote LZs. Remote LZs are airfields outside of Eglin AFB but within 400 miles of the installation that may be used for training missions. The LZs within this operational distance consist of numerous small to midsized, military- and publicly-owned airfields, including the Montgomery Regional Airport (FAA Identifier: MGM), Pensacola Regional Airfield (PNS),

Tyndall AFB (PAM), Gulfport-Biloxi International Airport (GPT), and Tallahassee International Airport (TLH).

Current Operations. Among the litany of DoD aircraft operations planned on military bases and airports in the region, the current and projected military aircraft programs operating in the airspaces over Eglin AFB, HRT, VPS, and CEW include C-130, CV-22, PC-12, U-28, and F-35 aircraft. The total number of aircraft based at the installation is 63 (AFSOC 2014b).

Analysis of air operations at Duke Field (FAA identifier: EGI) during 2014 reported a total of 41,053 planned annual air operations. Approximately 17,000 of these planned air operations were assigned to the now-retired C-130 aircraft platform. The remaining total numbers of air operations were accounted for by other aircraft including the C-146A aircraft.

As described in **Section 2.1.1**, five C-146A aircraft are currently based at Duke Field and are flown in 644 training missions per year (involving 2,700 air operations). Each mission lasts approximately 4 hours and consists of numerous air operations at airfields and LZs both on and off the installation at nearby airfields and a number of remote LZs located outside of Eglin AFB airspace but within 400 miles of the installation that are used as operational training sites. Approximately 2,200 annual C-146A aircraft air operations are conducted at the nearby airfields including HRT, VPS, and CEW. Approximately 4,400 total annual air operations are conducted at other nearby airfields (e.g., HRT, VPS, and CEW), and among the remote LZs. Flight operations are conducted 256 days per year, primarily during weekdays but also during reserve UTA weekends. The existing C-146A aircraft operations were detailed in **Table 2-2**.

HRT is fully dedicated to military operations, and supported an average total of 181 aircraft operations per day, or approximately 66,065 air operations per year (AirNav.com 2016). VPS accommodated an average of 132 air operations per day, or approximately 48,180 air operations per year. The total aircraft operations at VPS comprised of approximately 20,717 (43 percent) general transient aircraft operations, 18,790 (39 percent) dedicated military activities, and 9,154 (19 percent) commercial and local general flight operations (AirNav.com 2016).

CEW accommodated 133 air operations per day, or approximately 48,545 annual air operations. The 2015 FAA reported data for CEW indicated that the total aircraft operations was comprised of approximately 29,127 (60 percent) general transient aircraft operations, 3,884 (8 percent) dedicated military activities, and 16,019 (33 percent) local general flight and air taxi operations (AirNav.com 2016).

During 2015, the reported total number of air operations supported at each of the remote LZs was 67,160 at MGM, 107,310 at PNS, 123,735 at PAM, 49,275 at GPT, and 56,575 at TLH (AirNav.com 2016).

3.2.3 Environmental Consequences

The significance of potential impacts to airspace management depends on the degree to which the aircraft proposed for beddown and operation would affect the airspace environment. Significant impacts could result if implementation of the Proposed Action would: 1) impose

major restrictions on air commerce opportunities; 2) significantly limit airspace access to a large number of users; or 3) require major modifications to air traffic control systems.

3.2.3.1 PROPOSED ACTION

Long-term, minor, adverse impacts would be expected on airspace under the Proposed Action. The C-146A aircraft program currently operating out of Eglin AFB would increase from 5 to 23 aircraft based at Duke Field. C-146A aircraft operations would ramp up from current levels, conducting 1,880 training missions (involving approximately 60,160 air operations) per year. Each mission would consist of several air operations conducted in the same manner and using the same or similar airfields and LZs as current. The duration of each mission would be approximately 5 hours. Half of the planned training missions would be conducted at night. As described in **Section 2.1.1** and **Table 2-2**, 50 percent of the training operations planned for the C-146A aircraft would use other auxiliary airfields on Eglin AFB for short field landing practice. The remaining training missions would also originate out of Duke Field, but actual air operations would occur outside of local Eglin AFB airspace. In total, C-146A aircraft training missions would involve some combination of 8,000 annual air operations conducted at Duke Field. Under the Proposed Action, approximately 6,000 annual air operations would be conducted at other nearby airfields, including HRT, VPS, and CEW, and approximately 8,200 annual air operations would be distributed across airports and training sites located outside of local airspaces but within 400 miles of the installation. The number of training days per year would remain unchanged, and would continue to primarily include weekdays and UTA weekends.

The proposed C-146A aircraft beddown and operations would result in an increase in total domestic annual operating hours. To alleviate airspace traffic congestion and optimize use of the Gulf Coast region's airspace, operational plans for the C-146A aircraft would incorporate GRASI strategies, to the extent practicable, by distributing aircraft operations to various airfields and using multiple airspaces in Florida, Alabama, and Mississippi. Specifically, only half of the proposed total operations for the C-146A aircraft flight program would be flown locally at Duke Field. The remainder of the proposed operating hours would be flown at other nearby airfields (i.e., HRT, VPS, and CEW) and among the number of public or military-owned remote LZs that are outside of Eglin AFB's airspace. Furthermore, the beddown of the C-146A aircraft follows the retirement of the C-130 aircraft flight program that had an annual operating schedule at Duke Field of approximately 17,000 air operations per year. Thus, following implementation of the Proposed Action, it would be expected that the total aircraft operations local to Duke Field and Eglin AFB would still be less than in recent years and would not cause the total operations for the installation to meet or exceed the air traffic control (ATC) or runway capacity of Duke Field.

Additionally, no change to the configuration (i.e., size, shape, or location) of airspace is proposed or would be required to support implementation of the Proposed Action.

No airspace areas or ATC facilities currently used by the C-146A aircraft mission would be adversely impacted by implementation of the Proposed Action. Further, construction of the C-146A aircraft hangar facility or other facilities under the Proposed Action would not alter the existing runway configuration, or impede access to the airfield.

Other Nearby Airfields. Annual operations occurring outside of the Eglin AFB Restricted Airspace would be distributed over a large area and similarly would not exceed the established capacities of respective airspaces. Relative to regional aircraft activity, the net increases in flight activity over current operations at HRT, VPS, CEW (provided in **Section 2.1.1**) would be minor (i.e., less than 10 percent) under the Proposed Action. Specifically, the proposed increases in C-146A aircraft operations at the nearby airfields would represent a 6 percent increase in overall aircraft operations at HRT, and an 8 percent increase in overall aircraft operations at both VPS and CEW.

Remote LZs. If the aircraft operations that are planned for distribution at available remote LZs occur only at the five example airfields (i.e., MGM, PNS, PAM, GPT, and TLH) identified in this EA, it is expected that the overall operational increases at those facilities would also be minor (i.e., less than 10 percent). This assumption, however, represents a conservative estimate considering the number of active military and public airfields located along the Gulf Coast region that could accommodate the additional C-146 aircraft flight operations. Therefore, any impacts on airspace management at Eglin AFB or within the southeastern U.S. would be less than significant.

3.2.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, beddown of the C-146A aircraft would not occur at Duke Field, and no demolition or construction would occur. Flight operations would remain as they are described in **Section 3.2.2**. Therefore, no impacts on airspace management would be expected under the No Action Alternative.

3.3 Biological Resources

3.3.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats (e.g., wetlands, forests, and grasslands) in which they exist. Protected and sensitive biological resources include federally listed (endangered or threatened), proposed, and designated or proposed critical habitat; species of concern managed under conservation agreements or management plans; and state-listed species.

The Endangered Species Act (ESA) (16 U.S.C. § 1536) requires federal agencies, in consultation with the U.S. Fish and Wildlife Service (USFWS), to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. Under the ESA, “jeopardy” occurs when an action is reasonably expected, directly or indirectly, to diminish the number, reproduction, or distribution of a species so that the likelihood of survival and recovery in the wild is appreciably reduced. An “endangered species” is defined as any species in danger of extinction throughout all or a significant portion of its range. A “threatened species” is defined as any species likely to become an endangered species in the foreseeable future. Although candidate species receive no statutory protection under the ESA, USFWS advises government agencies, industry, and the public that these species are at risk and might warrant protection under the ESA in the future. The ESA also prohibits any action that causes a “take” of any listed species. “Take” is defined as “to harass, harm, pursue, hunt,

shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” Federal species of concern are not protected by law; however, these species could become listed and, therefore, are given consideration when addressing impacts from a Proposed Action. Listed plants are not protected from take, although it is illegal to collect or maliciously harm them on federal land. USFWS has primary responsibility for terrestrial and freshwater organisms.

State-protected wildlife species are protected under the F.A.C. Chapter 68A-27. The Florida Fish and Wildlife Conservation Commission (FWC) maintain the list of state-designated endangered or threatened, or state-designated species of special concern (NFWFMD 2004). Eglin AFB has 74 state-listed threatened or endangered species, most (54) of the 67 state-listed species are plants. AFI 32-7064, *Integrated Natural Resources Management*, calls for the protection and conservation of state-listed species when not in direct conflict with the military mission. Management operations conducted by the Eglin AFB Natural Resources Office primarily for many of the federally listed species provide direct and indirect benefits to many state-listed and other rare species.

The Migratory Bird Treaty Act (MBTA) of 1918 is the primary legislation in the United States established to conserve migratory birds. The MBTA prohibits the intentional and unintentional taking, killing, or possessing migratory birds unless permitted by regulation. EO 13186, *Responsibilities of Federal Agencies to Protect Birds*, provides a specific framework for the federal government’s compliance with its MBTA obligations and aids in incorporating national planning for bird conservation into agency programs. A Memorandum of Understanding exists between DoD and USFWS to promote the conservation of migratory birds in compliance with EO 13186 (USAF 2013b).

Birds and wildlife have the potential to cause millions of dollars in damage to aircraft as well as the loss of human life of aircrews and passengers. Flight Safety is the office of primary responsibility for monitoring and implementation of Bird/Wildlife Aircraft Strike Hazard (BASH) Plan per Air Force Pamphlet 91-212. Eglin AFB’s Natural Resources Office implements the BASH program as directed by AFI 32-7064. A wildlife/bird hazard assessment of Eglin AFB airfields, including Duke Field, and a wildlife/bird hazard management plan for the installation have been developed (USAF 2013b).

3.3.2 Affected Environment

Vegetation. Eglin AFB has 34 distinct natural vegetative communities that fall into the following four broad ecological associations, sandhill matrix, flatwoods matrix, barrier island matrix, and wetland/riparian matrix (USAF 2013b). Duke Field and the Project areas occur in the broad sandhill ecological association. Sandhills are characterized by gently rolling terrain, underlain by well-drained sands, that are often associated with and grade into scrub, upland pine forest, xeric hammock, or slope forests (FNAI 1990). Sandhills are also known as longleaf pine turkey oak, longleaf pine-xerophytic oak, longleaf pine-deciduous oak, or high pine. The sandhill matrix is most extensive ecological association on Eglin AFB, accounting for approximately 80 percent of the total area of the Base.

Vegetation covers approximately 60 percent (5.4 acres) of the Project areas and is composed of open ground (3.8 acres) and forests (1.6 acres) (see **Figure 3-2**). Approximately 3.6 acres (40 percent) of the Project areas are developed. The site for Project 1 is primarily developed and the vegetation consists of low profile maintained grasses and landscaped species. Typical turf grasses at Eglin include Bahia grass (*Panicum notatum*), St. Augustine (*Stenotaphrum secundatum*), and Centipede (*Eremochloa ophiuroides*) (USAF 2013b). The areas for Projects 2, 3 and 4 consist of upland coniferous forest.

Wildlife. Common mammalian species at Eglin that have the potential to occur within all of the Project areas include the gray squirrel (*Sciurus carolinensis*), white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), and eastern mole (*Scalopus aquaticus*). Some of the common bird species found at Eglin include northern bobwhite (*Colinus virginianus*), great horned owl (*Bubo virginianus*), red-winged blackbird (*Agelaius phoeniceus*), and red-shouldered hawk (*Buteo lineatus*) (USAF 2013b).

The vicinity of Projects 2, 3, and 4 currently provides habitat for animals typical of upland forests, such as the pileated woodpecker (*Dryocopus pileatus*), fox squirrel (*Sciurus niger*), gray fox (*Urocyon cinereoargenteus*), eastern diamondback rattlesnake (*Crotalus adamanteus*) and fox (*Vulpes vulpes*) (FNAI 1990, USAF 2013b).

Protected Species. The eastern indigo snake (*Drymarchon corais couperi*), gopher tortoise (*Gopherus polyphemus*), Florida black bear (*Ursus americanus floridanus*), and red-cockaded woodpecker (RCW) (*Picoides borealis*) are federally or state-listed species associated with the sandhill association and, due to potential suitable habitat on site and documented observations within 1 mile of Duke Field, have the potential to occur within the Project areas (see **Figure 3-2**). Due to the lack of ideal habitat for the reticulated flatwoods salamander (*Ambystoma bishop*) and minimal open ground for the Florida burrowing owl (*Athene cunicularia floridana*), their potential for occurrence is unlikely within the Project areas (see **Table 3-5**). Based on Eglin AFB's GIS data, no threatened or endangered species have been observed in any of the Project areas (USAF 2013b, USFWS 2013a).

The federally threatened eastern indigo snake inhabits the sandhill association during winter months and frequently uses gopher tortoise burrows for over-wintering (Eglin AFB 2013). Although there are no documented eastern indigo snake sightings within Duke Field, there are documented gopher tortoise burrows.

Since the areas encompassing Projects 1 through 4 have been identified as potential gopher tortoise habitat and gopher tortoise burrows have been documented within Duke Field, there is also a potential for the eastern indigo snake to be present (USAF 2013b, USFWS 2013a).

The federally endangered reticulated flatwoods salamander is a moderately sized mole salamander species that inhabit mesic longleaf pine and ephemeral wetlands. Eglin AFB contains approximately 17,000 acres of potential salamander habitat and has three separate populations of reticulated flatwoods salamanders outside of Duke Field (USAF 2013b). The closest mapped reticulated flatwoods salamander pond is over 15 miles to the southwest of the Duke Field. The probability of occurrence for the reticulated flatwoods salamander is unlikely due to the lack of ephemeral wetlands within and adjacent to the Project areas.

Table 3-5. Protected Species with Potential to Occur within Project Areas

Common Name	Designated Status		Habitat Preference	Potential for Occurrence	Habitat Present
	USFWS (Federal)	FWC (State)			
REPTILES AND AMPHIBIANS					
Eastern Indigo Snake <i>Drymarchon corais couperi</i>	LT	LT	Mesic flatwoods, upland pine forest, sandhill scrub.	Likely	Yes
Gopher Tortoise <i>Gopherus polyphemus</i>	C	LT	Sandy patches of open ground, right-of-ways adjacent to roads, sandhill, scrubby, flatwoods, xeric hammock.	Likely	Yes
Reticulated Flatwoods Salamander <i>Ambystoma bishopi</i>	LE	LE	Open, mesic (moderately wet) woodlands of longleaf or slash pine flatwoods maintained by frequent fires and that contain shallow, ephemeral wetland ponds.	Unlikely	No
MAMMALS					
Florida Black Bear <i>Ursus americanus floridanus</i>	DL	Black Bear Conservation Rule	Rural and urban area; Mixed hardwood pine, upland oak scrub, floodplains, and forested wetlands such as cypress and riverine.	Likely	Yes
BIRDS					
Florida Burrowing Owl <i>Athene cunicularia floridana</i>		SSC	Open areas; prairies, sand hills, farm land.	Unlikely	Yes
Red-cockaded Woodpecker <i>Picooides borealis</i>	LE	LE	Mature pine woodlands, diversity of grass, forb and shrub species.	Likely	Yes

Sources: FNAI 2015, USFWS 2015, USAF 2013b

Key:

LE = Endangered: species in danger of extinction throughout all or a significant portion of its range.

LT = Threatened: species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

C = Candidate Species

SSC = Species of special (state)

DL = Downlisted

Unlikely = Little or no suitable habitat and no documented element occurrence.

Likely = Potential suitable habitat exists and/or species observed on site.

The federally endangered RCW generally inhabits and forages in open mature, old-growth longleaf pine woodlands in north and central Florida. They are non-migratory and maintain territories throughout the year. The birds excavate a nest cavity in mature live longleaf pine trees (85–120 years or older) in mid-April through early June (see **Appendix B**). The RCW population on Eglin AFB reached the designated recovery goal of 350 potential breeding groups (PBGs) in 2009. A PBG consists of an adult female and adult male that occupy the same cluster (USAF 2013b). The current population size is 504 active clusters (a cluster of trees containing one or more active cavity trees) and 446 PBGs. There are five inactive cavity trees (last active in 2010), approximately 0.3 miles south of Duke Field (**Figure 3-2**). The closest active cluster is approximately 1 mile southeast of Project 1. Potential RCW habitat exists within and adjacent to Projects 2 through 4, and there are documented active RCW cavity trees within 1 mile; therefore, there is a potential for the RCW to be present within the Project areas.

The gopher tortoise is identified as a candidate species by USFWS and is also state-listed as threatened. The gopher tortoise is found primarily within the sandhill and open grassland ecological associations on Eglin AFB and has been documented within the boundaries of Duke Field (USAF 2012, USAF 2013b). The gopher tortoise prefers habitats with well-drained sandy soils, a water table below 18 inches, suitable herbaceous forage, and an open understory that provides open sunny sites for nesting. All Project areas are underlain by Lakeland Sand, 0 to 5 percent slopes, a well-drained soil with a high water table of greater than 72 inches (USDA 1988). Its burrows serve as important habitat for many species, including the federally listed eastern indigo snake. Since all of Duke Field overlaps with identified potential gopher tortoise habitat, and there are documented burrows within Duke Field, there is a potential for the gopher tortoise to be present within the Project areas.

The Florida burrowing owl is a state-listed species of special concern. It is a diurnal species of owl typically active during the morning or late afternoon and can be found in open habitats with short grass and few trees. Burrowing owls have been visually documented on test ranges across Eglin AFB; the closest approximately 11 miles to the southwest of Duke Field. There are approximately 3 acres of discontinuous, patchy, open ground interspersed within paved and unpaved walkways within the limits of Project 1. The locations of Projects 2 through 4 are currently forested. Due to the lack of ideal habitat within the Project areas, lack of documented observations, and distance to the nearest burrows, this species is unlikely to occur in the Project areas.

The Florida black bear is no longer listed in Florida as of 2012. However, the bear is still protected under the Florida Black Bear Conservation Rule 68A-4.009. Eglin AFB, including the lands within Duke Field, is located within the primary bear range of what is known as the Eglin Black Bear Management Unit as delineated by FWC. Primary bear range is defined as an area that contains core bear population, habitat that is important to bear movement, and evidence of reproduction. The Florida black bear generally breeds June 1 through July 1 of each year, and young are born in January through February. Many of the black bears on Eglin AFB use large swamps and floodplain forests where they feed on fruits, acorns, beetles, and yellow jackets. Black bear sightings have occurred at numerous locations throughout Eglin AFB, both within rural and urban areas. A statewide study conducted by FWC estimated that Eglin AFB currently has a population of 63 to 101 Florida black bears (USAF 2013b). The closest black bear

occurrences (2007–2008) occur along State Road 85, approximately 0.8 mile west of Duke Field. Since potential black bear habitat exists at Projects 2 through 4 and there are documented occurrences within 1 mile, there is a potential for the Florida black bear to be present within the Project areas.

Migratory Birds. Eglin AFB supports Partners in Flight, an initiative to protect and conserve neotropical migratory birds and their habitats. If a military activity could knowingly result in the take of bird species and the breeding season cannot be avoided, the Eglin AFB Natural Resources Office consults with USFWS to develop a mitigation plan (USAF 2013b).

3.3.3 Environmental Consequences

Potential impacts on biological resources are evaluated based on the following criteria:

- Importance (e.g., legal, commercial, recreational, ecological, scientific) of the resource
- Proportion of the resource that would be affected relative to its occurrence in the region
- Sensitivity of the resource to proposed activities
- Duration of ecological impacts
- Potential for “taking” of federally listed species
- Effect on ESA-protected species habitat.

Effects on biological resources would be significant if species or habitats of concern based on legal status or ecological importance were adversely affected over relatively large areas. Effects would also be considered significant if disturbances cause reductions in population size or distribution of a species.

Construction, aircraft operations, and associated noise could potentially directly result in adverse effects on biological resources. Direct effects are evaluated by identifying the types and locations of potential ground-disturbing activities relative to important biological resources. To evaluate the effects of noise, considerations were given to the number of individuals or critical species involved, type of stressors involved, and magnitude of the effects.

3.3.3.1 PROPOSED ACTION

Vegetation. Long-term, minor, adverse effects would be expected on vegetation and the associated habitats from the proposed construction and demolition of infrastructure to support the beddown of the C-146A aircraft at Duke Field. The total area of ground disturbance within the area of Project 1 is approximately 8 acres; however, the total area of new impervious surfaces within Project 1 is approximately 3.8 acres. Effects on vegetation in the area of Project 1 are not expected to be significant because of its location in a previously developed area and surrounding industrial land uses (see Land Use **Figure 3-4**).

Projects 2 through 4 would be constructed in the upland coniferous forested area north of McWhorter Avenue. The total area of ground disturbance and new impervious surfaces for Projects 2 through 4 is approximately 3.2 acres. Effects on vegetation associated with Projects 2 through 4 are not expected to be significant based on the remaining forested habitat within Duke Field and Eglin AFB. The total acreage of vegetation disturbed as a result of the

Proposed Action would depend on the final design, layout, and site of the proposed structures and facilities, and the constraints of each of the sites.

All projects associated with the Proposed Action could result in short-term, minor, indirect effects associated with nonnative and invasive species and erosion and sedimentation in vegetated areas. Appropriate best management practices (BMPs) would be implemented to minimize soil disturbance and control erosion and sedimentation during construction and clearing to minimize potential impacts on adjacent forested lands and water quality (See **Section 3.13.3**). In addition, the Proposed Action would not be expected to impact sensitive aquatic habitat, ditches, wetlands, or open water bodies. Soil disturbances could provide opportunities for nonnative and invasive species to establish or spread; however, the majority of the proposed project components would be covered by pavement or cleared landscaped areas and there would not be many areas with the proper environment for the establishment of invasive species nonnative plants.

In addition, the following BMPs would be implemented during and following construction and demolition to prevent the establishment and spread of nonnative species (USAF 2013b):

- Inspect and clean construction equipment to remove soil, plants, and seeds.
- Ensure all fill is as free of nonnative plant propagules as is practicable.
- Revegetate disturbed areas with native plant species.

Invasive weeds would not be expected to become permanently established in disturbed areas with the proper implementation of these management practices. BMPs to minimize soil disturbance and control erosion and sedimentation during demolition, construction, and clearing would also be implemented to minimize potential impacts on adjacent forested lands and water quality (see **Section 3.13.3**).

Wildlife. Long-term, negligible, adverse impacts could occur from the mortality of small less-mobile terrestrial species (e.g., reptiles, rodents, and small mammals) as a result of collision with construction equipment. Wildlife in the Project areas would be expected to generally avoid high traffic areas.

Short-term, minor, adverse impacts on wildlife would occur as a result of temporary noise disturbances associated with construction and demolition activities. Loud noise can disturb wildlife resulting in escape or avoidance behaviors; however, these effects would be temporary. Noise can also distort or mask bird communications signals (e.g., songs, warning calls, fledgling begging calls) and ability to find prey or detect predators. If noise persists in a particular area, animals could leave their habitat and avoid it permanently. Avoidance behavior by animals requires the expenditures of excess energy that is needed for survival (e.g., finding new food sources, water sources, and breeding and nesting habitats) (Ellis et al. 1991). Noises associated with construction and demolition would only be expected to affect individual animals within close proximity (typically within 400 to 800 feet) to the noise sources. Wildlife species would generally be expected to recover quickly from noise disturbance once the construction activities have ceased. As a result, population-level impacts would not be expected to occur.

The Proposed Action would result in an increase in the current number of annual aircraft operating hours and training missions at Duke Field and LZs; however, the increase to the noise environment would not be significant. Approximately 5,300 additional C-146A aircraft training missions per year would be flown to or from Duke Field under the Proposed Action. This would equate to an average of 15 additional operations per day, an increase of approximately 18 percent when compared to overall existing conditions. The additional aircraft operations would amount to an overall increase in noise of less than 1 A-weighted decibels (dBA) Day-night Sound Level (DNL) at Duke Field. Furthermore, the total aircraft operations under the Proposed Action would be 5,000 less (i.e., 14 percent less) than before the C-130 aircraft were relocated. Additionally, C-130 aircraft are both larger and louder than the C-146A aircraft. Therefore, even with the proposed additional C-146A aircraft, the noise surrounding Duke Field would likely be less than it was historically with the C-130 aircraft.

Long-term, minor, adverse impacts on wildlife would occur as a result of increased aircraft operations. Noise levels from aircraft overflights would not be expected to change noticeably from current levels (see **Section 3.9.3**). The Proposed Action would amount to an overall increase in noise of less than 1 dBA DNL at Duke Field and LZs. Changes to the types of overflights are not expected to result in significant impacts on wildlife or wildlife populations due to noise impacts. Overall, research on the effects of noise from overflights on wildlife suggests that although overflights are often initially startling, animals eventually habituate to them under most circumstances. The intensities and durations of the startle response have been shown to decrease with numbers and frequencies of exposure, suggesting little to no long-term adverse effects. The number of events per month above 65 dBA would be the same as or less than under baseline conditions (see **Section 3.9.3**). Furthermore, wildlife species on Eglin AFB have become accustomed to aircraft noise. Therefore, wildlife is not expected to be adversely affected by increased aircraft noise.

Long-term, minor, negligible effects would be expected on avian species due to a potential for increased bird airstrikes at Duke Field and nearby and remote LZs under the Proposed Action. Training missions would increase by approximately 18 percent (to a total of 36,053 training missions) which equates to an average of 15 additional operations per day (see **Section 3.9.3**). However, this is approximately 5,000 fewer aircraft operations than those planned for the airfield before the C-130 aircraft were divested from Duke Field. Approximately 50 percent of recorded bird aircraft strikes have been at altitudes lower than 400 feet and almost all strikes have been less than 15,000 feet. Ninety-two percent of recorded bird aircraft strikes have occurred below 2,500 feet (USAF 2015a). BASH risk would be highest in airspace components with lower altitudes (e.g., below 2,500 feet, where approximately 92 percent of recorded BASH incidents have occurred). Low-altitude flights would occur (<10,000 above msl) as a result of the Proposed Action, although nearly all C-146A aircraft flight time would occur above this elevation. The vast majority of documented aircraft collisions involve common, large-body birds, particularly gulls, waterfowl, and raptors, or large flocks of smaller birds (USAF 2015a). Between 2005 and 2012, approximately 130 aircraft BASH or weather related events occurred at Duke Field (USAF 2012). Implementation of the Proposed Action along with the divestiture of C-130 aircraft would not result in an increase in the current number of annual aircraft operating hours or training missions. Aircraft operations would continue to adhere to all established flight safety guidelines and protocol. Consequently, bird-aircraft strikes would not be expected to

increase significantly and this increase would not result in long-term (i.e., population-level) impacts.

Protected and Sensitive Species. The potential noise and strike impacts from aircraft overflights on threatened and endangered species are expected to be similar to those discussed previously for wildlife.

Section 7 informal consultation with USFWS was initiated by Eglin AFB's Natural Resources Office for potential impacts on protected species across the installation and specifically associated with development of new facilities, demolition, and renovation of existing facilities in Eglin AFB's cantonment areas, including Duke Field. This process included the submittal of an EA for continued development of the Eglin AFB cantonment areas and a letter of "no effect" for threatened and endangered species on December 9, 2013 from this action. On February 18, 2014, USFWS issued a determination of "not likely to adversely affect" for the RCW, Okaloosa darter, reticulated flatwoods salamander, eastern indigo snake, bald eagle, Florida black bear, and gopher tortoise if project activities on Duke Field did not deviate from management actions described in the Cantonment Areas EA (Eglin AFB 2014a). New construction projects must be evaluated on a case-by-case basis including conducting presence/absence surveys for protected species prior to construction.

Eglin AFB completed Section 7 informal consultation for the Proposed Action identified in this EA. It was determined by USFWS that there would be no effect on threatened and endangered species and the provided management actions identified through previous consultations to avoid or minimize effects from the Proposed Action would continue to be implemented (see **Section 4.2.2** for management actions and **Appendix B** for the consultation letter and the USFWS response letter). There would be no additional impacts on RCW, the eastern indigo snake, and gopher tortoise beyond what has been analyzed in existing programmatic consultation documents. The Eglin AFB Natural Resources Office would also brief construction personnel on protected species prior to construction initiation.

Short-term, negligible, adverse effects on the eastern indigo snake would be expected under the Proposed Action. Incidental contact with personnel or construction equipment could result in the trampling and injury or mortality of a snake. However, this occurrence is unlikely, as the snake would move away if it sensed a disturbance. In addition, gopher tortoise burrows used by eastern indigo snakes are easily damaged by ground disturbance, especially from heavy equipment, as they can cave in due to ground instability. The Proposed Action would be conducted consistent with measures identified in the 2008 Programmatic Biological Assessment (PBA) that address impacts of construction activities on eastern indigo snake on Eglin AFB, as well as those identified in **Section 4.2.2**, such as the following. The contractor would be provided with eastern indigo snake signs to post at strategic locations on the construction site and access roads. In addition, personnel would be given instructions not to harass, injure, harm, or kill this species. Should an eastern indigo snake be sighted, personnel should cease activities, report the sighting to the Eglin AFB Natural Resources Office, and allow the snake sufficient time to move away from the site on its own before resuming such activities (Eglin AFB 2014b).

Short-term, negligible, adverse effects on gopher tortoise habitat would be expected from the Proposed Action. The gopher tortoise can be found throughout Eglin AFB, including right-of-ways adjacent to roads and sandy spots within developed areas. There are documented potential suitable habitat and tortoise burrows within Duke Field. The primary potential impact would be crushing by construction equipment. A pre-construction gopher tortoise survey is required within 30 days of ground-disturbing activities. If tortoise burrows are found in the Project areas, and burrows cannot be avoided by at least 25 feet, the tortoise or commensals that may be occupying the burrow would be relocated in accordance with FWC protocols to a suitable location within Eglin AFB (Eglin AFB 2014b). In the unlikely event that construction personnel were to come into contact with a gopher tortoise, activities would cease until the tortoise moved away from the area.

No effects on the Florida black bear would be expected from the Proposed Action. Although there are no documented sightings of the black bear within or adjacent to the Project areas, there are documented occurrences (2006 and 2008) approximately 0.8 mile to the west along State Road 85 (see **Figure 3-2**). During construction, any bears in the area would likely move away due to noise and human presence, thus reducing potential vehicle or equipment collisions. If a Florida black bear is sighted during construction, activities would cease and vehicle/equipment operators should be instructed to allow the animal to move away from the area before resuming activities. Personnel should report any sightings of black bears to the Eglin AFB Natural Resources Office.

No effects would be expected on reticulated flatwoods salamander from activities related to construction and demolition supporting the beddown of the C-146A aircraft at Duke Field. No known or potential breeding ponds for this species are documented within Duke Field. Per consultation with USFWS, a survey for the reticulated flatwoods salamander is not required (Eglin AFB 2014b).

No effects on the RCW would be expected from the Proposed Action if conservation measures are followed. The nearest RCW active tree and foraging habitat is approximately 1 mile from Project 1 (see **Figure 3-2**). Approximately 3.2 acres of upland coniferous forested lands would be cleared for Projects 2 through 4. The total acreage of forested land and vegetation disturbed would depend on the final design, layout, and location of the proposed facilities. Potential effects from construction associated with the Proposed Action include disturbance from the physical presence of humans, equipment, and vehicles in foraging habitat, and clearing of foraging habitat and inactive trees. However, the influence of suitable habitat outweighs the negative effects of construction noise. Overall, noise from facilities construction near the Project areas would be comparatively less of an impact on RCW than noise associated with mission activities. Mission activities, including aircraft takeoffs and landings from Duke Field, have heavily impacted RCW habitat, but RCW populations have adapted to these activities (USFWS 2013b) and would continue to do so under the Proposed Action. Construction would be conducted consistent with the 2013 programmatic section 7 ESA consultation with USFWS addressing management actions and military missions and their effects on the RCW and its habitat on Eglin AFB, as well as a 2013 consultation with USFWS that covers construction at Duke Field. The Eglin AFB Natural Resources Office would survey trees for suitable habitat and possible cavity trees in the area prior to construction activities. If suitable habitat is identified,

further consultation with USFWS may be required. Additional general RCW conservation measures that would be required in accordance with the 2013 PBA for Eglin AFB are provided in **Section 4**.

The potential noise and strike impacts from aircraft overflights on threatened and endangered species are expected to be similar to those discussed previously for wildlife.

Migratory Birds. Long-term, minor, adverse effects would be expected on migratory birds due to an expected loss of forests from activities related to construction and demolition for the beddown of the C-146A aircraft at Duke Field. Approximately 3.2 acres of forest would be cleared which potentially provides nesting habitat for migratory birds associated with Projects 2 through 4. However, there is abundant forested habitat in adjacent areas, and birds would be expected to relocate to these habitats.

Migratory bird airstrikes could occur at Duke Field and nearby and remote LZs. The effects would be similar to those already discussed in the wildlife section. Furthermore, according to the final rule on take of migratory birds by the Armed Forces (50 CFR 14 § 21) and the 2003 NDAA, the Armed Forces are authorized for the incidental taking of migratory birds, with limitations, that occurs during military readiness activities, and the Proposed Action would fall within the thresholds of that authorization.

3.3.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, beddown of the additional C-146A aircraft would not occur at Duke Field and no demolition or construction associated with the beddown would occur. BASH-related impacts would remain unchanged when compared to existing conditions, and five C-145A and five C-146A aircraft would continue to operate from Duke Field. Selecting the No Action Alternative would result in no additional impacts on biological resources.

3.4 Cultural Resources

3.4.1 Definition of the Resource

Cultural resources is an umbrella term for many heritage-related resources defined in several federal laws and executive orders. These include the National Historic Preservation Act (NHPA) (1966), the Archeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (1990). Eglin AFB is required to comply with USAF regulations and instructions, including EAFBI 13-212, *Range Planning and Operations; Eglin AFB Integrated Cultural Resources Management Plan* (USAF 2013c); AFI 32-7065, *Cultural Resources Management*; and AFI 90-2002, *Interactions with Federally Recognized Tribes*.

The NHPA focuses on cultural resources such as prehistoric and historic sites, buildings and structures, districts, or other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or other reason. Such resources might provide insight into the cultural practices of previous civilizations or they might retain cultural and religious significance to modern groups. Resources found significant under

criteria established in the NHPA are considered eligible for listing in the National Register of Historic Places (NRHP). These are termed “historic properties” and are protected under the NHPA. Native American Graves Protection and Repatriation Act requires consultation with culturally affiliated Native American tribes for the disposition of Native American human remains, burial goods, and cultural items recovered from federally owned or controlled lands.

Typically, cultural resources are subdivided into archeological resources (prehistoric or historic resources containing physical evidence of human activity but no structures remain standing); architectural sites (buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); and resources of traditional, cultural, or religious significance.

Archeological resources comprise areas where human activity has measurably altered the earth or deposits of physical remains are found (e.g., projectile points and bottles). *Architectural resources* include standing buildings, bridges, dams, and other structures of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to warrant consideration for the NRHP. More recent structures might warrant protection if they are of exceptional importance or if they have the potential to gain significance in the future. *Resources of traditional, religious, or cultural significance* can include archeological resources, sacred sites, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals considered essential for the preservation of traditional culture.

This section describes the nature and extent of environmental impacts resulting from the Proposed Action and the No Action Alternative on cultural resources. Under Section 106 of the NHPA, federal agencies must take into account the effect of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. Under this process, the federal agency evaluates the NRHP eligibility of resources within the proposed undertaking’s area of potential effect (APE) and assesses the possible effects of the proposed undertaking on historic properties in consultation with the State Historic Preservation Officer and other parties. The APE is defined as the geographic area(s) “within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist.”

3.4.2 Affected Environment

Cultural resources investigations at Eglin AFB have inventoried more than 2,600 archaeological sites and 1,000 above-ground resources. Of these resources, there are more than 300 historic properties that include 164 NRHP-eligible archaeological sites, 2 NRHP-listed archaeological sites, 138 NRHP-eligible above-ground resources, 55 NRHP-listed above-ground resources, 3 NRHP-eligible cemeteries, and 19 NRHP-listed or eligible historic districts (USAF 2013c).

Thirteen archaeological surveys have been completed within the boundaries of Duke Field. There is one NRHP-eligible prehistoric archaeological site (8OK148) and two high probability areas that remain to be surveyed at Duke Field (Eglin AFB 2014b). There are no above-ground resources listed or eligible for listing in the NRHP. Further, no historic districts, cemeteries, or Traditional Cultural Properties have been identified at Duke Field. The entire APE has been surveyed for the presence of archaeological sites; the most recent archaeological report

identified no archaeological sites in the APE. This report has been sent to the State Historic Preservation Officer for concurrence. Building 3021, a Cold War-era resource proposed for demolition as part of Project 1, is ineligible for the NRHP. Concurrence is expected by May 9, 2016 from the Florida State Historic Preservation Office, and will subsequently be included in the final version of this EA.

3.4.3 Environmental Consequences

Adverse impacts on cultural resources can include physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or that alter its setting; neglecting the resource to the extent that it deteriorates or is destroyed; or the sale, transfer, or lease of the property out of agency ownership (or control) without adequate legally enforceable restrictions or conditions to ensure preservation of the property's historic significance.

3.4.3.1 PROPOSED ACTION

Under the Proposed Action, the beddown and operations of an additional 18 C-146A aircraft, the relocation of 169 USAF personnel to Duke Field, and increased air operations would have no impacts on historic properties as there are none within the APE.

The construction of the C-146A one-bay hangar and AMU shop, the 524/859 SOS Squadron Operations Facility, the temporary flight simulator, and the permanent flight simulator would have no effect on cultural resources as there are no historic properties in the APE if the State Historic Preservation Office concurs that Building 3021, which would be demolished under the Proposed Action, is not eligible for NRHP listing.

During the pre-planning phase, proposed land clearing and construction projects must be coordinated with the Eglin AFB Cultural Resources Office. Any change in project plans must also be coordinated. In addition, should archaeological deposits be discovered during demolition or construction of any of the individual facilities, construction or demolition would be immediately halted and Eglin AFB would follow the provisions for unanticipated discoveries specified in the Eglin AFB *Integrated Cultural Resources Management Plan* (USAF 2013c).

Eglin AFB will consult with the appropriate Tribal Historic Preservation Officers regarding the Proposed Action, as required under Section 106 of the NHPA; EO 13175, *Consultation and Coordination With Indian Tribal Governments*; AFI 90-2002; AFI 32-7065; Department of Defense Instruction 4710.02, *DoD Interactions with Federally-Recognized Tribes*; and as specified in Section 3.2.2 of the installation's *Integrated Cultural Resources Management Plan*.

Eglin AFB has five federally-recognized tribes that may have a historic or cultural affiliation with lands: the Miccosukee Tribe of Indians of Florida, Seminole Tribe of Florida, Poarch Band of Creek Indians of Alabama, Muscogee (Creek) Nation of Oklahoma, and Thloptholocco Tribal Town of the Creek (Muscogee) Tribe. The installation currently has arrangements with these tribes that differ from the typical rules of contact whereby the tribes do not wish to be contacted for work in areas that have already been surveyed and have no sites significant to them, which is the case with the APE. These arrangements were established in 2008 as part of initial

government-to-government meetings. Furthermore, the installation has Memoranda of Understanding with the Muscogee (Creek) nation of Oklahoma and Thloptholocco Tribal Town of the Creek (Muscogee) Tribe and is working toward one with the Poarch Band of Creek Indians of Alabama (see **Appendix B**).

3.4.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, beddown of C-146A aircraft would not occur at Duke Field and no demolition or construction would occur. Therefore, no impacts on cultural resources would be expected under the No Action Alternative.

3.5 Geological Resources

3.5.1 Definition of the Resource

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography and physiography, geology, soils, and, where applicable, geologic hazards.

Geology. Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition.

Topography. Topography and physiography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural features and human-made alterations of landforms.

Soils. Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

Prime Farmland. Prime farmland is protected under the Farmland Protection Policy Act of 1981. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water. The intent of the Farmland Protection Policy Act is to minimize the extent that federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. The Natural Resources Conservation Service has not identified any soils considered prime farmland that occur within Duke Field; therefore, it is removed from further analysis.

Geologic Hazards. Geologic hazards are defined as natural geologic events that can endanger human lives and threaten property. Examples of geologic hazards in Florida include karsts, sinkholes and earthquakes.

3.5.2 Affected Environment

Geology. The area that encompasses Eglin AFB consists of unnamed Holocene and Pliocene sands. These deposits sit on top of the Citronelle formation, which is approximately 250 feet of predominantly non-marine quartz sands, interspersed with gravel and relatively thin clay lenses (USAF 2013c). The Pensacola confining bed lies underneath the Citronelle Formation and ranges from 140 feet above msl in central Walton County to more than 125 feet below msl in southwestern Okaloosa County. This impermeable confining bed creates the top layer of a sand and gravel aquifer and the upper limestone of the Floridan aquifer, and inhibits the movement of water from the aquifers. The bed is made up of clays and clayey sands with some limestone and shell fragments (Becker et al. 1989, USAF 2013c)

Topography. The topography for Duke Field is relatively flat and sits at approximately 190 to 200 feet above msl. Duke Field is situated in the coastal plain of Florida, surrounded by lower terrain areas and the Shoal River to the north and Choctawhatchee Bay to the south.

Soils. One soil type is the defining soil type at Duke Field and covers all Project areas under the Proposed Action. Lakeland Sand soils occurs on 500 acres of Duke Field and are excessively drained brownish-yellow sands that have developed along broad ridgetops and slopes. Typically they have sandy surface layers with sandy subsoil that are more than 80 inches deep. Lakeland Sand soils have a moderate to high erosion risk potential (USAF 2012).

Geologic Hazards. Though they are uncommon, the Florida panhandle is subject to geologic hazards including earthquakes, karsts, and sinkholes. Karsts and sinkholes are most prevalent in the west central portion of Florida and uncommon in the panhandle and Okaloosa County. The U.S. Geological Society identified the panhandle of Florida as the lowest hazard from earthquakes with a peak acceleration of 0.02 percent g. As a result, Duke Field is unlikely to experience a geological event. Therefore, geologic hazards would not be expected to have an impact on the Proposed Action at Duke Field and is removed from further analysis (FGS 2004, USGS 2014).

3.5.3 Environmental Consequences

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential effects of a proposed action on geological resources. Generally, adverse effects can be avoided or minimized if proper construction techniques, erosion-control measures, and structural engineering design are incorporated into project development.

Effects on geology and soils would be significant if they would alter the lithology (i.e., the character of a rock formation), stratigraphy (i.e., the layering of sedimentary rocks), and geological structures that control groundwater quality, distribution of aquifers and confining beds, and groundwater availability; or change the soil composition, structure, or function within the environment.

3.5.3.1 PROPOSED ACTION

Under the Proposed Action, ground surfaces would be temporarily disturbed due to demolition and construction activities required for the proposed projects. Specific construction limitations

and considerations would depend on the type of construction and subsurface materials encountered at each project location.

Short-term, minor, adverse impacts on geological resources would result from earthmoving activities associated with demolition, construction of facilities, and apron paving. These activities would excavate soils and expose rock materials, temporarily removing vegetation in some areas and exposing soils to erosion.

All construction associated with the Proposed Action would occur within the Lakeland Sand soil type. Impacts in the immediate area of Duke Field (one-bay hangar and AMU Shop) would be negligible because the area has previously been developed. The area proposed for the 524/859 SOS Squadron Operations Facility and the temporary and permanent flight simulator has partially undergone development as part of the AvFID beddown and therefore impacts on soils in this area would also be negligible (USAF 2012).

Soils around Project areas could become compacted by vehicular traffic, including vehicles used for construction. In general, accelerated erosion of soils could be minimized for demolition and construction activities by siting and designing facilities to take into account soil limitations, employing construction and stabilization techniques appropriate for the soil and climate, and implementing temporary and permanent erosion control measures. Soil compaction could be minimized by planning construction activities, restricting construction traffic to specific areas and routes of travel. Additionally, there would be no intentional changes to topography as a result of the Proposed Action as areas proposed for development have been previously graded or are already flat.

Although soils would be disturbed by earthmoving and other construction activities, impacts on soil resources would be minimal since BMPs, erosion and sediment controls and other management measures would be implemented. Because Lakeland Soils are moderately susceptible to erosion, BMPs would reduce the impact to soils and could include installing silt fencing and sediment traps, applying water to disturbed soil, and revegetating disturbed areas as soon as possible after the disturbance, as appropriate. Implementing BMPs would reduce impacts to soils from construction and demolition. The impacts would be negligible and localized to the Project areas. Therefore, potential impacts on geological resources resulting from demolition and construction activities under the Proposed Action would be minimal and not significant.

3.5.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, beddown of the C-146A aircraft would not occur at Duke Field and no demolition or construction would occur. Therefore, no impacts on geological resources would be expected under the No Action Alternative.

3.6 Hazardous Materials and Wastes

3.6.1 Definition of the Resource

The terms “hazardous materials” and “hazardous waste” refer to substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act

and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA). In general, “hazardous materials” refers to any item or agent (biological, chemical, or physical) that has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors. A complete list of federally recognized hazardous substances as well as their reportable quantities is provided in 40 CFR § 302.4. Many substances not on this list may be considered hazardous according to their ignitability, corrosivity, reactivity, or toxicity as defined by 40 CFR § 261.20–24.

Hazardous wastes that are regulated under RCRA are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that either exhibit one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, reactivity, or are listed as a hazardous waste under 40 CFR § 261. The Environmental Restoration Program (ERP) is a USAF program to identify, characterize, and remediate environmental contamination from past activities at USAF installations.

Issues associated with hazardous material and waste typically center around waste streams; underground storage tanks; aboveground storage tanks (ASTs); and the storage, transport, use, and disposal of pesticides, fuels, lubricants, and other industrial substances. When such materials are used or not disposed of properly, they can threaten the health and well-being of wildlife species, habitats, soil and water systems, and humans.

3.6.2 Affected Environment

Hazardous Materials Management. At all USAF installations, Hazardous Materials are managed through AFI 32-7086, *Hazardous Materials Management*. Eglin AFB uses hazardous materials for training, testing, operations, and maintenance activities. All hazardous materials are requested, authorized, and distributed from a single point source, the HAZMART. This single point for requests, evaluation, and authorization of government-owned hazardous materials allows for the base-wide management of such materials.

Hazardous Waste Management. USAF manages hazardous wastes through AFI 32-7042, *Waste Management*. Eglin AFB has implemented a site specific *Hazardous Waste Management Plan*, EAFBI 32-7003, that designates waste storage and accumulation points. The plan addresses record keeping, spill contingency and response requirements, as well as education and training. Eglin AFB also maintains a Spill Prevention, Control, and Countermeasures Plan (USAF 2005), which identifies specific procedures and responsibilities for responding to a hazardous waste spill. Eglin AFB is classified as a Large Quantity Generator and maintains a USEPA hazardous waste generator identification number (FL8570024366).

Environmental Restoration Program. The ERP was developed by DoD to help manage the cleanup of contamination on military installations. The ERP program at Eglin AFB conforms to the Comprehensive Environment Response, Compensation, and Liability Act and the RCRA requirements. Since 2002, The Eglin AFB ERP has been overseen by FDEP. The Duke Field ERP includes three active sites (USAF 2015c). However, only ERP Site ST-55 is within the area of the Proposed Action (see **Figure 3-3**).

Buildings 3013, 3011, and 3204 are within ERP ST-55, the Duke Field tank farm site. This 1.75-acre area was formerly a petroleum storage facility. While in operation, there was a 1,850-gallon spill of JP-4 fuel (1991) and two known pipe leaks (1994 and 2000). Contaminated soils were removed, and an air sparging and soil vapor extraction system was installed in 1997. The tank farm was removed in 2006. The soil vapor extraction system was shut down in 2009. The air sparging system failed in 2012. Currently, active remediation at the ERP site includes an in-situ chemical oxidation pilot study using three monitoring wells. Investigation results show there is free product near well ST055A-MW-05. The pilot study and performance monitoring results will be reported to FDEP as progress is made. Once cleanup goals have been reached, Eglin AFB will request a Site Rehabilitation Completion Order from FDEP.

Pesticides. In accordance with DoD policy on pest management, integrated pest management principles should be used to help minimize the use of pesticides. The objective of integrated pest management is to use ecologically, economically, and socially sound strategies to control or keep pests at tolerable levels. Any pesticides, including herbicides, used at Eglin AFB must be on the installation's list of approved pesticides. All installation pest management personnel who apply or supervise the application of pesticides must be properly trained and certified.

Asbestos. Asbestos-containing materials (ACM) are generally found in floor tiles, mastic, roofing materials, pipe wrap, and sometimes in wall plaster. ACM is common in some of the older buildings at Duke Field (USAF 2012). ACM is managed in accordance with the base's *Asbestos Management Plan* and *Asbestos Operations Plan*, Eglin and through a computerized database that holds detailed information on surveys and abatement actions. ACM is generally maintained in place until such a time as the building is renovated or demolished. Buildings 3018 and 3021 in the Project areas are both known to contain ACM. Additionally, Buildings 3011 and 3204 are assumed to contain ACM due to their date of construction.

Lead. Eglin AFB has conducted a base wide survey and has identified lead-based paint (LBP) in older buildings. The *Lead Based Paint Management Plan* provides guidance on how to protect USAF personnel and the public from exposure, and the management and disposal of LBP (Eglin AFB 2014c). Buildings 3018 and 3021 in the Project areas are both known to contain LBP. Additionally, Buildings 3011 and 3204 are assumed to contain LBP due to their date of construction.

Radon. Radon is a colorless and odorless radioactive gas that results from the natural decay of radium. It is found in most soils. According to the Florida Department of Health, radon is the leading cause of lung cancer among non-smokers (FDH 2015a). The Department of Health requires radon testing in schools and daycares. Radon testing in the Cherokee and Oak Hill Elementary schools on Eglin AFB show average results of 0.5 picocuries of radon per liter of air (USEPA 2015d). This is two times less than the national average of 1.3 picocuries per liter.

The Florida Department of Business and Professional Regulation (formerly the Department of Community Affairs) has developed construction standards for radon-resistant new construction (FDH 2015b). These standards are voluntary in Okaloosa County.

3.6.3 Environmental Consequences

Impacts on hazardous materials management would be considered significant if a proposed action resulted in worker, resident, or visitor exposure to these materials above established limits. Impacts on hazardous materials management would be considered significant if the federal action resulted in noncompliance with applicable federal and respective state regulations, or increased the amounts generated or procured beyond current USAF hazardous materials management procedures and capacities.

3.6.3.1 PROPOSED ACTION

Short-term and long-term, negligible, adverse impacts would result from the implementation of the Proposed Action. Implementation of the Proposed Action is not anticipated to result in significant impacts from the use of hazardous materials or generation of hazardous wastes. All hazardous materials and wastes must be handled, stored, transported, and disposed of in accordance with applicable installation policies, USAF regulations, and local, state, and federal laws.

Hazardous Materials. Construction of new buildings and pavements would require the use of hazardous materials such as petroleum products, sealants, paints, etc. Many of these materials are currently used at Eglin AFB. Eglin AFB would manage the storage, use, and disposal of construction materials in accordance with current practices and management schemes. Materials would be stored in containers that meet federal, state and local requirements. Secondary containment systems would be employed as necessary to prevent or limit accidental spills.

All hazardous materials storage locations are equipped with emergency response procedures and site-specific contingency plans established by Eglin AFB. Any significant change in the quantity of hazardous materials stored on base during construction would be recorded and reported to local emergency planning committees and local fire departments in the annual Tier II forms, as required. No adverse impacts related to the management of hazardous materials are anticipated.

Hazardous Waste. Eglin AFB is already classified as a large quantity generator, and is responsible for stringent management and reporting requirements. During construction, fueling activities would create the potential for minor spills and releases. The construction contractor would be required to comply with BMPs to reduce the potential for spills, and ensure quick clean up.

ERP Sites. The active ERP site (ST-55) is the result of a prior fuel spill and leaks. Construction activities would be coordinated with the Environmental Restoration Branch at Eglin AFB to ensure no adverse impacts to this site. Construction procedures would include a plan for any occurrence of unusual odor, soil, or groundwater coloring. If during construction, were excavated soils to exhibit hazardous characteristics, work in the excavation area would be suspended until a remedial investigation of the soils are conducted by trained specialists. Thus, little or no impacts are anticipated from the presence of the ERP site during construction.

ACM/LBP. The demolition of buildings to support the Proposed Action would result in ACM or LBP wastes. The removal and disposal of these wastes would be performed by specifically-trained professionals knowledgeable in the removal and disposal of these materials. Any wastes would be disposed of in accordance with all federal and state regulations. Abatement activities and waste manifests from disposal would be retained by Eglin AFB. New construction and operations would not result in the use or exposure of ACM or LBP. No adverse impacts related to ACM or LBP are anticipated.

Hazardous materials requested for operation of the AMU shop include solvents, cleaners, lubricants, paints, and sealants used for the maintenance of aircraft (AFSOC 2014a). A new initial hazardous waste accumulation point would be required for the new AMU shop, and personnel would be trained to handle the hazardous waste streams. Waste generation from operation and maintenance activities would also include waste oil, batteries, and paints. Procedures for the usage, and disposal of these waste streams would be similar to those already generated at Eglin AFB. Waste generation levels would be managed within the current procedures and plans. No adverse impacts related to the management of hazardous wastes are anticipated.

3.6.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, beddown of the C-146A aircraft would not occur at Duke Field. There would be no additional training activities or required maintenance activities for additional aircraft. There would be no increase in hazardous materials or hazardous wastes at Eglin AFB. The ERP site, and existing ACM and LBP, would continue to be managed in place. No impacts to the management of hazardous wastes and materials would be anticipated.

3.7 Infrastructure and Transportation

3.7.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly man-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as “urban” or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. The components to be discussed in this section include infrastructure (electrical supply, water distribution, sewer and wastewater system, liquid fuel supply, stormwater drainage, communications, and solid waste management) and transportation. The information provided in this section is primarily from the Duke Field ADP unless otherwise noted (Atkins 2012).

Sustainability consists of the technologies, systems, physical structures, management strategies, and cultural practices that, when incorporated into design and use of infrastructure and utilities, enable resource-use-efficiency that supports operational readiness while maintaining balance with the environment. EO 13693, *Planning for Federal Sustainability in the Next Decade*, incrementally expands sustainability goals specifically for all new construction of federal buildings, amongst other sustainability elements.

3.7.2 Affected Environment

Electrical Supply. Electrical power is supplied to Duke Field via the Valparaiso substation located at Eglin Main Base. The electrical distribution system within Duke Field consists of aboveground transmission lines with wood poles and pole mounted transformers. The Duke Field substation, which is located south of the intersection of Florida Highway 85 and McWhorter Street, is a 28-megavolt ampere substation that was designed for easy expansion and additional Duke Field electrical capacity. There is adequate electrical capacity to support future development at Duke Field (AMEC 2012).

Water Supply. Domestic water supply at Duke Field is provided via deep water wells and elevated storage tanks. The existing water wells are in good condition and provide adequate capacity. See **Section 3.13.2** for more details regarding the source of the groundwater. The existing water distribution system on Duke Field consists of multiple elevated storage tanks and 8-inch water distribution mains that connect to facilities to storage tanks. The existing water distribution system is currently in poor condition with numerous dead-ends. A 200-foot elevated storage tank was recently constructed to support adequate water pressure throughout Duke Field, and additional tanks are planned. Okaloosa County has provided a tap to their 30-inch water main in the event a need to service Duke Field with additional water supply arises. However, the preference is for USAF to have a self-sustaining system for Duke Field (Eglin AFB 2014b).

Sewer and Wastewater System. Wastewater collection at Duke Field consists of gravity flow sewer mains connecting lift stations to the Duke Field Wastewater Treatment Plant (WWTP) and sprayfield. The WWTP's estimated capacity is 125,000 gallons. The estimated current usage is approximately 15,000 gallons per day, which increases to approximately 24,000 gallons per day during reserve duty weekends. A wastewater line along the north side of McWhorter Street also provides connection for Duke Field wastewater to be transported to the Arbienna Pritchett Water Reclamation Facility (WRF) near Fort Walton Beach. The Arbienna Pritchett WRF has a capacity of 10 million gallons per day (AMEC 2012, Eglin AFB 2014b).

Liquid Fuel Supply. The Jet A fuel yard that currently services Duke Field is at the south end of Maintenance Way. The fuel facility has a capacity of 210,000 gallons (two 105,000-gallon tanks). Additional fuel points at Duke Field include the Aerospace Ground Equipment on the eastside of Spectre Road, the military fuel point at the Corner of Clay Street and Phillips Street, and the Army Air Force Exchange Service service station at the corner of Drone Street and Ford Avenue.

Stormwater Drainage. Stormwater system maintenance at Duke Field is not considered a serious issue. Due to relatively flat terrain and expanse of sandy soils, rainfall is allowed to infiltrate instead of running off in sheets or channels. The existing stormwater drainage system at Duke Field is comprised of paved and unpaved storm ditches that transport stormwater to holding ponds located 3,000 feet north and 2,500 feet south of the proposed hangar and AMU shop (Eglin AFB 2014c). Additional discussion on stormwater is provided in **Section 3.13**.

Communications. Duke Field has copper cable and fiber optic cable (supporting local area networks and wide area networks), SIPRNet, and NIPRNet at all major Duke Field facilities.

Additionally, similar to Eglin Main Base, Duke Field has extensive and well-developed communications infrastructure (Eglin AFB 2014b).

Solid Waste Management. Solid waste at Eglin AFB is managed via contract as there are currently no landfills on the installation. Solid waste at Eglin AFB includes garbage, bulky wastes, sludges, and rubbish. A private contractor hauls all refuse to a transfer station in Fort Walton Beach, where it is then transported 50 miles to Spring Hill Landfill, a Class I Landfill in Jackson County, Florida. Demolition and construction debris is also collected as part of this contract. Most demolition and construction debris is taken to Point Center Landfill, located in Okaloosa County. All landfills that process solid waste from Eglin AFB are permitted by FDEP (Eglin AFB 2014c).

Transportation. Eglin AFB covers 464,000 acres in Santa Rosa, Okaloosa, and Walton counties, and transportation is achieved mainly via road and street networks and pedestrian walkways both on and off the installation. The key transportation route to Duke Field is via Florida Highway 85, which is a four-lane highway that runs north-south connecting Interstate 10 to the Florida Gulf Coast to the south. Highway 85 has a peak hourly volume of 1,900 to 2,900 vehicles with an intermediate level of service (LOS) rating. LOS is a measure of the operational conditions on a roadway or at an intersection. LOS range from A to F, with “A” representing the best operating conditions (free flow, little delay) and “F” the worst (congestion, long delays). LOS A, B, or C are typically considered good operating conditions. Highway 85 has LOS values ranging from C during off-peak commuter travel hours to F during peak hours. McWhorter Street connects Highway 85 to Duke Field. McWhorter Street is a two-lane paved road that runs southwest to northeast, connecting to the street grid at Duke Field (Eglin AFB 2014c).

The existing vehicle network infrastructure at Duke Field primarily consists of two-lane asphalt roads servicing existing developed areas. The road network consists of a loose grid system parallel to the flight line with blocks of various sizes. The road grid at Duke Field predominantly follows the cardinal directions. Additionally, there are various unnamed dirt roads that provide access to less developed areas of Duke Field (Atkins 2012).

The pedestrian circulation network at Duke Field is limited and very fragmented. There are few walkways between facilities. Parking at Duke Field can be limited at times, especially during reserve weekends as there is limited overflow parking. During these times, parking occurs in non-designated areas that violate safety setback distances (Atkins 2012).

3.7.3 Environmental Consequences

Impacts on infrastructure are evaluated for their potential to disrupt or improve existing infrastructure service levels and create additional needs for utilities. For example, effects might arise from energy needs created by either direct or indirect workforce and population changes related to activities. An impact could be significant if a proposed action resulted in any of the following:

- Exceeded capacity of a utility
- A long-term interruption of the utility
- A violation of a permit condition

- A violation of an approved plan for that utility
- Substantial increase in traffic LOS values.

3.7.3.1 PROPOSED ACTION

Short- and long-term, negligible to minor, adverse and beneficial impacts would be expected on infrastructure and transportation. Because certain components of the infrastructure at Duke Field would be temporary shutoff while new components and structures are brought online, short-term, adverse impacts would be expected. However, long-term, beneficial impacts would also be expected from replacement of older, inefficient utilities and structures.

Electrical Supply. Short-term, negligible to minor, adverse impacts on the electrical supply system would occur from a temporary increase in demand for electricity related to demolition and construction activities. Utility lines within the Project areas would be relocated and upgraded as necessary, which would result in a, negligible, beneficial impact. The new C-146A hangar, AMU shop, 524 SOS Squadron Operations Facility, and temporary and permanent flight simulators would require additional power at Duke Field. Duke Field currently has enough electrical capacity for future projects such as these. Long-term, negligible to minor, adverse impacts due to the addition of 169 personnel and operation of the new facilities would be expected on the electrical supply at Duke Field from increased electrical power consumption, although new facilities would be constructed as energy efficient structures.

Water Supply. Short- and long-term, minor, adverse impacts on the water distribution system at Duke Field would occur under the Proposed Action. A temporary increase in demand for water would be related to demolition and construction activities. The increase of approximately 169 USAF personnel moving to Duke Field as a result of the aircraft beddown would equate to a daily increase of water usage estimated to be 14,365 gallons based on a typical individual consumption rate of 85 gallons per day. Although the existing wells and water distribution system is in poor condition, this daily increase would be within the operating capacity of the system. Any required alterations of potable water systems would be conducted in accordance with FDEP and federal regulations, including the federal and state Safe Drinking Water Acts and the National Primary Drinking Water Regulations (Eglin AFB 2014b). Therefore, the impacts on the water supply would be long-term and minor, and significant impacts would not be expected.

Sewer and Wastewater System. Long-term, negligible impacts on the sewer and wastewater system at Duke Field would be expected. The daily increase in sanitary wastewater due to the increase in 169 personnel is estimated to be approximately 5,915 gallons based on a typical individual sanitary wastewater consumption rate of 35 gallons per day. This projected increase is well within the permitted capacity of the available wastewater treatment facilities. Currently, both the Duke Field WWTP and the Arbiene Pritchett WRF both have capacity to accommodate the additional 169 personnel being stationed at Duke Field. Standard operating procedures would be used in conducting aircraft maintenance to ensure that industrial wastewater is properly disposed. Therefore, no significant impacts would be expected and the wastewater treatment facilities would continue to accommodate demand on the sewer and wastewater system.

Liquid Fuel Supply. Long-term, negligible, adverse impacts on the fuel supply at Duke Field would be expected as a result of the additional C-146A aircraft operations at Duke Field. The Jet A fuel yard facility has the capacity to support the additional C-146A aircraft at Duke Field (Atkins 2012). No other operations related to the Proposed Action would increase the demand for fuel at Duke Field.

Stormwater Drainage. Short- and long-term, negligible, adverse impacts on stormwater drainage would be expected. Soil disturbance associated with demolition and construction activities would disrupt natural stormwater drainage flows and increase soil erosion until the areas are constructed or revegetated. There would be an approximate 304,920 ft² increase of new impervious surfaces at Duke Field with a decrease of 37,500 ft² of impervious surfaces related to road and building demolition, for a net increase of 267,420 ft². Per Section 438 of the Energy Independence and Security Act (EISA), Eglin AFB would implement BMPs and low-impact development measures at Duke Field which would minimize impacts on stormwater drainage from the Proposed Action. Stormwater permits would be required for the Proposed Action and are discussed in **Section 3.13**. Stormwater management is not a major concern at Duke Field due to infiltration rates in the area; therefore, no significant impacts on stormwater drainage would be expected.

Communications. Short-term, negligible, adverse impacts would be expected due to the connection and disconnection of communications infrastructure during demolition and construction. The increase in the personnel and facilities relying on the communication infrastructure at Duke Field would be minimal and, therefore, long-term, negligible impacts would be expected.

Solid Waste Management. Solid waste generated from construction and demolition would be disposed of in accordance with relevant federal, state, and local regulations. Construction and demolition materials would be recycled or reused to the maximum extent possible. The additional 169 USAF personnel stationed at Duke Field would result in an increased quantity of solid waste generated. However, this increase would not be expected to have a significant impact on existing solid waste management at Duke Field because it would be negligible compared to the total volume of solid waste generated by Eglin AFB, could be handled by current solid waste disposal practices, and local landfills have capacity (Eglin AFB 2014b).

Transportation. Short- and long-term, negligible to minor, adverse effects on transportation would be expected from implementing the Proposed Action. Demolition and construction would require delivery of materials to, and removal of debris, from construction sites. Construction traffic would use Highway 85 and McWhorter Street to access Duke Field. Portions of roads or lanes near Project areas may be temporarily reconfigured or closed in order to accommodate construction traffic at times. Construction traffic on Duke Field would, however, be minimal as projects associated with the Proposed Action would be staggered. Many heavy construction vehicles would be driven to the site and kept there for the duration of demolition and construction. Any potential increases in traffic volume associated with the proposed construction would be temporary. The roads proposed to be demolished to allow for construction of the hangar and associated aircraft apron are infrequently used side streets and would not adversely affect traffic patterns on Duke Field. Due to the increase of approximately

169 USAF personnel that would be accessing and utilizing Duke Field as a result of the Proposed Action, long-term, negligible impacts on transportation would be expected. Although traffic levels on Highway 85 at McWhorter Street during peak commuter travel hours are already at LOS F, increases in traffic from the Proposed Action would be slight. Additionally, long-term, negligible, beneficial impacts would be expected due to additional parking areas provided with the C-146A hangar and 524 SOS Squadron Operations Facility.

3.7.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, beddown of the C-146A aircraft would not occur at Duke Field and no demolition or construction would occur. Therefore, no impacts on infrastructure and traffic would be expected under the No Action Alternative.

3.8 Land Use/Coastal Zone Management

3.8.1 Definition of the Resource

Land Use. The term land use refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in master planning and local zoning laws. Land use planning ensures orderly growth and compatible uses among adjacent property parcels or areas. However, no nationally recognized convention or uniform terminology for describing land use categories exists. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. A wide variety of land use categories result from human activity. Descriptive terms for human activity land uses include residential, commercial, industrial, military, agricultural, institutional, transportation, communications and utilities, and recreational.

In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential effects on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its permanence.

Coastal Zone. The federal Coastal Zone Management Program comprehensively addresses the nation's coastal issues through a voluntary partnership between the federal government and coastal and Great Lakes states and territories. Authorized by the Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. § 1451 et seq., as amended), the program aims to protect, restore, and responsibly develop the nation's diverse coastal communities and resources. The coastal zone refers to the coastal waters and the adjacent shorelines, including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. The National Oceanic and Atmospheric Administration administers the program.

Section 307 of the CZMA, called the "federal consistency" provision, provides a state with input authority in federal agency decision making for activities that may affect a state's coastal uses

or resources. The state would not otherwise have such authority through other federal programs.

Generally, federal consistency requires that federal actions, within and outside the coastal zone, which have reasonably foreseeable effects on any coastal use (land or water) or natural resource of the coastal zone, be consistent with the enforceable policies of a state's federally approved coastal management program. Federal actions include federal agency activities, federal license or permit activities, and federal financial assistance. Federal agency activities must be consistent to the maximum extent practicable with the enforceable policies of a state's coastal management program.

3.8.2 Affected Environment

Land Use. Duke Field is approximately 2,700 acres in size and located in the northern part of Eglin AFB. Duke Field has nine land use categories including administrative (industrial), airfield surface (primary surface, clear zones and exclusion areas), airfield (runways, taxiways, and aprons), aircraft operations and maintenance, community (service/commercial), housing (unaccompanied), medical, open space, and outdoor recreation (Okaloosa County 2009). Duke Field's primary land uses are the extensive airfield, including the runway and associated taxiways, and airfield operations and maintenance facilities. Other facilities include range laser amenities, administrative buildings, housing and dining, a base exchange, an all-ranks club, the fire department, and ball fields. Project 1 is located in land designated as aircraft operations and maintenance and community uses while Projects 2, 3, and 4 are located in land currently designated as open space. Aircraft operations and maintenance support the aircraft located at Duke Field; the airfield land use includes runways, taxiways, and aprons that facilitate movement of the aircraft and includes safety buffer area. Open space includes forested area and makes up much of the cantonment area of Duke Field (USAF 2004, Atkins 2012). Future land uses for Project 1 include land designated as aircraft operations and maintenance and airfield (runway/taxiway/apron). Future land uses for Projects 2, 3, and 4 include community, medical, mixed used/administrative, parking, and pedestrian right-of-way (Atkins 2012). **Figure 3-4** shows the current land uses occurring in the vicinity of the Proposed Action at Duke Field. **Table 3-6** shows the current and proposed land use categories associated with each proposed project. The nearest city is Crestview, which is over 6 miles to the north of Duke Field, and activities occurring on the airfield do not conflict with any land use in the surrounding communities of Okaloosa County. There is a significant amount of open space around Duke Field, which buffers the airfield from any other local land uses (Atkins 2012). The *Okaloosa County 2020 Comprehensive Plan* directs local land and water use policy and decision making as relevant to this section to promote compatibility of local land and water uses (Okaloosa County 2009).

Coastal Zone. The Florida Coastal Management Program (FCMP) approved by the National Oceanic and Atmospheric Administration in 1981 and codified at Chapter 380, Part II, Florida Statutes (F.S.) consists of a network of nine state agencies and five regional water management districts implementing 24 statutes that protect and enhance the state's natural, cultural, and economic coastal resources. FDEP directs implementation of the FCMP and the Florida State Clearinghouse coordinates federal agency consistency reviews (except for proposed actions requiring permits under Section 404 of the Clean Water Act, Section 10 of the Rivers and

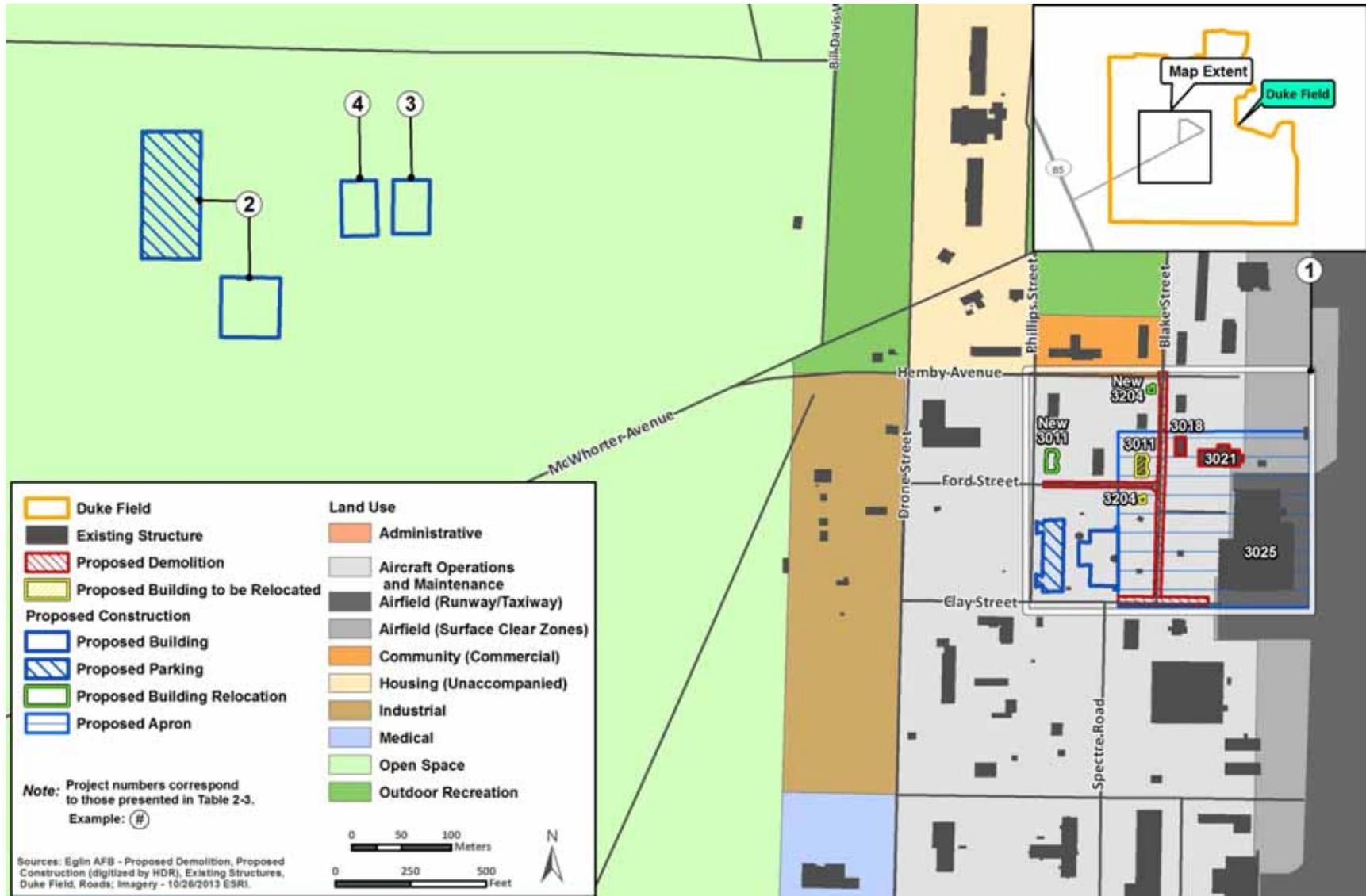


Figure 3-4. Land Use at Duke Field

Table 3-6. Land Use Categories Associated with C-146A Beddown Projects at Duke Field

Current Land Use Category	Proposed Land Use Category	Proposed Project Activity
Aircraft Operations and Maintenance	<ul style="list-style-type: none"> • Aircraft Operations and Maintenance • Airfield (Runway/Taxiway/Apron) • Parking • Pedestrian Right of Way • Utility Line 	<ul style="list-style-type: none"> • Construct 10,200 ft² hangar for C-146A aircraft (Project 1) • Construct 272,266 ft² aircraft apron to east of new hangar for C-146A aircraft (Project 1) • Construct 6,826 ft² AMU facility (Project 1) • Construct 15,000 ft² parking area • Demolish Building 3018 (Project 1) • Demolish Building 3021 (Project 1) • Demolish Ford and Blake Streets (Project 1) • Demolish a portion of Clay Street (Project 1) • Demolish and relocate Building 3011 and Building 3024 (well house)
Community	<ul style="list-style-type: none"> • Aircraft Operations and Maintenance • Airfield (Runway/Taxiway/Apron) 	<ul style="list-style-type: none"> • Demolish Blake Street (Project 1)
Open Space	<ul style="list-style-type: none"> • Community • Medical • Mixed Use/Administrative • Parking • Pedestrian Right of Way 	<ul style="list-style-type: none"> • Construct 32,500 ft² facility for 524/859 SOS Squadron Operations (Project 2) • Construct 70,000 ft² parking area with sidewalks for 524/859 SOS Squadron Operations Facility (Project 2) • Improve road and add curbs, landscaping, and fence for 524/859 SOS Squadron Operations Facility (Project 2) • Construct concrete pad with utilities for new temporary C-146A aircraft flight simulator (Project 3) • Install new 4,665 ft² temporary C-146A aircraft flight simulator (Project 3) • Install new 6,850 ft² permanent C-146A aircraft flight simulator (Project 4)

Harbors Act and offshore activities). The coastal zone in Florida is defined as the 67 counties and adjacent territorial seas, and Eglin AFB and Duke Field are within the coastal zone. A project must be shown to be consistent to the maximum extent practicable with the various applicable components of the FCMP.

3.8.3 Environmental Consequences

Land Use. The significance of potential land use impacts is based on the level of land use sensitivity in areas affected by a proposed action and the compatibility of proposed actions with existing conditions. In general, a land use impact would be significant if it were to cause the following:

- Be inconsistent or in noncompliance with existing land use plans or policies
- Preclude the viability of existing land use

- Preclude continued use or occupation of an area
- Be incompatible with adjacent land use to the extent that public health or safety is threatened
- Conflict with planning criteria established to ensure the safety and protection of human life and property
- Interfere with the use or function or otherwise diminish the value of recreation areas.

Coastal Zone. Impacts from a proposed action would be significant if the proposed action does not comply with requirements of the CZMA and FCMP. An impact to the coastal zone would be considered significant if it resulted in a deterioration of Florida's coastal ecosystems by negatively affecting coastal resources through one or more of the 24 enforceable statutes of the FCMP.

3.8.3.1 PROPOSED ACTION

Land Use. All facilities would be consistent with USAF planning policies and guidelines and would be compatible with existing land use guidelines. The construction of the 524/859 SOS Squadron Operations facility and parking area and temporary and permanent C-146A aircraft flight simulator are elements of the Proposed Action that would occur outside of already developed areas of Duke Field.

These projects alter land use on Duke Field currently designated as open space. However, the general nature of the projects is consistent with the 2012 Duke Field ADP. For example, the ADP identified the opportunities to use undeveloped land for siting new facilities and vacated buildings for new growth, as well as to simplify and upgrade road infrastructure and parking. Project 1 is consistent with the future land use identified in the 2012 Duke Field ADP. The plans include demolishing buildings, relocating functions, and creating hangar and airfield infrastructure. Projected future land use in the area includes these aircraft operations and maintenance and airfield functions, as well as parking, pedestrian rights of way. Furthermore, proposed buildings to be demolished under the Proposed Action were identified in the ADP (Atkins 2012). Projects 2 through 4 would require a modification to the future land use identified in the ADP because a portion of the Project areas are designated medical and community, which conflicts with the mixed use/administrative land use proposed for Projects 2 through 4. The Proposed Action would not alter any land use off Duke Field. Therefore, based on the conflict in projected future land use, minor adverse impacts on land use resulting from the implementation of the Proposed Action would be expected. Training operations by the C-146A aircraft at offsite locations would be conducted in a manner to ensure that the operations remain compatible with existing adjacent land uses.

Coastal Zone. Coastal impacts for activities associated with the C-146A aircraft beddown at Duke Field, including relocation of personnel and new construction and demolition, would be similar to the actions analyzed through the NEPA process for the Eglin AFB Cantonment Areas EA. That EA and its associated coastal consistency determination covered development on the portions of Duke Field also proposed for the C-146A aircraft mission facilities. FDEP concurred with that analysis, which concluded that the proposed development at Duke Field would not

affect the majority of coastal uses or resources and the impacts that would occur would be consistent with the enforceable policies of the FCMP (Eglin AFB 2014b).

The Proposed Action would not affect the majority of coastal uses or resources including the following: beach and shore preservation, growth policy, county and municipal planning, land development regulation, emergency management, state lands, state parks and preserves, land acquisition for conservation or recreation, Florida Greenways and Trails program, commercial development and capital improvements, transportation finance and planning, outdoor recreation, energy resources, land and water management, public health, mosquito control, and aquaculture. Although impacts could occur on state and regional planning; historical resources; transportation system; water resources; transfer, storage, and transportation of pollutants and cleanup of pollutant discharges including hazardous materials and hazardous waste; fish and wildlife conservation; environmental control; and soil and water conservation, the Proposed Action would be consistent with the enforceable policies of the FCMP. The coastal consistency determination for the Proposed Action is included in **Appendix B**.

3.8.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, beddown of the C-146A and associated personnel would not occur at Duke Field and no new construction or demolition would occur. Land use conditions at Duke Field would remain consistent with current land uses. Therefore, no impacts on land use at Duke Field would be expected under the No Action Alternative.

Conditions at Duke Field would remain the same and no impacts on the coastal zone and coastal zone resources would be expected under the No Action Alternative. The No Action Alternative would not affect a coastal use or resource and would be consistent with the enforceable policies of the FCMP.

3.9 Noise

3.9.1 Definition of the Resource

Sound is a physical phenomenon consisting of vibrations that travel through a medium, such as air, and are sensed by the human ear. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise can be generated by activities essential to enhancement of a community's quality of life, such as construction or vehicular traffic associated with proposed land development activities.

Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz are used to quantify sound frequency. The human ear responds differently to different frequencies. "A-weighting", measured in dBA, approximates a frequency response expressing the perception of sound by humans. Sounds encountered in daily life and their dBA levels are provided in **Table 3-7**.

Table 3-7. Common Sounds and Their Levels

Outdoor	Sound Level (dBA)	Indoor
Motorcycle	100	Subway train
Tractor	90	Garbage disposal
Noisy restaurant	85	Blender
Downtown (large city)	80	Ringling telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: Harris C.M. 1998

The sound pressure level noise metric describes steady noise levels, although very few noises are, in fact, constant; therefore, additional noise metrics have been developed to describe noise, such as:

- Equivalent Sound Level (L_{eq}) – L_{eq} is the average sound level in dBA.
- Day-night Sound Level – DNL is the average sound energy in a 24-hour period with a 10-dB penalty added to the nighttime levels. DNL is a useful descriptor for noise because: (1) it averages ongoing yet intermittent noise, and (2) it measures total sound energy over a 24-hour period. A-weighted DNL is used to assess aircraft noise, and C-weighted DNL is used for demolition and heavy artillery noise.

3.9.2 Affected Environment

Existing sources of noise at Eglin AFB and Duke Field include military aircraft overflights, air-to-ground and ground-to-ground munitions training and testing, commercial and private aircraft overflights, road traffic, and other noises such as lawn maintenance equipment, construction noise, and bird and animal vocalizations. Background noise levels without aircraft operations (L_{eq} and DNL) were estimated for the surrounding areas using the techniques specified in the *American National Standard Institute – Quantities and Procedures for Description and Measurement of Environmental Sound Part 3: Short-term measurements with an observer present*. **Table 3-8** outlines the land use category and the estimated background noise levels for nearby noise sensitive areas (ANSI 2013).

USAF’s land use compatibility guidelines for noise exposure are essentially the same as those published by the Federal Interagency Committee on Urban Noise in the June 1980 publication, *Guidelines for Considering Noise in Land-Use Planning and Control*.

These guidelines stem from the USEPA 1974 “Levels Document” which suggested continuous and long-term noise in excess of DNL 65 dBA are normally incompatible with noise-sensitive land uses such as residences, schools, churches, and hospitals. USAF has recently updated AFI 32-7063, *Air Installations Compatible Use Zones Program*, which provides prescriptive guidance on the recommended land use compatibility for noise zones. **Table 3-9** provides general categories of noise ranges from aircraft operations to achieve compatible land use

Table 3-8. Estimated Background Noise Levels

Example land use category	Average Residential Intensity (people per acre)	DNL	L _{eq} (dBA)	
			Daytime	Nighttime
Rural or remote areas	<2	<49	<48	<42
Quiet suburban residential	2	49	48	42
	4	52	53	47
	4.5	52	53	47
Quiet urban residential	9	55	56	50
Quiet commercial, industrial, and normal urban residential	16	58	58	52
	20	59	60	54

Source: ANSI 2013

Table 3-9. Recommended Noise Ranges for Compatible Land Use Planning

General Level of Noise	Aircraft Noise (DNL)	Recommended Uses
Low	< 65 dBA	Noise-sensitive land compatible
Moderate	65–75 dBA	Noise-sensitive land uses normally not compatible
High	> 75 dBA	Noise-sensitive land uses not compatible

planning. Detailed guidelines based on the compatibility of various land uses with noise exposure levels are provided in Attachment 3 of AFI 32-7063. Descriptions of existing noise sources at locations where training operations could occur under the Proposed Action, including Duke Field, other nearby airfields, remote LZs, and DZs are described below.

Duke Field. NOISEMAP is a suite of computer programs adopted by USAF which predict noise exposure in the vicinity of an airfield due to aircraft, maintenance, and ground run-up operations. NOISEMAP Version 7.3 was used to calculate the existing DNL noise contours at Eglin AFB and Duke Field based on the average daily aircraft operations. **Figure 3-5** shows the 2012 DNL noise contours for Duke Field and reflects conditions before the C-130 aircraft were divested. The contours are measured in 5 dB increments and range from 65 to 85 dBA DNL. The 65 dBA DNL noise contour extends approximately 1.5 miles from both ends of the Duke Field main runway. As mentioned above, the 65 dBA DNL is the noise level below which all land uses are compatible with noise generated from airfield operations. All areas exposed to noise levels greater than 65 dBA DNL other than a small area off the installation to the north of the airfield are entirely within Eglin AFB installation boundary. **Table 3-10** shows the projected air operations before the C-130 aircraft were divested and current air operations at Duke Field without the C-130 aircraft or the Proposed Action. This level of activity and associated noise is considered the comparative baseline in the noise analysis. C-130 aircraft accounted for 25 percent of the total operations at the airfield and were a primary contributor to the overall size of the noise contours before they were divested.

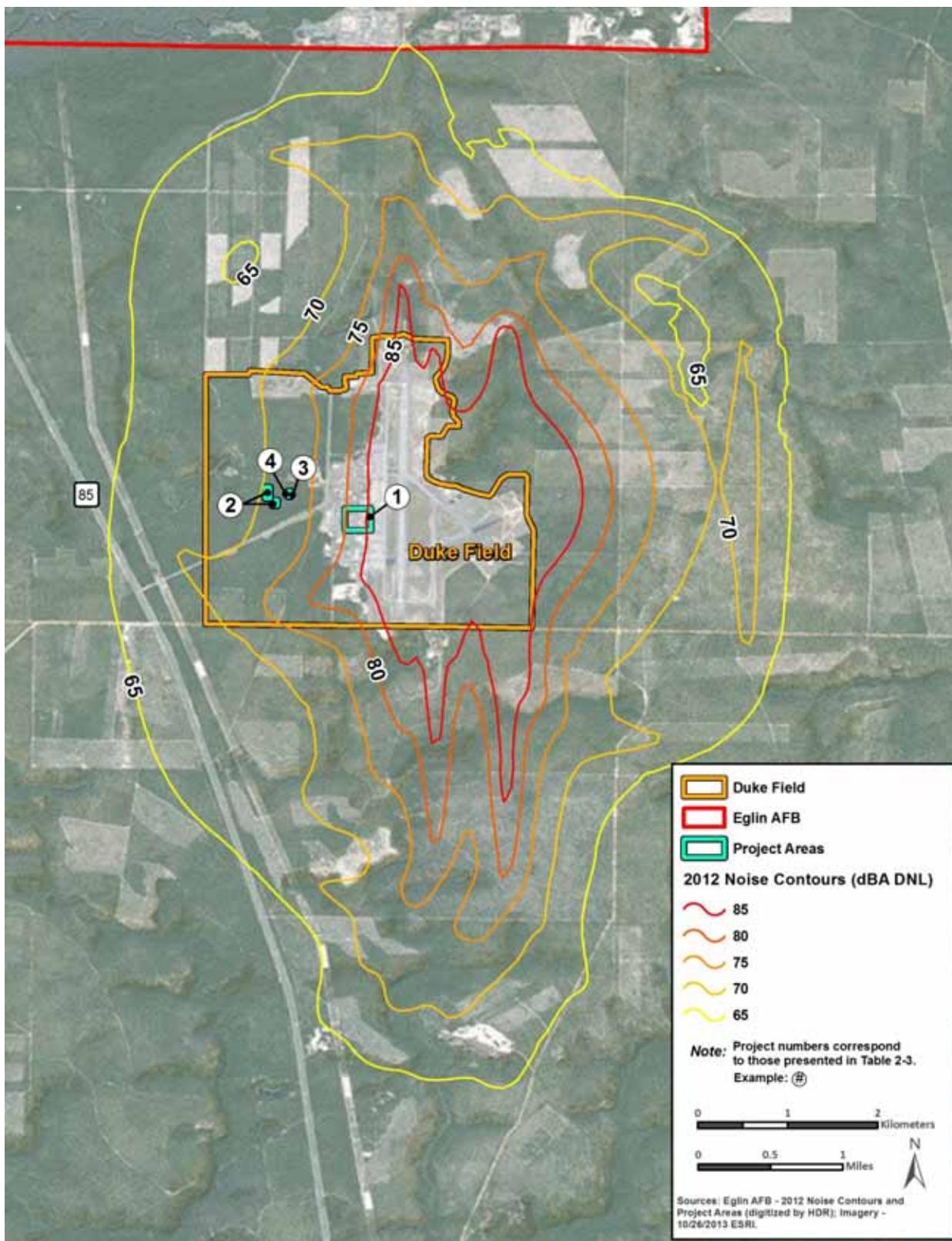


Figure 3-5. Existing Aircraft Noise Contours Near Duke Field

Table 3-10. Existing Overall Air Operations at Duke Field

Overall Aircraft Operations	Annual	Average Daily
Projected Operations Before C-130 Aircraft Divestiture	41,053	112
Current	30,753	84

Source: Eglin AFB 2014c

Other Nearby Airfields. The other nearby airfields that act as LZs for the C-146A aircraft include Eglin AFB, HRT, VPS, and CEW. Existing sources of noise at these airfields are consistent with active military airfields and midsize civilian airports. Background noise in areas surrounding the LZs ranges from 48 to 60 dBA during the daytime and 42 to 54 dBA at night. Aircraft operations are loud to individuals under the flight path, and as with Duke Field, air operations normally are sufficient to generate greater than 65 dBA DNL beyond the immediate area of the runways.

Remote LZs. Remote airfields used for Eglin AFB training missions, including C-146A aircraft training activities, within 400 miles of the installation consist of numerous small to midsized, military and publicly owned airfields used as LZs. Existing sources of noise at the outlying airfields and auxiliary fields would consist primarily of aircraft activities. Background noise in areas surrounding the remote LZs range from 48 to 60 dBA in the daytime and 42 to 54 dBA at night. Aircraft operations would be clearly audible to individuals under the flight path, particularly at night; however, air operations at smaller LZs normally are not sufficient to generate greater than 65 dBA DNL beyond the immediate area surrounding the runway. Air operations at larger LZs are normally sufficient to generate greater than 65 dBA DNL beyond the immediate area of the runway. DZs would not be used under the Proposed Action.

3.9.3 Environmental Consequences

Effects would be considered significant if the Proposed Action were to (1) result in the violation of applicable federal, state, or local noise regulations; or (2) create appreciable areas of incompatible land use.

3.9.3.1 PROPOSED ACTION

The Proposed Action would have short- and long-term minor adverse effects on the existing noise environment. Short-term effects would be primarily due to use of heavy equipment during construction. Long-term effects would be due to incremental increases in C-146A aircraft operations at Duke Field, other nearby airfields, and some LZs within 400 miles of Eglin AFB. These effects would not (1) result in the violation of applicable federal, state, or local noise regulations; or (2) create appreciable areas of incompatible land.

Construction and Demolition. Table 3-11 presents typical noise levels (dBA at 50 feet) that USEPA has estimated for the main phases of outdoor construction. Individual pieces of heavy equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet. With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of sites using heavy equipment. The zone of relatively high noise typically extends to distances of 400 to 800 feet from the site of major equipment operations.

Table 3-11. Noise Levels Associated With Outdoor Construction

Construction Phase	L_{eq} (dBA)
Ground clearing	84
Excavation, grading	89
Foundations	78
Structural	85
Finishing	89

Source: USEPA 1971

All construction and demolition activities under the Proposed Action would occur over a mile from the Eglin AFB installation boundary, within which other military training and testing activities are both frequent and loud, and there are few nearby noise receptors. Given the relatively limited amount of noise that heavy equipment would generate, the remote location, and the existing operational noise from training and testing activities, these effects would be minor. Nonetheless, the following BMPs would be implemented to further reduce any realized noise effects:

- Construction and demolition would primarily occur during normal weekday business hours
- Heavy equipment mufflers would be properly maintained and in good working order
- Construction and demolition personnel, and particularly equipment operators, would use adequate personal hearing protection to limit exposure and ensure compliance with the Air Force Occupational Safety and Health Standard 48-20 (USAF 2013d).

The Noise Control Act of 1972 (PL 92-574) directs federal agencies to comply with applicable federal, state, and local noise control regulations, and specifically exempts military training activities such as munitions and demolition training, and aircraft operations. Eglin AFB is required to comply with local noise control regulations only for areas outside the installation. As construction would be confined to on-base areas, local noise ordinances would not apply.

Duke Field. Long-term minor adverse effects would occur due to an incremental increase in C-146A aircraft operations at Duke Field. In the immediate area surrounding Duke Field the noise environment would continue to be dominated by aircraft takeoff and landing operations. **Table 3-12** shows the existing air operations at Duke Field, those that were planned before the C-130 aircraft were divested, and those that would occur with the Proposed Action. Approximately 5,300 additional C-146A aircraft operations per year would occur to or from Duke Field under the Proposed Action. This would equate to an average of 15 additional operations per day, an increase of approximately 18 percent when compared to existing conditions. In general, it would take a doubling (100 percent increase) in air operations to have even a barely perceptible change to the noise environment (e.g., greater than 3 dBA); therefore, this 18 percent increase in air operations would be so small when compared to existing conditions it would have no perceptible effect on the overall noise in surrounding areas. The additional aircraft operations would amount to an overall increase in noise of less than 1 dBA DNL at Duke Field. Although there would be only a small change in the overall noise environment at

Table 3-12. Proposed Air Operations at Duke Field

Aircraft Operations	Annual	Average Daily
Projected Operations Before the C-130 Aircraft Divestiture	41,053	112
Current	30,753	84
Proposed Action	36,053	99
Change in Total Operations	5,300	15
Percent Change From Existing	17%	17%
Change from Planned Operations Before the C-130 Aircraft Divestiture	(5,000)	(14)
Percent Change from Planned Operations in the Joint Strike Fighter (JSF) EIS	-14%	-14%

Source: Eglin AFB 2014c

Duke Field, noise from individual overflights would generate distinct acoustical events, and have the potential from time-to-time to annoy residents directly under their flight path. These effects would be considered minor.

The total aircraft operations under the Proposed Action would be 5,000 less than those projected for the airfield before the C-130 aircraft were divested. The C-130 aircraft are both larger and louder than C-146A aircraft. Therefore, even with the proposed additional C-146A aircraft, the noise surrounding Duke Field would likely be less than it was historically when the C-130 aircraft were stationed at Duke Field. These noise levels would be less than those shown in **Figure 3-5**.

As with the C-130 aircraft, some of the proposed operations would occur between the hours of 10:00 p.m. and 7:00 a.m. Although these events could normally cause greater adverse impacts, the number of nighttime operations would be relatively small when compared to airfield-wide operations. It is not expected that these changes would substantially alter the overall noise at the airfield or the level of impacts. In addition, the C-145A aircraft is programmed for divestiture; therefore, future reduction in C-145A aircraft operations associated noise would further limit these already minor impacts.

Nearby Landing Zones. Long-term minor adverse effects would be due to an incremental increase in C-146A aircraft operations at other nearby LZs. In the immediate area surrounding other nearby LZs including Eglin AFB, HRT, VPS, and CEW, the noise would continue to be dominated by aircraft takeoff and landing operations. Approximately 3,800 additional C-146A aircraft operations per year would occur to or from each of these airfields under the Proposed Action. This would equate to an average of 10 additional operations per day, an increase of approximately 6 to 8 percent when compared to existing conditions. In general, it would take a doubling in air operations to have even a barely perceptible change to the noise environment; therefore, this percent increase in air operations would be so small when compared to existing conditions it would have no perceptible effect on the overall noise areas surrounding these airfields. Although there would be only a small change in the overall noise environment at nearby airfields, noise from individual overflights would generate distinct acoustical events, and have the potential from time-to-time to annoy residents directly under their flight path. These effects would be considered minor.

Remote LZs. Long-term minor adverse effects would be expected. These effects would be from an incremental increase in C-146A aircraft operations at remote LZs. Sources of noise at remote LZs would remain consistent with active military installations and airports, and the noise environment in areas surrounding these LZs would continue to be dominated by intermittent fixed-wing and rotary aircraft overflights. Both the overall and percent increase in air operations at remote LZs would be less than those outlined for nearby airports; therefore, for similar reasons these incremental increases in air operations would be so small when compared to existing conditions it would have no perceptible effect on the overall noise. These effects would be minor.

3.9.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, beddown of the additional C-146A would not occur at Duke Field and no demolition or construction associated with the beddown would occur. Therefore, noise conditions at Duke Field would remain unchanged; five C-145A and five C-146A aircraft would continue to operate from Duke Field, resulting in continued minor impacts on noise levels; and no new impacts on noise from the No Action Alternative would be expected.

3.10 Safety

3.10.1 Definition of the Resource

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Safety addresses the well-being, safety, and health of members of the public, contractors, and USAF personnel during the various aspects of the Proposed Action and alternatives.

Elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the proximity of the hazard to the population. Hazardous activities can include demolition and construction activities, training activities. The proper operation, maintenance, fueling, and repair of aircraft and equipment also carry important safety implications. Extremely noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns.

The primary safety concern with regard to military training flights is the potential for aircraft mishaps (i.e., crashes), including those caused by adverse weather events and bird-aircraft strikes. There are four mishap classifications defined by USAF. Class A mishaps result in a fatality or permanent total disability; total cost in excess of \$2 million for injury, occupational illness, and property damage; or destruction or damage beyond repair to military aircraft. Class B mishaps result in a permanent partial disability; total cost in excess of \$500,000 but less than \$2 million for injury, occupational illness, and property damage; or hospitalization of five or more personnel. Class C mishaps result in total damages between \$50,000 and \$500,000, and Class D mishaps result in total damages between \$20,000 and \$50,000. A fifth category, which is known as an 'event' per AFI 91-204, *Safety Investigations and Reports*, is Class E, which includes occurrences that do not meet reportable mishap classification criteria, but are deemed important to investigate and/or report for mishap prevention (USAF 2012).

Bird and wildlife strikes are a flight safety concern due to the potential damage that a strike might have on the aircraft or injury to aircrews. AFI 91-202, *The USAF Mishap Prevention Program* implements Air Force Policy Directive 91-2, *Safety Programs*. It establishes mishap prevention program requirements (including BASH), assigns responsibilities for program elements, and contains program management information. The USAF devotes considerable attention to avoiding the possibility of bird/wildlife aircraft strikes.

No construction or demolition under the Proposed Action would occur within clear zones, accident prevention zones, runway protection zones, explosive safety-quantity distance (ESQD) arcs or unexploded ordnance (UXO) contaminated areas. Therefore, clear zones, accident prevention zones, runway protection zones, ESQD and UXO are removed from further analysis.

3.10.2 Affected Environment

Contractors working on Duke Field, Eglin AFB follow applicable Occupational Safety and Health Administration (OSHA) regulatory requirements (29 CFR), except when DoD or USAF-specific requirements apply. Such regulatory requirements address exposure to hazardous materials, use of personnel protective equipment (PPE), and availability of Safety Data Sheets. Contractors should review potentially hazardous workplace operations, monitor exposure to workplace chemicals (e.g., asbestos, lead, and hazardous materials), physical hazards (e.g., noise propagation and falls), and biological agents (e.g., infectious waste, wildlife, and poisonous plants); recommend and evaluate controls (e.g., prevention, administrative, and engineering) to ensure personnel are properly protected or unexposed; and ensure a medical surveillance program to perform occupational health physicals for workers subject to accidental chemical exposures.

AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*, provides USAF industrial and general ground safety guidance as USAF instructions, which also implement OSHA standards. The purpose of this is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet federal safety and health requirements. This instruction applies to all USAF activities.

Implementation of these regulatory requirements and procedures ensure that there is minimal risk to the health and safety of installation personnel and contractors, as well as to the general public, from installation operations.

Of all the aircraft mishaps that occurred at Duke Field between 2005 and 2012, 95 percent of them were Class E events, which are comparatively minor in nature. One percent of mishaps were Class B mishaps, with three percent and one percent of the mishaps being Class C and Class D, respectively. No Class A mishaps were identified at Duke Field between 2005 and 2012 (USAF 2012).

3.10.3 Environmental Consequences

Any increase in safety risks is considered an adverse impact on safety. Significant impacts on health and safety would be expected if the Proposed Action does either of the following:

- Substantially increases risks associated with the safety of contractors, USAF personnel, or the general public,
- Introduces a new health or safety risk for which the USAF is not prepared or does not have adequate management and response plans in place.

3.10.3.1 PROPOSED ACTION

Short-term, minor, adverse impacts on health and safety would occur during proposed demolition and construction activities associated with projects listed in **Table 2-3**. Adverse impacts would result from the exposure of construction workers to the safety hazards associated with such activities. Examples of such safety hazards include slips/trips/falls; exposure to the heat, cold, and wet conditions; and fire, mechanical, electrical, vision, noise, chemical, and respiratory hazards.

During all phases of demolition and construction, safety standards required by OSHA, DoD, and USAF would be followed. Workers would be required to wear PPE such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Demolition and construction areas would be fenced and appropriately marked with signs and placards. Equipment and associated trucks transporting material to and from the demolition and construction sites would be directed to roads and streets that can safely accommodate these vehicles.

Implementation of the Proposed Action would also result in an increase in the current number of annual aircraft training mission hours by 5,300 at Duke Field and 3,800 at HRT, VPS and CEW. However, this increase would not result in additional safety or mishap concerns considering the overall number of missions at Duke Field, including those under the Proposed Action, would be lower than historical levels due to the divestiture of C-130 aircraft at Duke Field. Aircraft operations at Duke Field would continue to adhere to all established flight safety requirements and protocols. No conflicts with the installation BASH plan would be anticipated under the implementation of the Proposed Action.

3.10.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, beddown of the C-146A aircraft would not occur at Duke Field and there would be no associated demolition or construction. No impacts would be expected under the No Action Alternative.

3.11 Socioeconomics and Environmental Justice

3.11.1 Definition of the Resource

Socioeconomics. Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly characteristics of population and economic activity. Demographics, employment characteristics, housing occupancy status, and schools' data provide key insights into socioeconomic conditions that might be affected by a proposed action.

Environmental Justice. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that federal agencies' actions

substantially affecting human health or the environment do not exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, or national origin. EO 12898 was created to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, tribal, and local programs and policies. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a proposed action. Such information aids in evaluating whether or not a proposed action would render vulnerable any of the groups targeted for protection in the EO.

3.11.2 Affected Environment

For the purpose of this analysis, the Region of Influence (ROI) includes those areas where people would likely live and work, namely the counties immediately adjacent to Eglin AFB. Okaloosa, Santa Rosa and Walton counties are the geographic areas where most impacts from the Proposed Action would occur.

Demographics. U.S. Census population data from 2010 and the 2014 was used to analyze the spatial levels presented in **Table 3-13**. The population within the ROI is estimated to have increased 9 percent from 2010 to 2014, which is higher than the 6 percent estimated increase for the State of Florida. Although the exact numbers are estimated, it is safe to assume there is an upward population trend in both the ROI and Florida.

Table 3-13. Population Data for Spatial Levels in 2010, and 2014

Location	Okaloosa County	Santa Rosa County	Walton County	Florida
2010 Population	180,822	151,372	55,043	18,804,623
2014* Population	196,512	163,422	61,530	19,893,297
Percent Change	8.6	7.9	11.7	5.8

Source: USCB 2015a

Note: Numbers present in this table are based on estimates from the American Community Survey. The 2014 data represents 5-year estimates from 2009 to 2014 and are intended to provide a more precise estimate of current conditions across all spatial levels.

Housing and Schools. **Table 3-14** below presents specific information on total and available housing within the ROI. Roughly 29 percent or about 60,000 housing units are currently vacant. These units could be available for immediate rental, vacation homes, or be temporarily empty and undergoing renovations. The total enrollment of elementary and secondary schools in the ROI is 48,122 students (FLDOE 2014).

Employment Characteristics. The total estimated civilian employed population within the ROI is 172,322 people (USCB 2015b). As of 2012, the government workforce made up about 17 percent of the workforce within the ROI. The civilian workforce is divided into the major categories shown below in **Table 3-15**.

Table 3-14. Housing Characteristics for 2010–2012

Housing	Okaloosa County	Santa Rosa County	Walton County	ROI Summary
Total Housing Units	93,000	65,000	45,000	203,000
Percent Vacant	22	13	51	29
Percent single unit	66	78	56	67
Percent multi-unit	26	12	29	22
Percent mobile homes	7	10	14	10

Source: USCB 2015b

Note: Numbers present in this table are based on estimates from the 2010–2012 ACS 3-year estimates.

Table 3-15. Employment Characteristics Percentages by Industry for 2010–2012

Industry	Okaloosa County	Santa Rosa County	Walton County	ROI Summary (Averages)
Civilian population 16 years old and over in the labor force	56	53	52	54
Workforce employed by federal, state, or local government	20.9	19.6	11.8	17
Agriculture, forestry, fishing, and hunting and mining	0.5	1.4	2.2	1
Construction	6.3	8.3	11.3	9
Manufacturing	5.2	5.6	4.3	5
Wholesale trade	1.6	2.2	1.2	2
Retail trade	12.8	14.8	13.8	14
Transportation and warehousing, and utilities	5.2	5.5	3.9	5
Information	1.2	1.9	1.2	1
Finance, insurance, real estate, and rental and leasing	6.7	6.3	7.3	7
Professional, scientific, management, administrative, and waste management services	11.8	10.5	11.6	11
Education, health, and social services	17.5	20.8	15.2	18
Arts, entertainment and recreation	14.0	9.0	15.2	13
Other services (except public administration)	5.3	3.9	6.7	5
Public administration	11.9	9.9	6.0	9

Source: USCB 2015b

Note: Numbers present in this table are percentages based on estimates from the 2010-2012 ACS 3-year Estimates.

Environmental Justice. Across the ROI, approximately 85 percent of the population is classified as white. The median household income for the ROI is (\$26,104). Approximately 15 percent of families live below the poverty line in the ROI. The percentage of children representing the total population (i.e., individuals under 18 years of age) living within the ROI is 22 percent. **Table 3-16** below provides details on race and poverty within the ROI.

Table 3-16. Race, Ethnicity, and Poverty Characteristics

Race and Origin	Okaloosa County	Santa Rosa County	Walton County	ROI Summary
Total Population	185,852	155,579	56,590	398,021
Percent Under 18 Years of Age	22.3	23.4	20.3	22
Percent Over 65 Years of Age	14	13.2	17	15
Percent White	80.6	86.8	86.7	85
Percent Black or African American	9.1	5.4	5.4	7
Percent American Indian and Alaska Native	0.6	0.6	0.9	1
Percent Asian	3.1	2.0	1.1	2
Percent Native Hawaiian and Other Pacific Islander	0.1	0.1	0.1	0
Percent Other Race	2.2	0.9	3.3	2
Percent Two or More Races	4.4	4.2	2.4	4
Percent Hispanic* or Latino	7.4	4.7	5.6	6
Median Household Income	\$26,943	28,050	23,319	\$26,104
Families Living Below Poverty	13.4%	12.3%	17.9%	15%

Source: USCB 2015c

Key: * = percent Hispanic of any race.

Note: Numbers present in this table are based on estimates from the 2009-2013 ACS 5-year Estimates.

3.11.3 Environmental Consequences

Socioeconomic impacts would be considered potentially significant if changes associated with the Proposed Action substantially affected the demand for housing or community services or substantially affected economic stability in the region. Methodologies for determining impacts for the C-146A aircraft beddown have been taken from Eglin AFB F-35 Beddown SEIS to provide comparison and consistency in analysis (Eglin AFB 2014c).

3.11.3.1 PROPOSED ACTION

Socioeconomics. Construction would have short-term, minor beneficial effects on the local economy and local employment levels. Construction of new facilities would provide a temporary increase in income for construction workers and increases in retail trade revenues. It is anticipated that construction work would be done by both skilled and unskilled labor force already within the ROI.

As a result of the C-146A aircraft beddown, approximately 169 personnel would be moved to Eglin AFB from Cannon AFB. **Table 3-17** presents information on the potential socioeconomic impacts resulting from the C-146A aircraft beddown personnel changes and changes in the economic activity. Assuming 2.2 dependents accompany each personnel member (Eglin AFB 2014c), the total population increase under the Proposed Action would be approximately 541. This increase would represent a 0.1 percent increase in the ROI population. Similarly, using the assumption that 1.2 of the 2.2 dependents per personnel are school-age students, there would be an increase of 203 students, an increase of less than 1 percent in the ROI which would

Table 3-17. Potential Socioeconomic Impacts of the Proposed Action in the ROI

Category	Existing Conditions	Proposed Action	Change (Percent)
Population	421,464	541	0.1
Government Employment	29,441	169	0.6
School Enrollment	48,182	203	0.4
Available Housing	58,870	169	0.3

Source: FLDOE 2014, USCB 2015c

readily be absorbed into to the local elementary and secondary school systems. Therefore, it is unlikely that this increase in population would provide quantifiable economic impact within the ROI. The change in population is not expected to change the demand for law enforcement, fire fighting services, education or health care professionals.

A conservative way to measure the increase in housing would be to provide one housing unit per employment position, and under the Proposed Action this would result in an increase in the demand for housing within the ROI by approximately 169. There is currently a 29 percent vacancy or 58,870 vacant single-family, multi-family, and mobile homes available in the ROI. The housing market would have adequate capacity to accommodate the population change.

Environmental Justice. Florida households average a medium income of \$24,344, which is less than the ROI, and a poverty rate of 16.3 percent which is above the ROI (USCB 2015c). The state average of 76.3 percent is also slightly less than the 80 percent of white population within the ROI. No minority or low-income populations are located within the ROI or near Duke Field. Therefore, there would be no disproportionately high and adverse health or environmental effects on minority or low income populations.

3.11.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, beddown of the C-146A aircraft would not occur at Duke Field and thus no change in personnel, contractors, or indirect increases in population from dependents. There would be no new construction at Duke Field, and therefore no impact to the area. There would be no increase in demand of community services, housing, or schools under the No Action Alternative.

3.12 Water Resources

3.12.1 Definition of the Resource

Water resources include groundwater, surface water, floodplains, and wetlands, and their relationship to water quality in the area of the Proposed Action. It also discusses water quality programs that are enforced as part water resources protection regulations. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes.

Groundwater. Groundwater is water that collects or flows beneath the Earth’s surface, filling the porous spaces in soil, sediment, and rocks. It is an essential resource often used for

potable water consumption, agricultural irrigation, and industrial applications. Groundwater originates from rain and from melting snow and ice and is an essential resource often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater typically can be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

Surface Water. Surface water includes natural, modified, and constructed water confinement and conveyance features above groundwater that may or may not have a defined channel and discernable water flows, as well as associated flora, fauna, and habitats. These features are generally classified as streams, springs, wetlands, natural and artificial impoundments (ponds and lakes), and constructed drainage canals and ditches.

Stormwater is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade lakes, rivers, and streams. Stormwater flows, which can be exacerbated by high proportions of impervious surfaces associated with buildings, roads, and parking lots, are important to the management of surface water. Stormwater systems provide the benefit of reducing sediments and other contaminants that would otherwise flow directly into surface waters.

The Clean Water Act (CWA) (33 U.S.C. §1251 et seq., as amended) establishes federal limits, through the National Pollutant Discharge Elimination System (NPDES), on the amounts of specific pollutants that are discharged to surface waters to restore and maintain the chemical, physical, and biological integrity of the water. An NPDES permit would be required for any change in the quality or quantity of wastewater discharge or stormwater runoff from construction sites where 1 or more acres would be disturbed.

EISA Section 438 (42 U.S.C. § 17094) establishes stormwater design requirements for federal construction projects that disturb a footprint greater than 5,000 ft² of land. Additional guidance is provided in the USEPA Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under EISA Section 438.

Water quality standards at Duke Field are regulated by FDEP under the following F.A.C. Chapters:

- 62-302 (Surface Water Quality Standards)
- 62-4 (Antidegradation policy in Rule 62-4.242)
- 62-303 (Impaired Waters Rule)
- 62-55 and 62-550 (Drinking Water Quality Standards)
- 62-604 (Wastewater).

Water quality standards at the facility are also regulated by USEPA, under the federal Safe Drinking Water Act (42 U.S.C. 201, 300 et seq.) and the CWA. Section 303(d) of the CWA requires states to identify and develop a list of impaired water bodies where technology based and other required controls have not provided attainment of water quality standards. Section 305(b) of the CWA requires states to assess and report the quality of their water bodies. The State of Florida combined their 303(d) and 305(b) list into one report referred to as the Integrated Report. The Integrated Report identifies those water bodies that are impaired and do

not meet designated uses, and it establishes total maximum daily loads for the pollutants of concern.

The Florida NPDES stormwater program requires construction site operators engaged in activities that disturb 1 acre or more to obtain coverage under a Generic Permit for Storm Water Discharge from Large and Small Construction Activities for their stormwater discharges. Construction or demolition that necessitates a permit requires preparation of a Notice of Intent to discharge stormwater and a Storm Water Pollution Prevention Plan (SWPPP) that is implemented during construction. F.A.C. Chapters 62-621 and 62-346 address NPDES permitting and environmental resource permits, respectively.

Wetlands. Wetlands are an important natural system and habitat because of the diverse biologic and hydrologic functions they perform. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, wildlife habitat provision, and erosion protection.

Wetlands are protected as a subset of the waters of the United States under Section 404 of the CWA. The term “waters of the United States” has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). The U.S. Army Corps of Engineers defines wetlands as “those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (33 CFR § 328).

EO 11990, *Protection of Wetlands*, requires that federal agencies provide leadership and take actions to minimize or avoid the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland.

Per Section 401 of the CWA, any applicant for a federal license or permit to conduct any activity, including the construction or operation of facilities that could result in any discharge into the navigable waters, is required to provide the licensing or permitting agency a certification from the state in which the discharge originates or will originate. In addition to supplying Section 401 water quality certification, Part IV, Management and Storage of Surface Waters, of Chapter 373 F.S., Water Resources mandates a state permitting process. Permitting under Chapter 373 F.S. is administered by FDEP and Northwest Florida Water Management District. At Eglin AFB, permitting is under the jurisdiction of the FDEP in accordance with an operating agreement between the two agencies. The Florida Environmental Resource Permit Program in Northwest Florida regulates impacts on wetlands at the state level and was implemented on November 1, 2010. This includes regulation of dredging and filling in, on, or over connected and isolated wetlands and other surface waters.

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters. Such lands might be subject to periodic or infrequent

inundation due to rain or melting snow. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling. Floodplains also help to maintain water quality and are often home to a diverse array of plants and animals. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body.

Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines 100-year and 500-year floodplains. The 100-year floodplain is the area that has a 1 percent chance of inundation by a flood event in a given year while 500-year floodplains have a 0.2 percent chance of inundation in a given year.

EO 11988, *Floodplain Management*, as amended by EO 13690, *Establishing a Federal Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, requires federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves consultation of FEMA Flood Insurance Rate Maps, which contain enough general information to determine the relationship of the Project areas to nearby floodplains. EO 11988 directs federal agencies to avoid floodplains to the maximum extent possible wherever there is a practicable alternative. In accomplishing this objective, Section 1 of EO 11988 states that “each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities.”

3.12.2 Affected Environment

Groundwater. Duke Field is underlain by a sand and gravel aquifer and the Floridan aquifer. The Floridan aquifer is one of the most productive in the world and covers a 100,000-mile area, including the entire state of Florida.

The sand and gravel aquifer consists of the Citronelle Formation and marine terrace deposits, which thicken to the southwest. In Okaloosa County, a sand and gravel aquifer consists of several distinct sandy units, the lowest of which is the main producing zone. Yields from wells in this zone vary considerably but are generally in the range of 200 to 400 gallons per minute. The sand and gravel aquifer is located close to the surface of the land, recharged by rainfall, and vulnerable to impacts by surface contamination. The sand and gravel aquifer is an important source of drinking or irrigation water for Escambia, Okaloosa, Santa Rosa, and Walton counties (USAF 2013b). Duke Field is located in the northern part of Okaloosa County.

The deep, regional Floridan Aquifer consists of a thick sequence of interbedded limestones and dolomites overlain by the Pensacola Clay confining bed. This aquifer is highly productive and provides water to large cities and rural communities in parts of Alabama, Georgia, and South Carolina and all of Florida (Miller 1990). The Bucatunna Formation separates the Floridan Aquifer into upper and lower limestone units. The lower unit is saline; the upper unit is used as potable water for Eglin AFB and the surrounding communities. Yields from wells are large, ordinarily in the range of 250 to more than 1,000 gallons per minute. The Northwest Florida Water Management District regulates consumptive uses of all water within in the Florida panhandle.

Surface Water. In 62-302.40 F.A.C., the State of Florida classifies all surface waters according to their designated use. Silver Creek and the unnamed tributary of Juniper Creek, which both lie to the northeast of Project 1, are located at least 1,000 ft away from the Duke Field fence line (Eglin AFB 2014b). Silver Creek lies over 2,800 ft from Project 1. Project 2 is located 1,000 ft from Pearl Creek, which is a Class III water body. Class III is designated for fish consumption, recreation, propagation, and maintenance of a healthy, well balanced population of fish and wildlife. Both Silver Creek and Pearl Creek empty into the Shoal River (USAF 2012). Urban runoff from development in the city of Crestview impacts the Shoal River but water quality is still some of the most pristine in the state (Thorpe et al. 1997). **Figure 3-6** shows the water resources mapped in the vicinity of the site of the Proposed Action.

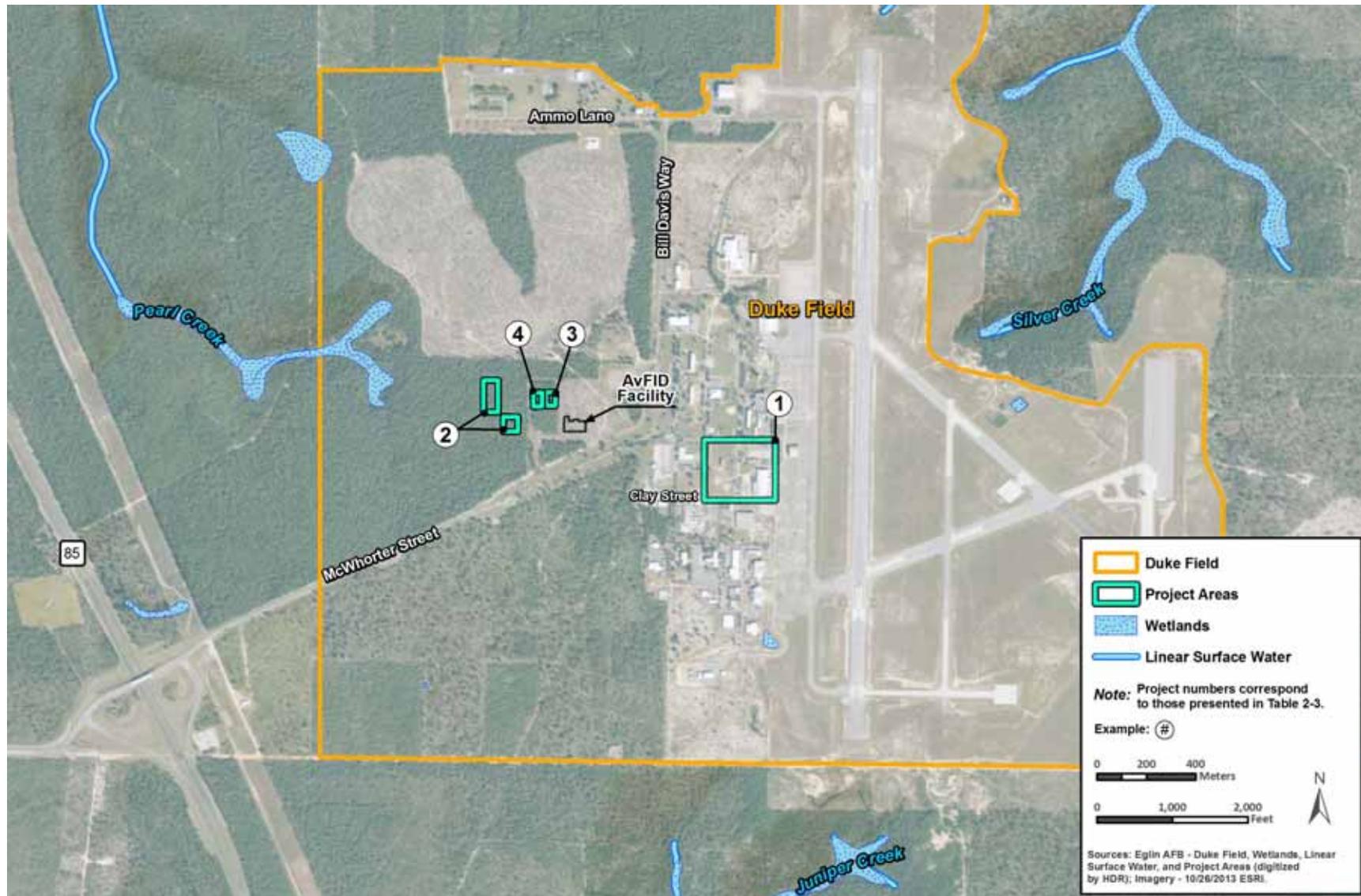
Wetlands. Eglin AFB contains approximately 65,350 acres of wetlands influenced by seasonal fluctuations in direct precipitation, overland or near surface flow, shallow groundwater, or some combination of these processes. The majority of the installation's wetlands are of good quality (USAF 2013b). Wetlands located on Duke Field are categorized as palustrine freshwater forested/shrub and palustrine freshwater emergent wetlands (USFWS 2012). The wetlands closest to the project sites are those associated with Pearl and Silver Creeks, which are more than 2,800 ft and 1,000 ft away from Projects 1 and 2, respectively. The wetlands associated with Pearl Creek are on the western part of Duke Field and likely marginal quality habitat compared with other wetland areas on Eglin AFB (USAF 2012). The wetlands associated with Silver Creek are located to the northeast and outside the Duke Field fence line.

Floodplains. According to FEMA Flood Insurance Rate Maps Map Number 12091C0275H for Okaloosa County, the Proposed Action is not located within the 100-year floodplain (FEMA 2002).

3.12.3 Environmental Consequences

Evaluation criteria for effects on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. A proposed action could have significant effects with respect to water resources if any of the following were to occur:

- Substantially reduce water availability or supply to existing users
- Overdraft groundwater basins
- Exceed safe annual yield of water supply sources
- Substantially affect water quality
- Endanger public health or safety by creating or worsening health or flood hazard conditions
- Threaten or damage unique hydrologic characteristics
- Violate established laws or regulations adopted to protect water resources.



1
2 Figure 3-6. Water Resources in the Vicinity of the C-146A Proposed Action at Duke Field

3.12.3.1 PROPOSED ACTION

The Proposed Action would result in short-term, minor, adverse effects on some water resources including groundwater and surface water on Duke Field. There would be no direct impacts on wetlands and floodplains. The following subsections provide detailed analyses of the potential effects.

Groundwater. Short-term, minor, adverse effects on groundwater would be anticipated from the construction and demolition activities to supporting the beddown of the C-146A aircraft at Duke Field.

If left unmanaged, stormwater runoff could have adverse effects on shallow groundwater sources by transporting dissolved nutrients, pesticides, and pollutants through the soil. However, a project-specific Erosion and Sediment Control Plan (ESCP) would be required and FDEP stormwater management regulations also require an approved SWPPP for construction activities greater than 1 acre. The estimated total ground disturbance from construction and demolition would be over 11 acres. Additionally, disturbances greater than 1 acre would require additional notice under the Florida NPDES permit and sent to FDEP. BMPs established in the SWPPP and ESCP would be implemented to reduce stormwater runoff and erosion/sediment control from demolition and construction activities associated with the Proposed Action during and after construction. These BMPs would reduce both the volume and velocity of stormwater runoff and erosion and the potential sediments and pollutants introduced into groundwater sources. Stormwater would be managed in accordance with 2007 EISA, federal, state, and local requirements.

A spill or leak of fuel or other construction-related products could impact groundwater quality. All construction and demolition equipment would be maintained according to the manufacturer's specifications and all fuels and other potentially hazardous materials would be contained and stored appropriately. Construction contractors would be required to have spill control plans to minimize effects of any potential accidental spills or releases. The quality and quantity of groundwater on and adjacent to Duke Field are not anticipated to be adversely affected under the Proposed Action; therefore, impacts to groundwater would not be significant.

Surface Water. Short-term, minor, adverse effects on surface water would be anticipated from construction and demolition activities supporting the beddown of the C-146A aircraft at Duke Field. Impacts would occur from soil and sediment disturbance, which could increase turbidity and degrade water quality. Although soils would be disturbed by earthmoving and other construction activities, impacts would be confined to the immediate project sites and BMPs such as erosion and sediment controls would reduce potential erosion impacts to surface waters.

Under the Proposed Action, construction would result in over 8 acres of total ground disturbance from construction activities. This construction and increase of approximately 5 acres of impervious and semi-impervious surface would include the alteration of natural drainage flows and removal of vegetation because of the additional buildings and pavement added within the project sites. An approved SWPPP, ESCP, additional NPDES coverage, and BMPs as appropriate would be implemented to minimize stormwater runoff and erosion/sediment control. After construction and demolition, applicable stormwater BMPs and practices established

according to the FDEP regulation for stormwater management and erosion and sediment control would be implemented to reduce the volume and velocity of stormwater runoff and prevent sedimentation and the introduction of pollutants into nearby streams and watersheds. Construction and demolition personnel would follow appropriate BMPs, particularly those outlined in the Eglin Spill Prevention, Control, and Countermeasures Plan, to protect against potential petroleum or hazardous material spills. If a spill or leak were to occur, BMPs would be implemented to contain the spill and minimize the potential for, and extent of, associated contamination. The quality of surface waters on and adjacent to Duke Field are not anticipated to result in significantly adverse impacts under the Proposed Action.

Floodplains. The proposed action is not located within any floodplains. Therefore, there would be no direct impacts on floodplains from construction and demolition activities for beddown of the C-146A aircraft at Duke Field under the Proposed Action.

Wetlands. There would be no direct impacts on wetlands because no structures would be built in or adjacent to wetlands. The closest project (Project 2) is approximately 1,000 ft from the nearest wetland. Furthermore, BMPs would be implemented associated with the ESCP and SWPPP. The implementation of these BMPs along with strict adherence to federal and state permit requirements would further minimize the potential for any indirect impacts to occur.

3.12.3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, beddown of the C-146A aircraft and associated personnel would not occur at Duke Field and no new construction or demolition would occur. Water resources at Duke Field would remain the same. Therefore, no impacts on water resources would be expected under the No Action Alternative.

3.13 Cumulative Effects

Federal regulations implementing NEPA (40 CFR §§ 1500–1508) require that the cumulative effects of a proposed action be assessed. CEQ regulations implementing the procedural provisions of NEPA define cumulative effects as follows (40 CFR §1508.7):

“The impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.”

A cumulative effect could be additive (i.e., the net adverse cumulative effects are strengthened by the sum of individual effects), countervailing (i.e., the net adverse cumulative effect is less as a result of the interaction between beneficial and adverse individual effects), or synergistic (i.e., the net adverse cumulative effect is greater than the sum of the individual effects). Cumulative effects could result from individually minor, but collectively significant actions that take place over time. Accordingly, a cumulative effects analysis identifies and defines the scope of other actions and their interrelationship with the alternatives if there is an overlap in space and time. Cumulative effects are most likely to occur when there is an overlapping geographic location and a coincidental or sequential timing of events.

3.13.1 Projects Considered for Potential Cumulative Effects

This section discusses the potential for cumulative impacts caused by implementation of the Proposed Action when combined with other past, present, and reasonably foreseeable actions occurring in the vicinity of the Project areas.

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 time period. This relationship may or may not be obvious. 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.

In this EA, USAF has made an effort to identify actions on or near the Project areas that are under consideration and in the planning stage at this time. These actions are included in the cumulative effects analysis to the extent that details regarding such actions exist and the actions have a potential to interact with the Proposed Action or alternatives outlined in this EA. Although the level of detail available for those future actions varies, this approach provides the decisionmaker with the most current information to evaluate the consequences of the alternatives. The EA addresses cumulative impacts to assess the incremental contribution of the alternatives to impacts on affected resources from all factors.

Past actions are those actions, and their associated impacts, that occurred within the geographical extent of cumulative effects that have shaped the current environmental conditions of the Project areas. CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions. The effects of past actions are now part of the existing environment and are included in the affected environment described in **Sections 3.1** through **3.13**. However, recent past actions with ongoing effects germane to cumulative impacts are discussed with present and reasonably foreseeable future actions. Projects considered for cumulative impacts with the Proposed Action include ongoing development of Eglin AFB’s cantonment areas, establishment of the JSF Initial Joint Training Site (IJTS) at Eglin AFB, and additional yet-unscheduled construction and renovation projects that will be needed to support Eglin AFB’s continued growth (Eglin AFB 2014b). Brief discussion on these projects follows:

Ongoing Development of the Eglin AFB Cantonment Areas. To continue to support the evolving military mission and growth of Eglin AFB and to maintain adequate facilities for personnel, the USAF conducted a fence-to-fence EA of all anticipated future development within the five Eglin AFB cantonment areas: Eglin Main Base, Duke Field, Camp Rudder, 7th Special Forces Group Cantonment, and Site C-6 20th Space Control Squadron Area.

Establishment of JSF IJTS. A Record of Decision was signed in February 2009 for the 2005 Base Realignment and Closure decision to establish the JSF IJTS at Eglin AFB where USAF, U.S. Navy, and U.S. Marine Corps JSF training organizations teach aviators and maintenance technicians how to properly operate and maintain the new weapons system (USAF 2008). Approximately 4,000 additional military, civilian, and contractor personnel (not including family

members) are relocating to Eglin AFB. These additional programs, aircraft, and personnel would likely affect airspace management, noise, air quality, munitions storage, transportation, and utilities, among others. Analysis for a Supplemental EIS was completed in 2014, which analyzed options for new runways or reconfiguring existing Eglin AFB runways to accommodate additional aircraft (Eglin AFB 2014c).

Ongoing Construction and Renovation Projects on Eglin. Projected growth of Eglin AFB through 2020 indicates that future, currently unscheduled construction and renovation projects on Eglin AFB are likely to occur. These actions would include replacement of older buildings and facilities with modernized buildings and facilities. Similar to other construction projects, any potential future projects would most likely result in impacts on land use, air quality, noise, traffic and transportation, water resources, local utilities, and hazardous materials. Updating and replacing antiquated facilities would likely provide beneficial impacts from improved energy efficiency.

3.13.2 Cumulative Effects on Resources

The following analysis examines the cumulative effects on the environment that would result from the incremental impacts of the Proposed Action, in addition to other past, present, and reasonably foreseeable future actions. This analysis assesses the potential for an overlap of impacts with respect to project schedules or affected areas. This section presents a qualitative analysis of the cumulative effects.

Under the No Action Alternative, there would be no change in the baseline conditions for any resource areas. Existing conditions would continue as described in **Sections 3.1** through **3.13**. No new cumulative impacts would be expected.

Air Quality. The State of Florida takes into account the impacts of all past, present, and reasonably foreseeable emissions during the development of the State Implementation Plan. The state accounts for all significant stationary, area, and mobile emission sources in the development of this plan. Estimated emissions generated by the Proposed Action would be *de minimis* and it is understood that activities of this limited size and nature would not contribute appreciably to adverse cumulative impacts to air quality. In addition, there would be a net reduction in emissions due to the divestiture of the C-130 aircraft from Duke Field.

Airspace Management. Short- and long-term, minor, adverse cumulative impacts would be expected following implementation of the Proposed Action and the other identified cumulative projects on airfield and airspace management at Eglin AFB. Cumulatively, the additional C-146A aircraft and associated air operations for the Proposed Action and additional JSF aircraft and associated air operations out of Eglin AFB would increase air traffic controller workload and may cumulatively contribute to increased congestion of other airspaces and nearby airfields within the region. It would be expected that the total aircraft operations local to Duke Field and Eglin AFB would still be less than in recent years and would not cause the total operations for the installation to meet or exceed the ATC or runway capacity of Eglin AFB's airfields. Also, annual operations occurring outside of the Eglin AFB Restricted Airspace would be distributed over a large area and would not be expected to exceed the established capacities of their respective airspaces. Relative to regional aircraft activity, net increases in flight activity

under the Proposed Action and other cumulative projects at Eglin AFB and other nearby airfields and remote LZs would be minor because the operations would be distributed over space and time in accordance with GRASI recommendations. As a result, any impacts on airspace management at Eglin AFB or within the southeast region would be less than significant. Additionally, because the Proposed Action and other cumulative projects would not require alterations of the existing airspace, runway, or airfield configurations, no additional cumulative impacts on these resources would be expected.

Biological Resources. Long-term, minor, adverse cumulative impacts would be expected on vegetation and the associated habitats from activities related to the construction and demolition activities associated with the Proposed Action and other cumulative projects including development of the JSF IJTS and the ongoing development of the cantonment areas on Eglin AFB. Short- and long-term, minor, direct, adverse cumulative impacts would be expected to result from noise during demolition and construction activities. Long-term cumulative noise impacts on wildlife (including ESA- and MBTA-protected species) would be expected from the increase in air operations associated with the C-146A and JSF flight programs operating out of Eglin AFB's airfields and in Eglin airspace. Long-term, minor cumulative adverse impacts on wildlife could occur from the mortality of small less-mobile terrestrial species (e.g., reptiles and small mammals) as a result of collision with construction equipment associated with construction and demolition activities associated with the Proposed Action and other cumulative projects involving development. Additionally, the increase in aircraft and operations associated with the C-146A beddown and the JSF IJTS program would be expected to increase the potential for on-ground and in-air collisions with wildlife such as deer and birds. To minimize this potential for impacts, airfield and flight operations would be conducted in accordance with the existing BASH plan.

Cultural Resources. Because no cultural or historical resources are located within the Project areas, no cumulative impacts would be expected.

Geological Resources. Past development in various locations of Eglin AFB have likely contributed to erosion and soil loss. However, the extent to which this has occurred is difficult to determine. The Proposed Action and other cumulative projects involving demolition and construction such as development of the cantonment areas and development supporting the JSF IJTS would result in temporarily disturbed ground surfaces and short-term, minor, adverse impacts on geological resources. Although soils would be disturbed by earthmoving and other construction activities, any effects would not be expected to exceed individual project boundaries and would not result in significant impacts on soil resources since BMPs, erosion and sediment controls and other management measures would be implemented.

Hazardous Materials/Wastes. Planned and foreseeable cumulative construction, renovation, and demolition activities within Eglin AFB would result in short-term cumulative increases in the volume of hazardous wastes generated at the installation. The increase in ongoing air operations and fueling and maintenance activities associated with the Proposed Action and the JSF IJTS program could increase the potential for minor spills and releases. Operations and maintenance teams would implement BMPs to reduce the potential for spills and ensure quick clean ups. Operational activities could require a new initial accumulation point for the new AMU

shop. Hazardous materials and wastes would be handled, stored, and disposed of in accordance with applicable regulations and approved plans. USAF regulations require construction contractors to recycle materials to the maximum extent possible to reduce the amount of debris disposed of at off-installation landfills. Debris from development activities on Eglin AFB that could not be recycled would go to area landfills; however, landfill capacity is available. Therefore, no significant cumulative adverse impacts on waste management, hazardous waste storage, or handling would be anticipated.

Infrastructure. While there is currently capacity for growth, the potential exists for cumulative impacts on utilities. However, in many cases newly constructed infrastructure would replace older facilities. Newer, more energy-efficient construction methods would likely contribute to cumulative, long-term, minor, beneficial impacts on electrical consumption. Beneficial impacts would also be expected as a result of newly constructed supplemental parking areas for the Proposed Action and other cumulative projects. Likewise, more efficient potable water and wastewater infrastructure would be implemented in newly constructed or renovated facilities. Cumulatively, growth on the installation would be expected to result in long-term, minor increases in fuel consumption to support C-146A and JSF aircraft flight operations out of Eglin AFB. Short- and long-term, negligible to minor, cumulative impacts on the communications, sewer and wastewater, stormwater drainage, transportation, and solid waste generation systems would be expected from accommodation of the increase in operations and personnel associated with the Proposed Action when combined with other actions such as the establishment of the JSF IJTS (Eglin AFB 2014c).

Land Use and CZMA. The Proposed Action and other cumulative projects would likely result in minor adverse cumulative impacts on land use and the coastal zone as Duke Field and Eglin AFB's cantonment areas are developed with new facilities. The increase in noise exposure from construction and increased air operations could affect land use compatibility. No cumulative land use impacts are anticipated from C-146A or JSF aircraft operational activities.

Noise. Construction and air operations associated with the Proposed Action and other cumulative projects would cause short- and long-term, minor, cumulative, adverse impacts on Duke Field, other nearby airfields, and some LZs within 400 miles of Eglin AFB. No noise-producing activity or project has been identified that, when combined with the Proposed Action, would have greater than minor adverse impacts on sensitive noise receptors in the environment. In fact, it is expected that there would be a net reduction in noise at Duke Field due to the divestiture of the C-130 aircraft.

Safety. Short-term, negligible, cumulative adverse impacts on health and safety (e.g., slips, falls, heat exposure, exposure to mechanical, electrical, vibration, or chemical hazards) would be expected as a result of demolition and construction activities associated with the Proposed Action and other cumulative projects. Implementation of appropriate safety methods during these activities would be expected to minimize the potential for such impacts. Implementation of the Proposed Action and the JSF IJTS flight program would increase air operations out of Eglin AFB, resulting in increased potential for long-term, minor, cumulative adverse impacts from bird strikes. However, such events would likely be minimal by air operations adhering to existing BASH protocols.

Socioeconomics and Environmental Justice. Construction, demolition, and renovation would result in short-term, minor, beneficial effects on the local economy and local employment levels, lasting only for the duration of these activities. The increase in personnel on the installation associated with the Proposed Action and establishment of the JSF IJTS would be expected to have long-term, minor to moderate beneficial impacts on the local economy as the installation would provide sustainable employment and earnings. The cumulative changes in population would be expected to increase the demand for law enforcement, fire fighting services, health care professionals, and school systems. The current housing market capacity combined with the installation's Military Housing Privatization Initiative can accommodate the population change. No cumulative disproportionately high and adverse health or environmental effects on low-income or minority populations as a result of implementing the Proposed Action and other cumulative Projects would be expected.

Water Resources. Short-term, minor, cumulative adverse impacts on ground and surface water would be expected from implementation of the Proposed Action and other cumulative projects involving demolition and construction. The cumulative increase in impervious surfaces from the proposed cumulative projects in the area would be considered a minor contribution in the context of the whole watershed but could be noticeable on a more localized level. In accordance with federal and state stormwater regulations, the post-development hydrologic condition of the areas where the proposed C-146A aircraft and 524/859 SOS facilities and other cumulative project facilities or buildings would be developed must be maintained as it was pre-development. For these projects, preservation of pre-development hydrologic condition would be ensured through adherence to the ESCPs and incorporation of BMPs and appropriate low-impact development strategies that would be expected to attenuate potentially long-term, adverse impacts on water resources.

3.13.3 Irreversible and Irrecoverable Commitment of Resources

NEPA requires that EAs include identification of any irreversible and irretrievable commitment of resources that would be involved in the implementation of the Proposed Action. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources could 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. Irrecoverable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the Proposed Action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

Environmental consequences as a result of the Proposed Action are considered short-term and temporary. Construction would require consumption of materials typically associated with exterior and interior construction (e.g., concrete, wiring, piping, insulation, and windows). USAF does not expect the amount of these materials used to significantly decrease the availability of the resources. Small amounts of nonrenewable resources would be used; however, these amounts would not be appreciable and are not expected to affect the availability of these resources.

4. Management Practices

The following is a list of regulations, plans, permits, and management actions associated with the Proposed Action. The environmental impact analysis process for this EA identified the need for these requirements, and the Proponent and interested parties involved in the Proposed Action cooperated to develop them. These requirements are, therefore, to be considered as part of the Proposed Action and would be implemented through the Proposed Action's initiation. The USAF is responsible for adherence to and coordination with appropriate agencies to complete the plans, permits, and management actions outlined in this section.

4.1 Regulations, Plans, and Permits

The following regulations, plans, and permits would be required for the Proposed Action:

- Erosion and Sediment Control Plan
- Incorporation of an SWPPP and NOI into the final design plans as required
- ESA section 7 consultation with USFWS as appropriate for all proposed activities
- FDEP NPDES permit
- CZMA Consistency Determination.

4.2 Management Actions

Under the Proposed Action, the Proponent would be responsible for implementing the management actions that follow.

4.2.1 Air Quality

No new stationary sources of air emissions as part of the Proposed Action occur at this time; therefore, no air permitting requirements have been identified; however, minor new stationary source emissions could become required, such as heating boilers or emergency generators.

- Construction and operational must comply with all the applicable requirements in the Title V permit. If an increase in emissions is anticipated during the Proposed Action, Eglin AFB may need to submit an application to the FDEP, Division of Air Resource Management, New Source Review Section.
 - Construction/access roads would be routinely watered to reduce fugitive dust emissions during the construction phases of the Proposed Action.
 - All construction equipment would be maintained in proper working condition according to the manufacturer's specifications; vehicles would be maintained and inspected on a weekly basis in order to ensure good operating conditions.

4.2.2 Biological Resources

- Prior to the initiation of any construction or disturbance within the Project areas, a qualified biologist (i.e., professional biologist with education and training in wildlife biology or ecology) would monitor construction and demolition plans to ensure

adherence with all measures to avoid impacts on sensitive species (listed below) and to provide advice to the construction contractor as needed.

- If a federally or state-protected species (e.g., Florida black bear, gopher tortoise, eastern indigo snake) is found within the work area, work would cease in those areas until the individual moves away on its own; Eglin AFB Natural Resources must also be notified of the sighting.
- A migratory bird survey would be conducted prior to tree removal to ensure compliance with the MBTA.
- Restrict vehicles to established roads and paved areas.

Gopher tortoise

- A pre-construction gopher tortoise survey is required within 30 days of ground-disturbing activities; construction personnel are responsible for contacting Eglin AFB Natural Resources to arrange the survey. If tortoise burrows are found to conflict with the proposed project site and burrows cannot be avoided by at least 25 feet, the tortoise(s) would be relocated in accordance with FWC Gopher Tortoise Permitting Guidelines.
- Construction personnel would be briefed on protected species prior to project initiation.
- Should a gopher tortoise burrow be identified by construction personnel within the proposed path of equipment, work would cease and Eglin AFB Natural Resources would be contacted immediately. Eglin AFB Natural Resource would investigate the burrow and relocate any gopher tortoise or other sensitive species (e.g., eastern indigo snake) using the burrow to another suitable location within Eglin AFB.
- Aircraft operations and construction and demolition activities would be conducted in accordance with the existing conservation measures, terms, and conditions from the Overland Air Operations PBA and the Eastern Indigo Snake PBA and Programmatic Biological Opinion (PBO).
- If a gopher tortoise burrow is found within a LZ, and landing operations cannot avoid the burrow by at least 25 feet, the tortoise would be relocated in accordance with FWC Gopher Tortoise Permitting Guidelines.

Red-cockaded woodpecker

- Construction and demolition activities and C-146A aircraft operations would be conducted in accordance with the existing conservation measures, terms, and conditions from the Overland Air Operations PBA and the RCW PBO from the USFWS. Pertinent requirements for RCWs that apply to the C-146A aircraft operations are listed below.
 - Use only the approved LZs listed in EAFBI 13-212 unless prior written approval has been granted by Eglin AFB.
 - Do not establish new LZs within 500 feet of active RCW trees without prior written authorization from Eglin AFB Natural Resources.
 - Range users must check the fire danger rating daily, and follow the Eglin AFB Wildfire Specific Action Guide restrictions for pyrotechnics use by class day.

- Range users must immediately notify the Joint Test and Training Operations Control Center.
- Conduct periodic checks of LZs for erosion issues and to ensure fuel loads (vegetation/debris) are maintained at safe levels.
- Eglin Natural Resources would conduct a survey of the construction area 30 days prior to any tree removal to verify there are no new active RCW trees at the site.

During the pre-planning phase, proposed land clearing and construction projects must be coordinated with an Eglin AFB Natural Resources Office endangered species biologist.

- All new construction must reduce artificial night lighting that affects wildlife to the extent practical using the most current cited resources available at that time.
- Prior to tree clearing and construction in RCW habitat, personnel must be provided with RCW restrictions, either in verbal or written form, and incorporate information into maps when necessary.
- No RCW cavity tree will be cut down that contains eggs or chicks. Tree clearing must wait until the young fledge; the Eglin AFB Natural Resources Office will then catch and translocate the adults and fledglings (if they are roosting in a cavity).
- In the event that an entire active cluster needs to be removed, a new recruitment cluster would be established in a suitable area, and all RCWs within the cluster will be captured and moved to the new cluster.
- Eglin AFB must conduct spot checks every 2 weeks in construction areas to check for impacts and ensure personnel comply with RCW-related requirements and restrictions.
- During pre-planning with Eglin AFB Natural Resources Office staff, emphasis would be placed on reducing the impacts to all natural and artificial RCW cavity trees, as well as other old-growth and flat-top pines potentially used as cavity trees.

Eastern indigo snake

- Construction, demolition activities and C-146A aircraft operations would be conducted in accordance with the existing conservation measures, terms, and conditions from the Overland Air Operations PBA and the Eastern Indigo Snake PBA and PBO.
- If relocation of the eastern indigo snake is necessary, then the snake would be relocated by Eglin AFB Natural Resources biologists in accordance with the 10(a)(1)(A) permit.
- Should an eastern indigo snake be sighted, construction personnel would be directed to cease any activities and allow the eastern indigo snake sufficient time to move away from the site on its own before resuming such activities. Personnel would contact Eglin Natural Resources Office immediately to report the sighting of the snake.
- Construction personnel would be briefed on protected species prior to project initiation. Construction personnel would be provided a description of the eastern indigo snake and its protection under Federal Law.

- Indigo snake signs would be provided by Eglin AFB Natural Resources Office and posted at the construction site. Personnel would be given instructions not to harass, injure, harm, or kill this species.
- The eastern indigo snake protection/education plan developed by USFWS would be implemented.
 - At least 30 days prior to any clearing/land alteration, the applicant would notify the appropriate USFWS Field Office via e-mail that the Plan will be implemented.
 - A concurrence e-mail from the appropriate USFWS Field Office would fulfill approval requirements.

Florida black bear

- Discourage human-bear interactions by responsibly handling waste and employing measures such as bear-proof dumpsters and bear-resistant garbage cans.

The following BMPs would also be implemented to prevent the establishment and spread of nonnative species during and following construction and demolition:

- Inspect and clean construction equipment to remove soil, plants, and seeds.
- Ensure all fill is as free of nonnative plant propagules, as practicable.
- Revegetate disturbed areas with native plant species.

4.2.3 Cultural Resources

- Should archeological material be inadvertently discovered during construction, all actions in the immediate vicinity would cease and efforts would be taken to protect the archeological site find from further impact as detailed in the provisions for unanticipated discoveries in the Eglin AFB *Integrated Cultural Resources Management Plan*.
- Should inadvertent discoveries occur or project plans change, coordination with the Eglin AFB Cultural Resources Office must occur.

4.2.4 Hazardous Materials and Wastes

- Demolition that involves the wrecking or taking out of any load-supporting structural member and/or removal of a defined amount of asbestos containing material would require notifying FDEP, as outlined in Chapter 62-257 F.A.C. Asbestos Program.
- Refueling of machinery would be completed following accepted guidelines, and all vehicles would have drip pans beneath them during storage to contain minor spills and drips.
- No refueling or storage of heavy equipment would take place within 100 feet of any drainage.
- Construction standards defined by the Florida Department of Business and Professional Regulation for radon-resistant new construction would be implemented as appropriate.

- Eglin would manage the storage, use, and disposal of construction materials in accordance with current practices and management schemes. Materials would be stored in containers that meet federal, state and local requirements. Secondary containment systems would be employed as necessary to prevent or limit accidental spills.
- Any significant change in the quantity of hazardous materials stored on the installation during construction would be recorded and reported to local emergency planning committees and local fire departments in the annual Tier II forms, as required.

4.2.5 Infrastructure, Utilities, and Transportation

- Coordination with all utility providers would be required prior to any ground-disturbing activities in an effort to minimize potential conflicts between utility providers.

4.2.6 Noise

- Construction and demolition would primarily occur during normal weekday business hours.
- Heavy equipment mufflers would be properly maintained and in good working order.
- Construction and demolition personnel, and particularly equipment operators, would don adequate personal hearing protection to limit exposure and ensure compliance with the Air Force Occupational Safety and Health Standard 48-20 (USAF 2013d).

4.2.7 Water Resources

- An NPDES and Rule 62-621, F.A.C. Storm Water Permit is required for the Proposed Action as it includes construction projects greater than 1 acre in size.
- The Proposed Action must comply with environmental resource permit management requirements included in Chapter 62-346 F.A.C.
- Prior to implementation of the Proposed Action contact would be made with the Stormwater Permit Engineer of the Northwest District Office for the FDEP as well as with personnel in the NPDES section of the FDEP.
- Construction activities must be performed in compliance with Chapters 62-550 F.A.C., 62-55 F.A.C., 62-604 F.A.C., American Water Works Association Standards, Recommended Standards for Wastewater Facilities (commonly referred to as Ten State Standards), and Northwest Florida Water Management District laws and permits.
- An SWPPP and ESCP would be developed for the Proposed Action.
- Upon completion of the Proposed Action, all disturbed areas not supporting new facilities or pavements would be revegetated with appropriate native vegetation.
- In accordance with the EISA Section 438 (requiring federal facility projects over 5,000 square feet to maintain or restore the predevelopment hydrology of the property), low-impact development techniques would be incorporated into the proposed construction projects.

- The construction contractor would implement the following stormwater and erosion control BMPs as appropriate and:
 - Install and maintain silt fences and hay bales or other appropriate BMPs in effective operating condition prior to, during, and throughout the entire construction process to avoid soil runoff.
 - Include site-specific management requirements for erosion and sediment control in permits and site plan designs.
 - Maintain at least a 100-foot vegetated buffer between construction sites and surface waters.
 - Replant cleared and disturbed areas with native vegetation and grasses or mulch when the final grade is established to reduce or prevent erosion.
 - Reduce erosion using rough grade or terrace slopes.
 - Identify areas of existing vegetation that would be retained and not disturbed through construction.
 - Designate a “staging area” for repairs, maintenance, and use of construction equipment (e.g., cement mixers) to contain any chemicals, solvents, or toxic materials and prevent them from entering surface waters.
 - Stabilize construction site entrances using stone and geotextile (filter fabric) approved by the Florida Department of Transportation.
 - Inspect BMPs on a weekly basis and after rain.

The following practices identified in the Okaloosa County Land Development Code would be implemented, when possible and as applicable, for stormwater management:

- The design of stormwater retention facilities would incorporate 10-year storm events.
- All work sites would be equipped with adequate waste disposal receptacles, for liquid, solid, and hazardous wastes, to prevent construction and demolition debris from leaving the work site.
- Proper site planning, low-impact design principles, and adequately engineered stormwater retention ponds (or swales) would help manage stormwater (on-site) and prevent discharges into surface waters.
- The design and construction of paved surface areas would incorporate a slope of sufficient size to direct potential runoff away from wetland areas. All drainage improvements and related infrastructure would be designed and constructed in such a manner that the natural hydrologic conditions would not be severely altered.
- Areas designated for demolition would be mulched/vegetated immediately to help prevent soil erosion and runoff, and to foster vegetative establishment.
- Sediment would be retained at development sites.
- Water bodies would not be used as sediment traps.

- Regular maintenance would occur at erosion and sedimentation facilities to ensure continued proper functioning.
- Design of open channels and outfall ditches would include plans so that they do not overflow their banks. Where flow velocities exceed 2 cubic feet per second, ditch pavement or other permanent protection against scouring would be provided. All ditches not protected with a permanent material will be revegetated to provide an erosion-resistant embankment.
- The first inch of runoff from surfaces would be retained on the site of the development. Post-development runoff would not exceed the redevelopment runoff rate for a 25-year storm event, up to and including one with a 24-hour duration.
- A “pop off” shall be provided for stormwater runoff beyond the above requirements. The pop off shall be part of an approved system with adequate capacity to handle additional stormwater runoff. If no pop off is available, the stormwater storage facility would be designed with a minimum capacity to retain a storm event of 100-year frequency, up to and including one with a 24-hour duration.
- Runoff from parking lots would be treated to remove oil and sediment before it enters receiving waters.
- Tree clearing of any species is not permitted unless approved by the Eglin AFB Natural Resources Office.
- All construction personnel would be provided with proper training regarding all management techniques.
- Incorporation of a monitoring plan, especially after rain, would observe the effectiveness of BMPs and address modification as needed. Any failures would be carefully examined and corrected to prevent reoccurrence.

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A

Duke Field NSAv
Association
Recommendation
Memorandum





DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON DC

FEB 11 2016

MEMORANDUM FOR AFSOC A5/8
AFRC A5/8

FROM: HQ USAF/A5/8
1070 Air Force Pentagon
Washington, DC 20330-1070

SUBJECT: AFSOC/AFRC Non-Standard Aviation (NSAv) Total Force Integration Proposal

The Total Force Enterprise Evaluation Group (TFEEG), chaired by Mr. Shawn Barnes, AF/A8X (D), convened on 14 October 2015, and agreed to the recommended rating of "Strongly Recommend" for the NSAv Association at Duke Field between AFSOC and AFRC.

Based on careful review of the Business Case Analysis and Association Plan, I concur with the approval of this Association for implementation in FY17.

For further questions, contact my POC for this action, Lt Col Eugene Moore, A8XF/TF-C, DSN 227-7429, eugene.a.moore2.mil@mail.mil.

A handwritten signature in black ink, appearing to read "J. Holmes", is positioned above the typed name of the signatory.

JAMES M. HOLMES
Lieutenant General, USAF
DCS, Strategic Plans and Requirements

Attachments:

1. BCA for NSAv TFIP
2. A-Plan for NSAv TFIP
3. AF/JAA Legal Review

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B

Agency Coordination and
Public Involvement





DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 96TH TEST WING (AFMC)
EGLIN AIR FORCE BASE FLORIDA

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Chief, Eglin Natural Resources
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MAR - 1 2016

Catherine Phillips, Ph. D.
U.S. Fish and Wildlife Service
1601 Balboa Avenue
Panama City FL 32405

Dear Dr. Phillips:

The following information is being submitted to the U.S. Fish and Wildlife Service (USFWS) to evaluate potential impacts to protected species under Section 7 of the Endangered Species Act (ESA) associated with the Proposed Action for the C-146A Aircraft Beddown Environmental Assessment (EA) at Duke Field, Eglin Air Force Base (AFB), Florida (Figure 1). The Proposed Action consists of operations, personnel relocation, and construction/demolition activities in support of the C-146A aircraft beddown. This assessment addresses potential impacts from the Proposed Action to the Red-cockaded Woodpecker (RCW), eastern indigo snake, and gopher tortoise.

Description of the Proposed Action:

C-146A Aircraft Beddown and Operations

The Proposed Action includes the beddown of 18 additional C-146A aircraft at Duke Field between fiscal year (FY) 16 and FY 18, which would result in a total of 23 C-146A aircraft in FY 18 (Table 1). Approximately 10 of the 23 C-146A aircraft at Duke Field would typically be deployed at any given time. Therefore, approximately 13 C-146A aircraft are anticipated to be located at Duke Field. The beddown would also include the relocation of 145 additional U.S. Air Force (USAF) personnel from the 524 Special Operations Squadron (SOS) from Cannon AFB, New Mexico, to Duke Field, and the standup of the 859 SOS, a reserve aviation squadron.

The five C-146A aircraft based at Duke Field currently conduct 644 training missions per year, half of which occur at night. Each training mission is approximately four hours long and consists of multiple air operations (e.g., single takeoff or landing) at existing airfields, landing zones (LZs), and drop zones (DZs), both on and off the installation. These five C-146A aircraft conduct approximately 2,700 annual air operations at Duke Field, and approximately 2,200 annual air operations at nearby airfields including Hurlburt Field (HRT), Destin-Fort Walton Beach Airport (VPS), and Bob Sikes Airport (CEW). They also conduct approximately 4,400 annual air operations at other airports and training sites outside the local airspace, but normally within 400 miles of the installation. There are approximately 256 training days per year, primarily weekdays and reserve unit training assembly (UTA) weekends.

Under the Proposed Action, the combination of the existing 5 and proposed 18 C-146A aircraft (i.e., 23 total aircraft) based at Duke Field would conduct 1,880 training missions per year, half of which would occur at night. Each mission would be approximately five hours long and consist of numerous air operations at airfields, LZs, and DZs similar to those currently being used. They would conduct approximately 8,000 annual air operations at Duke Field and approximately 6,000 annual air operations at nearby airfields. They would also conduct approximately 8,200 annual air operations at other airports and other training sites within approximately 400 miles of Eglin AFB. The number of training days per year would remain unchanged, and would continue to primarily include weekdays and UTA weekends.

Table 1. Existing and Proposed C-146A Aircraft Operations

	Number of C-146A Aircraft	Total Number of Annual Training Missions	Average Duration of Training Mission (hours)	Annual C-146A Aircraft Operations	
				Hurlburt, Destin-Fort Walton Beach (VPS), Bob Sikes Airport (CEW)	Duke Field
Existing	5	644	4	2,200	2,700
Proposed Action	23	1,880	5	6,000	8,000
Increase over existing	18	1,236	1	3,800	5,300

Facility Construction and Demolition

Under the Proposed Action, new construction and demolition of existing facilities would occur at Duke Field to facilitate and support the beddown of the C-146A aircraft, transfer of the 524 SOS, and standup of the 859 SOS (Table 2 and Figure 2). Proposed facilities include a C-146A one-bay hangar and collocated aircraft maintenance unit (AMU) facility; a squadron operations facility for the 524 SOS and 859 SOS; and a

temporary and ultimately a permanent flight simulation training facility for C-146A aircraft. The size, construction year, and exact location of some construction projects could change based on future funding and as designs develop in accordance with mission requirements. Each building site would be developed to provide optimum efficiency, adequate stormwater runoff detention, and compliance with all relevant federal and state regulations.

Table 2. Proposed Demolition and Construction for C-146A Beddown

Project Title	Fiscal Year (FY)	Size¹ (square feet [ft²])	Key Components
C-146A One-bay Hangar and AMU Shop	2021	17,026	<ul style="list-style-type: none"> • Construction of 10,200-ft² one-bay hangar with a minimum height-of-aircraft plus 10 ft clearance (23.75 ft plus 10 ft) • Demolition of Buildings 3018 and 3021 • Relocation of Building 3011 and a well house (Building 3204) • Demolition of Ford Avenue, Blake Street, and a portion of Clay Street • Construction of 6,826-ft² AMU shop • Construction of a 272,266-ft² apron • Construction of 15,000-ft² vehicle parking
524/859 SOS Squadron Operations Facility	2020	32,500	<ul style="list-style-type: none"> • Construction of 32,500 ft² of office space, storage areas, heritage room, planning and testing rooms, conference room, and locker rooms. • Construction of an access road, parking area with sidewalks, curbs, dumpster enclosure, landscaping, and fencing. • Construction of a 70,000 ft² parking area
Temporary Flight Simulator	2016	4,665	<ul style="list-style-type: none"> • Construction of office space, area for the flight simulator system, computer room, maintenance area, supply/storage room, and utility rooms.
Permanent Flight Simulator	2019	6,850	<ul style="list-style-type: none"> • Construction includes road improvements, paved parking area, driveway, and sidewalks. • Construction of the temporary and permanent flight simulators would include similar features.

¹These values are approximations.

Biological Information:

Red-cockaded Woodpecker

The RCW (*Picoides borealis*) is a federally endangered bird species. The RCW excavates cavities in longleaf pine trees that are at least 85 years old. Due to the preservation of continuous longleaf pine forests on Eglin, the Eglin Range has one of the largest populations of RCWs in the country. In 2009, the RCW population on Eglin reached the designated recovery goal of 350 Potential Breeding Groups (PBGs) and consultation was completed for future management of the species. In addition to the goal of 350 PBGs, Natural Resources personnel have developed a long-term goal of 450 PBGs in order to allow for more mission flexibility, and are currently monitoring a trend toward that goal.

Eglin maintains geographic information system (GIS) data for active RCW cavity trees and RCW foraging habitat around active clusters of RCW cavities. The Eglin RCW population is divided into the eastern subpopulation, composed of all clusters East of Highway 85, and the western subpopulation, which is comprised of all clusters West of Highway 85. The two subpopulations are isolated and each is in a different demographic condition. The western subpopulation is large and increasing (357 PBGs in 2015); the eastern subpopulation is smaller, but appears to be increasing as well (89 PBGs in 2015).

Eglin has developed an independent Oracle®-based GIS tool (model) that creates foraging habitat assessments, allowing Eglin to consistently and accurately describe the available foraging resources without sampling the entire Eglin reservation. High quality RCW forage habitat consists of open pine stands with tree diameter at breast height (dbh) averaging 10 inches (in) and larger. Good quality foraging habitat on Eglin is defined as that containing between 19 and 33 stems per acre of pines that are greater than 10 in dbh. (Site conditions at Eglin generally result in longleaf pines that tend to have smaller dbhs and lower densities than much of the rest of the RCW's range.) Natural Resources has determined that Eglin RCW groups utilize large areas for foraging habitat, thus Eglin generally manages for 300 acres per cluster with the allowance of 30 percent overlap with surrounding clusters.

Eastern Indigo Snake

The federally threatened eastern indigo snake (*Drymarchon corais couperi*) is the largest nonvenomous snake in North America. The primary reason for its listing is population decline resulting from habitat loss and fragmentation. Movement along travel corridors between seasonal habitats exposes the snake to danger from increased contact with humans. Eastern indigo snakes frequently utilize gopher tortoise burrows and the burrows of others species for over-wintering. The snake frequents flatwoods, hammocks,

stream bottoms, riparian thickets, and high ground with well-drained, sandy soils. The eastern indigo snake could occur anywhere on the Eglin Range because it uses such a wide variety of habitats; however, this species is considered extremely uncommon on the Eglin Range. Occasional sightings were documented during the period of 1956 to 1999, but there have been no documented eastern indigo snake reports or sightings since 1999. Most of these historic observations were snakes seen crossing roads or after being killed by a vehicle. It is difficult to determine a precise number or even estimate of the number of these snakes due to the secretive nature of this species.

Gopher Tortoise

The gopher tortoise (*Gopherus polyphemus*) is a state threatened species and a federal candidate species. The 12-month finding on a petition to list the gopher tortoise as threatened in the eastern portion of its range (east of the Mobile and Tombigbee Rivers) stated that the listing of the gopher tortoise is warranted; however, listing is currently precluded by higher-priority actions. In December 2008, all Department of Defense entities, as well as state agencies and other non-governmental organizations, signed a Candidate Conservation Agreement with the USFWS. This agreement defines what each agency will voluntarily do to conserve the gopher tortoise and its habitat. The gopher tortoise is found primarily in longleaf pine and oak uplands (sandhills) and open grassland ecological associations, where it excavates a tunnel-like burrow for shelter from climatic extremes and refuge from predators. The primary features of good tortoise habitat are well-drained sandy soils, open canopy with plenty of sunlight, and abundant food plants (forbs and grasses). Prescribed fire is often employed to maintain these conditions.

Determination of Impacts:

Red-cockaded Woodpecker

C-146A Aircraft Beddown and Operations

RCWs may be affected by C-146A aircraft operations and LZ/DZ usage in the form of noise harassment, direct impacts, and habitat modification. Aircraft operations will be conducted in accordance with the existing conservation measures, terms and conditions from the Overland Air Operations Programmatic Biological Assessment (PBA) (Log No. 04EF3000-2014-I-0178) and the RCW Programmatic Biological Opinion (PBO) from the USFWS (Log No. 04EF3000-2013-F-0143). Therefore, Eglin Natural Resources has determined that the proposed C-146A aircraft operations will have no additional impacts to RCW beyond what has been analyzed in existing programmatic consultation

documents. Pertinent requirements for RCWs that apply to the C-146A aircraft operations are listed below:

- Use only the approved LZs and DZs listed in Eglin Air Force Base Instruction (EAFBI) 13-212 unless prior written approval has been granted by Eglin
- Do not establish new LZs/DZs within 500 ft of active RCW trees without prior written authorization from the Chief of Eglin Natural Resources
- Range users must check the fire danger rating daily, and follow the Eglin Wildfire Specific Action Guide restrictions for pyrotechnics use by class day
- Range users must immediately notify the Joint Test & Training Operations Control Center (JTTOCC) and Eglin Fire Dispatch of any wildfire observed
- Conduct periodic checks of LZs/DZs for erosion issues and to ensure fuel loads (vegetation/debris) are maintained at safe levels

Facility Construction and Demolition

There are no active or inactive RCW trees within the proposed construction area (Figure 3). The nearest active tree is approximately one mile from the construction area. There is also no foraging habitat for existing RCW clusters located within the proposed construction area. Eglin Natural Resources would conduct a survey of the construction area 30 days prior to any tree removal to verify there are no new active RCW trees at the site.

RCWs foraging near Duke Field may be temporarily disturbed from construction and demolition activities. Any negative influences associated with noise due to construction and demolition activities would be outweighed by the suitable foraging opportunities provided by the habitat in the surrounding areas of Duke Field. The RCW population continues to grow at Eglin as RCWs appear to have adapted to noise associated with military mission activities. Overall, noise during construction and demolition activities would be less of a disturbance on foraging RCWs compared with that of current jet-aircraft activities within Duke Field. Therefore, Eglin Natural Resources has determined that construction and demolition activities in support of the C-146A beddown would have **no effect** on the RCW.

Eastern Indigo Snake

C-146A Aircraft Beddown and Operations

Eastern indigo snakes may be affected by C-146A aircraft operations and LZ/DZ usage in the form of noise harassment, direct impacts, and habitat modification. Aircraft operations will be conducted in accordance with the existing conservation measures, terms and conditions from the Overland Air Operations PBA (Log No. 04EF3000-2014-I-0178) and the Eastern Indigo Snake PBA and PBO (2008-F-0201). Therefore, Eglin Natural Resources has determined that the proposed C-146A aircraft operations will have no additional impacts to the eastern indigo snake beyond what has been analyzed under existing programmatic consultation documents. Pertinent requirements for eastern indigo snakes that apply to the C-146A aircraft operations are listed below:

- If an Indigo snake is sighted all activity would cease and the snake would be given sufficient time to leave the area; personnel would contact Eglin Natural Resources immediately to report the sighting of the snake
- If relocation of the Indigo snake is necessary, then the snake would be relocated by Eglin Natural Resources biologists in accordance with the 10(a)(1)(A) permit

Facility Construction and Demolition

The potential impact of this activity to eastern indigo snakes would be from direct physical impacts associated with construction or demolition equipment. Incidental contact with personnel and equipment could result in trampling of an individual snake. Construction and demolition operations will be conducted in accordance with the existing conservation measures, terms and conditions from the eastern indigo Snake PBA and PBO (2008-F-0201). Therefore, Eglin Natural Resources has determined that construction and demolition activities will have no additional impacts to the eastern indigo snake beyond what has been analyzed in existing programmatic consultation documents. Pertinent requirements for eastern indigo snakes that apply to construction and demolition activities are listed below:

- Construction/demolition personnel would be provided a brief on the eastern indigo snake and its protection under Federal Law
 - Indigo snake signs would be provided by Eglin NR and posted at the construction site
 - Personnel would be given instructions not to harass injure, harm, or kill this species

- Should an eastern indigo snake be sighted, construction/demolition personnel would be directed to cease any activities and allow the snake sufficient time to move away from the site on its own before resuming such activities; personnel would contact Eglin Natural Resources immediately to report the sighting of the snake
- If relocation of the Indigo snake is necessary, then the snake would be relocated by Eglin Natural Resources biologists in accordance with the 10(a)(1)(A) permit

Gopher Tortoise

C-146A Aircraft Beddown and Operations

Gopher tortoises may be affected by C-146A aircraft operations and LZ/DZ usage in the form of noise harassment, direct impacts, and habitat modification. Aircraft operations will be conducted in accordance with the existing conservation measures, terms and conditions from the Overland Air Operations PBA (Log No. 04EF3000-2014-I-0178) and the Eastern Indigo Snake PBA and PBO (2008-F-0201). Therefore, Eglin Natural Resources has determined that the proposed C-146A aircraft operations will have no additional impacts to the gopher tortoise beyond what has been analyzed in existing programmatic consultation documents. Pertinent requirements for gopher tortoises that apply to the C-146A aircraft operations are listed below:

- If a tortoise burrow is found within a LZ/DZ, and landing operations cannot avoid the burrow by at least 25 ft, the tortoise would be relocated in accordance with Florida Fish and Wildlife Conservation Commission (FWC) Gopher Tortoise Permitting Guidelines

Facility Construction and Demolition

The potential for this action to impact gopher tortoises derives from direct physical impacts associated with construction and demolition activities. Incidental contact with personnel and equipment could result in trampling or crushing of a gopher tortoise or its burrow. Construction and demolition operations will be conducted in accordance with the existing conservation measures, terms and conditions from the eastern indigo Snake PBA and PBO (2008-F-0201). Therefore, Eglin Natural Resources has determined that construction and demolition activities will have no additional impacts to the gopher tortoise beyond what has been analyzed in existing programmatic consultation documents. Pertinent requirements for gopher tortoise that apply to construction and demolition activities are listed below:

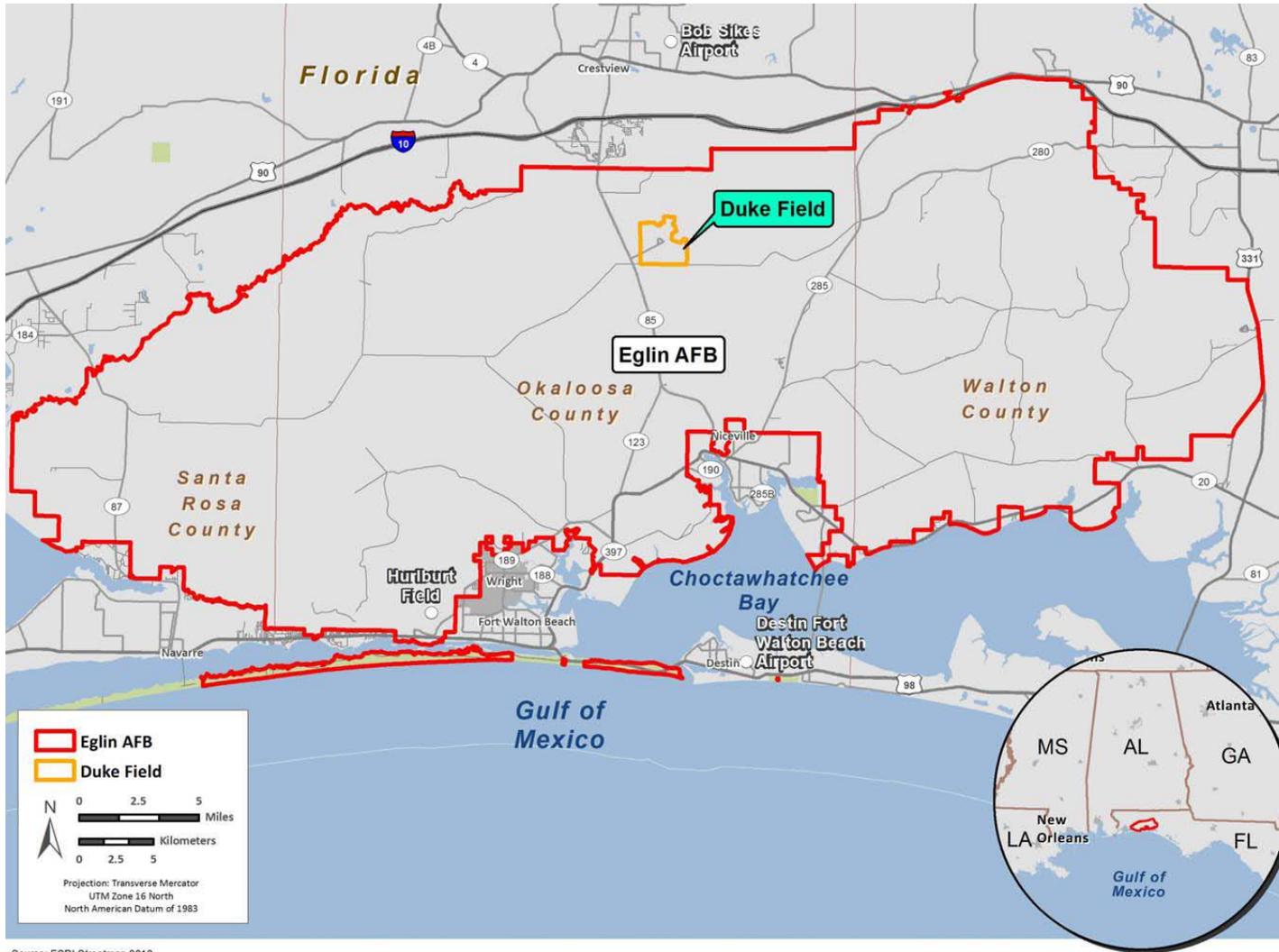
- Gopher tortoise survey is required to take place within 30 days of ground disturbing activities; construction personnel are responsible for contacting Eglin Natural Resources to arrange the survey; if a gopher tortoise burrow cannot be avoided, then the tortoise would be relocated in accordance with the FWC Gopher Tortoise Permitting Guidelines
- Gopher tortoise burrows should be avoided by at least 25 ft
- Should a gopher tortoise burrow be identified within the proposed path of construction by construction personnel, work would cease and Eglin Natural Resources would be contacted immediately; Eglin Natural Resources will investigate the burrow and relocate any gopher tortoise or commensals to a suitable location within the Eglin reservation

Conclusion:

Eglin Natural Resources has determined that the Proposed Action for the C-146A Beddown would have no additional impacts on the RCW, eastern indigo snake, and gopher tortoise beyond what has been analyzed in existing programmatic consultation documents. Eglin AFB would notify the USFWS if any actions are modified or additional information on listed species becomes available, as a reinitiation of consultation may be required. If an impact to a listed species occurs, all operations would cease and Eglin would notify the USFWS. If you have any questions regarding this letter or the proposed activities, please contact Mr. Rodney Felix (850) 883-1153 or myself at (850) 882-8391.

Sincerely,


BRUCE HAGEDORN
Chief, Eglin Natural Resources



Source: ESRI Streetmap 2010

Figure 1. Location of the Proposed Action

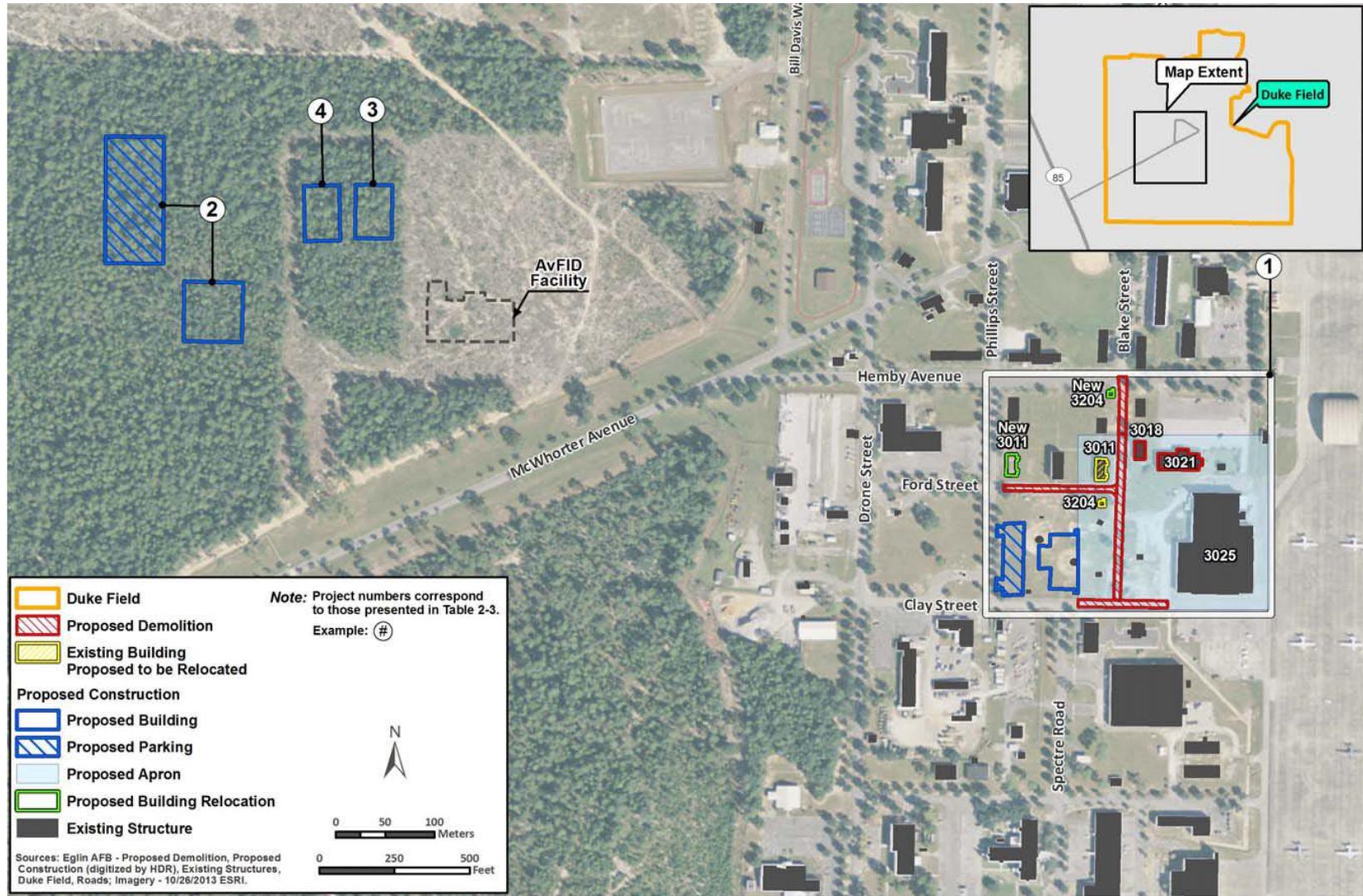


Figure 2. Proposed Construction and Demolition on Duke Field, Eglin AFB

From: Lehnhoff, Lisa <lisa_lehnhoff@fws.gov>
Sent: Tuesday, March 15, 2016 2:36 PM
To: FELIX, RODNEY K JR CIV USAF AFMC 96 CEG/CEIEA
Subject: Re: FW: C-146A No Effect Letter

Mr. Hagedorn and Mr. Felix,

Thank you for contacting the U.S. Fish and Wildlife Service (Service) regarding the Proposed

Action for the C-146A Aircraft Beddown Environmental Assessment (EA) at Duke Field, Eglin Air Force Base (AFB), Florida in which Eglin AFB natural Resources staff has determined a "no effect" on the following listed species: Red-cockaded woodpecker (endangered), Eastern indigo snake (threatened), and gopher tortoise (candidate). As you know, the Service does not "concur" on actions that have no impact, and there is no requirement for our concurrence on "no effects." You should document your rationale in your project file, are fine to move forward on the ESA component, and should not need anything further from the Service to move forward.

USFWS Log # 2016-TA-0113

Thanks,

Lisa (Lehnhoff) Yarbrough
Fish and Wildlife Biologist
USFWS Panama City ES
1601 Balboa Ave.
Panama City, FL 32405
850-769-0552 x.225

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FEDERAL AGENCY COASTAL ZONE MANAGEMENT ACT CONSISTENCY DETERMINATION

This document provides the State of Florida with the U.S. Air Force's Consistency Determination under the Coastal Zone Management Act (CZMA) Section 307 and 15 C.F.R. Part 930 sub-part C. The information in this Consistency Determination is provided pursuant to 15 C.F.R. Section 930.39 and Section 307 of the Coastal Zone Management Act, 16 U.S.C. § 1456, as amended, and its implementing regulations at 15 C.F.R. Part 930.

This federal consistency determination addresses the beddown of C-146A aircraft, relocation of personnel, and construction/demolition of associated facilities at Duke Field on Eglin AFB, Florida (Figure 1).

Proposed Federal Agency Action:

C-146A Aircraft Beddown and Operations

The Proposed Action includes the beddown of 18 additional C-146A aircraft at Duke Field between fiscal year (FY) 16 and FY 18, which would result in a total of 23 C-146A aircraft in FY 18 (Table 1). Approximately 10 of the 23 C-146A aircraft at Duke Field would typically be deployed at any given time. Therefore, approximately 13 C-146A aircraft are anticipated to be located at Duke Field. The beddown would also include the relocation of 145 additional U.S. Air Force (USAF) personnel from the 524 Special Operations Squadron (SOS) from Cannon AFB, New Mexico, to Duke Field, and the standup of the 859 SOS, a reserve aviation squadron.

The five C-146A aircraft based at Duke Field currently conduct 644 training missions per year, half of which occur at night. Each training mission is approximately four hours long and consists of multiple air operations (e.g., single takeoff or landing) at existing airfields, landing zones (LZs), and drop zones (DZs), both on and off the installation. These five C-146A aircraft conduct approximately 2,700 annual air operations at Duke Field, and approximately 2,200 annual air operations at nearby airfields including Hurlburt Field (HRT), Destin-Fort Walton Beach Airport (VPS), and Bob Sikes Airport (CEW). They also conduct approximately 4,400 annual air operations at other airports and training sites outside the local airspace, but normally within 400 miles of the installation. There are approximately 256 training days per year that occur primarily during weekdays with reserve unit training assembly (UTA) on the weekends.

Under the Proposed Action, the combination of the existing 5 and proposed 18 C-146A aircraft (i.e., 23 total aircraft) based at Duke Field would conduct 1,880 training missions per year, half of which would occur at night. Each mission would be approximately five hours long and consist of numerous air operations at airfields, LZs, and DZs similar to those currently being used. They would conduct approximately 8,000 annual air operations at Duke Field and

approximately 6,000 annual air operations at nearby airfields. They would also conduct approximately 8,200 annual air operations at other airports and other training sites within approximately 400 miles of Eglin AFB. The number of training days per year would remain unchanged, and would continue to primarily include weekdays and UTA weekends.

Table 1. Existing and Proposed C-146A Aircraft Operations

	Number of C-146A Aircraft	Total Number of Annual Training Missions	Average Duration of Training Mission (hours)	Annual C-146A Aircraft Operations	
				Hurlburt, Destin-Fort Walton Beach (VPS), Bob Sikes Airport (CEW)	Duke Field
Existing	5	644	4	2,200	2,700
Proposed Action	23	1,880	5	6,000	8,000
Increase over existing	18	1,236	1	3,800	5,300

Facility Construction and Demolition

Under the Proposed Action, new construction and demolition of existing facilities would occur at Duke Field to facilitate and support the beddown of the C-146A aircraft, transfer of the 524 SOS, and standup of the 859 SOS (Table 2 and Figure 2). Proposed facilities include a C-146A one-bay hangar and collocated aircraft maintenance unit (AMU) facility; a squadron operations facility for the 524 SOS and 859 SOS; and a temporary and ultimately a permanent flight simulation training facility for C-146A aircraft. The size, construction year, and exact location of some construction projects could change based on future funding and as designs develop in accordance with mission requirements. Each building site would be developed to provide optimum efficiency, adequate stormwater runoff detention, and compliance with all relevant federal and state regulations.

Table 2. Proposed Demolition and Construction for C-146A Beddown

Project Title	Fiscal Year (FY)	Size ¹ (square feet [ft ²])	Key Components
C-146A One-bay Hangar and AMU Shop	2021	17,026	<ul style="list-style-type: none"> • Construction of 10,200-ft² one-bay hangar with a minimum height-of-aircraft plus 10 ft clearance (23.75 ft plus 10 ft) • Demolition of Buildings 3018 and 3021 • Relocation of Building 3011 and a well house (Building 3204) • Demolition of Ford Avenue, Blake Street, and a portion of Clay Street

Project Title	Fiscal Year (FY)	Size¹ (square feet [ft²])	Key Components
			<ul style="list-style-type: none"> • Construction of 6,826-ft² AMU shop • Construction of a 272,266-ft² apron • Construction of 15,000-ft² vehicle parking
524/859 SOS Squadron Operations Facility	2020	32,500	<ul style="list-style-type: none"> • Construction of 32,500 ft² of office space, storage areas, heritage room, planning and testing rooms, conference room, and locker rooms. • Construction of an access road, parking area with sidewalks, curbs, dumpster enclosure, landscaping, and fencing. • Construction of a 70,000 ft² parking area
Temporary Flight Simulator	2016	4,665	<ul style="list-style-type: none"> • Construction of office space, area for the flight simulator system, computer room, maintenance area, supply/storage room, and utility rooms
Permanent Flight Simulator	2019	6,850	<ul style="list-style-type: none"> • Construction includes road improvements, paved parking area, driveway, and sidewalks • Construction of the temporary and permanent flight simulators would include similar features

¹These values are approximations.

Federal Consistency Review:

Statutes addressed as part of the Florida Coastal Zone Management Program consistency review and considered in the analysis of the Proposed Action are discussed in the following table.

Pursuant to 15 C.F.R. § 930.41, the Florida State Clearinghouse has 60 days from receipt of this document in which to concur with or object to this Consistency Determination, or to request an extension, in writing, under 15 C.F.R. § 930.41(b). Florida's concurrence will be presumed if Eglin AFB does not receive its response on the 60th day from receipt of this determination.

Florida Coastal Management Program Consistency Review

Statute	Consistency	Scope
Chapter 161 <i>Beach and Shore Preservation</i>	<p>The Proposed Action would not affect beach and shore management, specifically as it pertains to:</p> <ul style="list-style-type: none"> • The Coastal Construction Permit Program • The Coastal Construction Control Line (CCCL) Permit Program • The Coastal Zone Protection Program 	<p>This statute provides policy for the regulation of construction, reconstruction, and other physical activities related to the beaches and shores of the state.</p> <p>Additionally, this statute requires the restoration and maintenance of critically eroding beaches.</p>
Chapter 163, Part II <i>Growth Policy, County and Municipal Planning: Land Development Regulation</i>	<p>The Proposed Action would not affect local government comprehensive plans.</p>	<p>Provide for the implementation of comprehensive planning programs to guide and control future development of the state.</p>
Chapter 186 <i>State and Regional Planning</i>	<p>All construction and demolition activities would occur on federal property.</p> <p>A temporary increase in demand for water would be required for demolition and construction activities. The increase of approximately 145 USAF personnel moving to Duke Field as a result of the aircraft beddown would equate to a daily increase of water usage estimated to be 12,325 gallons based on a typical individual consumption rate of 85 gallons per day. This daily increase would be within the operating capacity of the system (refer to Section 3.7 of the EA).</p> <p>Demolition and construction would require delivery of materials to and removal of debris from Duke Field. Construction and demolition vehicles would use Highway 85 and McWhorter Avenue to access Duke Field, but traffic impacts would be minor and temporary.</p> <p>Therefore, the Proposed Action would be consistent with Florida's statutes and regulations regarding state plans for water use, land development, or transportation.</p>	<p>Provides direction for the delivery of governmental services, a means for defining and achieving the specific goals of the state, and a method for evaluating the accomplishment of those goals in regards to the state comprehensive plan.</p>
Chapter 252 <i>Emergency Management</i>	<p>The Proposed Action would not affect the state's vulnerability to natural disasters.</p> <p>The Proposed Action would not affect emergency response and evacuation procedures.</p>	<p>Directs the state to reduce the vulnerability of its people and property to natural and manmade disasters; prepare for, respond to and reduce the impacts of disasters; and decrease the time and resources needed to recover from disasters.</p>
Chapter 253 <i>State Lands</i>	<p>The Proposed Action would not affect state lands.</p>	<p>Addresses the acquisition, administration, management,</p>

Statute	Consistency	Scope
		control, supervision, conservation, protection, and disposition of all state lands.
Chapter 258 <i>State Parks and Preserves</i>	The Proposed Action would not affect state parks, recreational areas, or aquatic preserves.	Addresses the state's administration of state parks, aquatic preserves, and recreation areas.
Chapter 259 <i>Land Acquisitions for Conservation or Recreation</i>	The Proposed Action would not affect tourism or outdoor recreation.	Addresses public ownership of natural areas for purposes of maintaining the state's unique natural resources; protecting air, land, and water quality; promoting water resource development to meet the needs of natural systems and citizens of this state; promoting restoration activities on public lands; and providing lands for natural resource based recreation.
Chapter 260 <i>Florida Greenways and Trails Act</i>	The Proposed Action would not affect the Greenways and Trails Program.	Statewide system of greenways and trails established in order to conserve, develop, and use the natural resources of Florida for healthful and recreational purposes.
Chapter 267 <i>Historical Resources</i>	<p>There are no known archaeological or historical resources located within the Proposed Action area; however, Eglin's Cultural Resource Office (96 CEG/CEIEA) is currently conducting surveys within the Pearl Creek area. If findings in the Pearl Creek area suggest further investigation is necessary into areas affected by the Proposed Action, then consultation with the State Historic Preservation Officer (SHPO) may be required (refer to Section 3.4 of the EA).</p> <p>Furthermore, if resources are inadvertently discovered during construction and demolition activities, the Cultural Resources Office would be notified immediately and further ground disturbing activities would cease in that area. The identified resources would be managed in compliance with Federal Law and Air Force regulations.</p> <p>Therefore, the Proposed Action would be consistent with Florida's statutes and regulations regarding the state's archaeological and historical resources.</p>	Addresses the management and preservation of the state's archaeological and historical resources.
Chapter 288 <i>Commercial Development</i>	The Proposed Action would not affect future business opportunities on state lands, or the	Promotes and develops general business, trade, and tourism

Statute	Consistency	Scope
<i>and Capital Improvements</i>	promotion of tourism in the region.	components of the state economy
Chapter 334 <i>Transportation Administration</i>	<p>Minor short-term impacts are anticipated during construction and demolition stages. Demolition and construction would require delivery of materials to and removal of debris from construction sites. Construction and demolition vehicles would use Highway 85 and McWhorter Avenue to access Duke Field, but traffic impacts would be minor and temporary (refer to Section 3.7 of the EA).</p> <p>Therefore, the Proposed Action would be consistent with Florida's statutes and regulations regarding transportation.</p>	Addresses the state's policy concerning transportation administration.
Chapter 339 <i>Transportation Finance and Planning</i>	The Proposed Action would not affect the finance and planning needs of the state's transportation system.	Addresses the finance and planning needs of the state's transportation system.
Chapter 373 <i>Water Resources</i>	<p>Eglin's Water Resources Office (96 CEG/CEIEC) would coordinate all applicable permits in accordance with the Florida Administrative Code (FAC).</p> <p>An Environmental Resource Permit (ERP) from the Northwest Florida Water Management District (NFWFMD) per FAC 62-330 is required for the Proposed Action.</p> <p>Under the Proposed Action, construction would result in over 8 acres of total ground disturbance from construction activities. An approved Stormwater Pollution Prevention Plan (SWPPP), Erosion and Sediment Control Plan (ESCP), additional National Pollutant Discharge Elimination System (NPDES) coverage, and best management practices (BMPs) would be implemented to minimize stormwater runoff and erosion/sediment control (refer to Section 3.13 of the EA).</p> <p>Therefore, the Proposed Action would be consistent with Florida's statutes and regulations regarding the water resources of the state.</p>	Addresses sustainable water management; the conservation of surface and ground waters for full beneficial use; the preservation of natural resources, fish, and wildlife; protecting public land; and promoting the health and general welfare of Floridians.
Chapter 375 <i>Outdoor Recreation and Conservation Lands</i>	The Proposed Action would not affect opportunities for recreation on state lands.	Addresses the development of a comprehensive multipurpose outdoor recreation plan, with the purpose to document recreational supply and demand, describe current recreational opportunities, estimate the need for additional recreational opportunities, and propose the means to meet the identified needs.

Statute	Consistency	Scope
<p>Chapter 376 <i>Pollutant Discharge Prevention and Removal</i></p>	<p>Construction and demolition personnel would follow appropriate BMPs, particularly those outlined in the Eglin Spill Prevention, Control, and Countermeasures Plan, to protect against potential petroleum or hazardous material spills. If a spill or leak were to occur, BMPs would be implemented to contain the spill and minimize the potential for, and extent of, associated contamination. The quality of surface waters on and adjacent to Duke Field is not anticipated to experience significantly adverse impacts under the Proposed Action (refer to Section 3.6 of the EA).</p> <p>A new initial hazardous waste accumulation point would be required for the new AMU shop, and personnel would be trained to handle the hazardous waste streams. Waste generation from operation and maintenance activities would also include waste oil, batteries, and paints. Procedures for the usage, and disposal of these waste streams would be similar to those already generated at Eglin AFB. Waste generation levels would be managed within the current procedures and plans.</p> <p>Therefore, the Proposed Action would be consistent with Florida’s statutes and regulations regarding the transfer, storage, transportation of pollutants, and cleanup of pollutant discharges.</p>	<p>Regulates transfer, storage, and transportation of pollutants, and cleanup of pollutant discharges.</p>
<p>Chapter 377 <i>Energy Resources</i></p>	<p>The Proposed Action would not affect energy resource production, including oil and gas, and/or the transportation of oil and gas.</p>	<p>Addresses regulation, planning, and development of the energy resources of the state; provides policy to conserve and control the oil and gas resources in the state.</p>
<p>Chapter 379 <i>Fish and Wildlife Conservation</i></p>	<p>Eglin Natural Resources has completed a “No Effect” letter with the U.S. Fish and Wildlife Service (USFWS) for threatened and endangered species. Projects will comply with requirements listed in the document for protected species (refer to Appendix A of the EA).</p> <p>Therefore, the Proposed Action would be consistent with the State’s policies concerning the protection of fish and wildlife.</p>	<p>Establishes the framework for the management and protection of the state of Florida’s wide diversity of fish and wildlife resources.</p>
<p>Chapter 380 <i>Land and Water Management</i></p>	<p>The Proposed Action would not affect development of state lands with regional (i.e., more than one county) impacts. The Proposed Action would not include changes to coastal infrastructure such as capacity increases of existing coastal infrastructure, or use of state funds for infrastructure planning, designing or construction.</p>	<p>Establishes land and water management policies to guide and coordinate local decisions relating to growth and development.</p>

Statute	Consistency	Scope
Chapter 381 <i>Public Health, General Provisions</i>	The Proposed Action would not affect the state's policy concerning the public health system.	Establishes public policy concerning the state's public health system.
Chapter 388 <i>Mosquito Control</i>	The Proposed Action would not affect mosquito control efforts.	Addresses mosquito control efforts in the state.
Chapter 403 <i>Environmental Control</i>	<p>Short-term increases in emissions would occur due to generating airborne dust and other pollutants during construction. Long-term increases in emissions would occur due to the increase in mobile source emissions such as commuter vehicles and aircraft, and less significantly, yet still measurably, due to heating of buildings. Air quality impacts from the Proposed Action would be below the de minimis threshold of 100 tons per year of each pollutant; therefore, the level of impacts would be minor. Detailed emissions calculations are provided in Appendix B of the EA.</p> <p>Eglin AFB would take reasonable precautions to minimize fugitive particulate (dust) emissions during any construction activities in accordance with Florida Administrative Code (FAC) 62-296.</p> <p>The Proposed Action would result in short-term, minor, adverse effects on some water resources including groundwater and surface water on Duke Field. There would be no direct impacts on wetlands and floodplains. Eglin's Water Resources Office (96 CEG/CEIEC) would coordinate all applicable permits in accordance with the FAC.</p> <p>Solid waste generated from construction and demolition would be disposed of in accordance with relevant federal, state, and local regulations. Construction and demolition materials would be recycled or reused to the maximum extent possible. The additional 145 USAF personnel stationed at Duke Field would result in an increased quantity of solid waste generated. However, this increase would not be expected to have a significant impact on existing solid waste management at Duke Field because it would be negligible compared to the total volume of solid waste currently generated by Eglin AFB (refer to Section 3.7 of the EA).</p> <p>Therefore, the Proposed Action would be consistent with state policies concerning air quality, water quality, pollution control, solid waste management, and other environmental control efforts.</p>	Establishes public policy concerning environmental control in the state.

Statute	Consistency	Scope
Chapter 553 <i>Building and Construction Standards</i>	The Air Force would construct buildings in accordance with the Florida Building Code. Therefore, the Proposed Action would be consistent with state standards for construction of buildings.	Addresses building construction standards and provides for a unified Florida Building Code.
Chapter 582 <i>Soil and Water Conservation</i>	<p>The Proposed Action would not have an adverse impact on soils. BMPs would be implemented by construction and demolition personnel to reduce the impact to soils which may include installing silt fencing and sediment traps, applying water to disturbed soil, and revegetating disturbed areas as soon as possible after the disturbance (refer to Section 3.5 of the EA).</p> <p>Permits required, such as NPDES permits, will address the effects of groundwater discharge on maintaining clean water (refer to Section 3.13 of the EA).</p> <p>Therefore, the Proposed Action would be consistent with the Florida's statutes and regulations regarding soil and water conservation efforts.</p>	Provides policy regarding the control and prevention of soil erosion.
Chapter 597 <i>Aquaculture</i>	The Proposed Action would not affect state aquaculture efforts.	Establishes public policy concerning the cultivation of aquatic organisms of the state. Addresses state aquaculture plan which provides for the coordination and prioritization of state aquaculture efforts, the conservation and enhancement of aquatic resources and provides mechanisms for increasing aquaculture production.

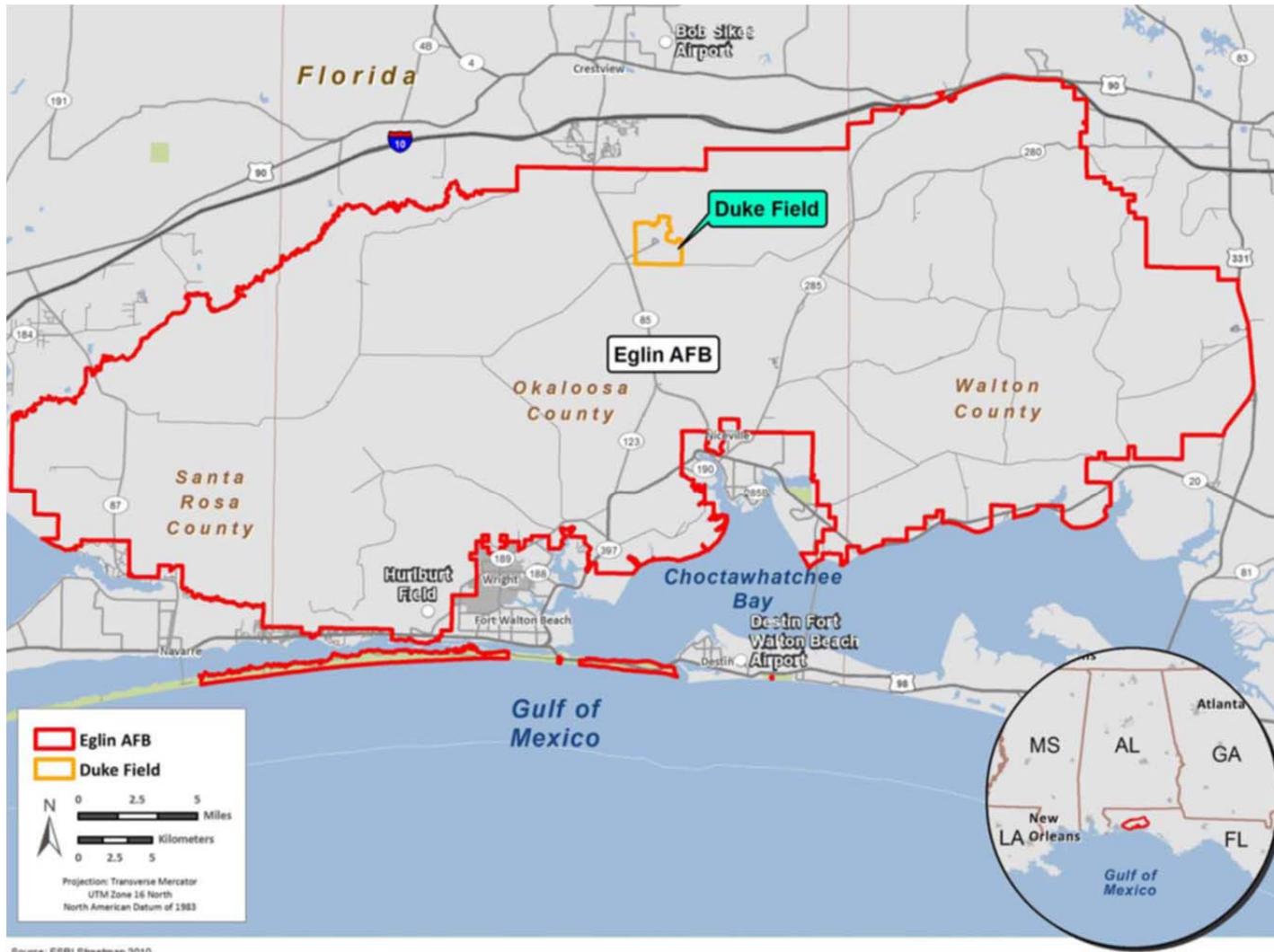


Figure 1. Location of Proposed Action

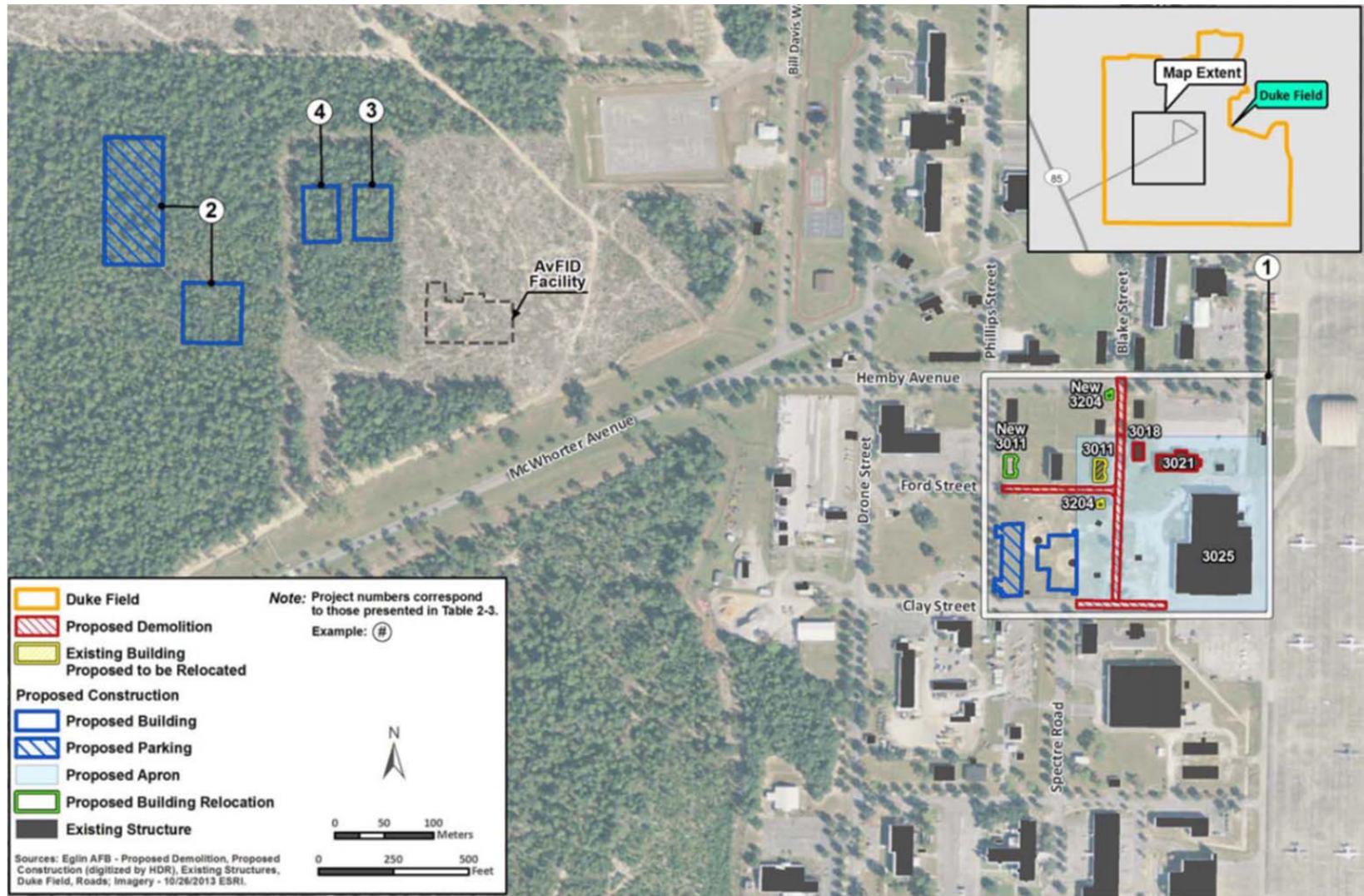


Figure 2. Proposed Construction and Demolition on Duke Field, Eglin AFB

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21 Apr 16

MEMORANDUM FOR RECORD

FROM: 96 CEG/CEIEA

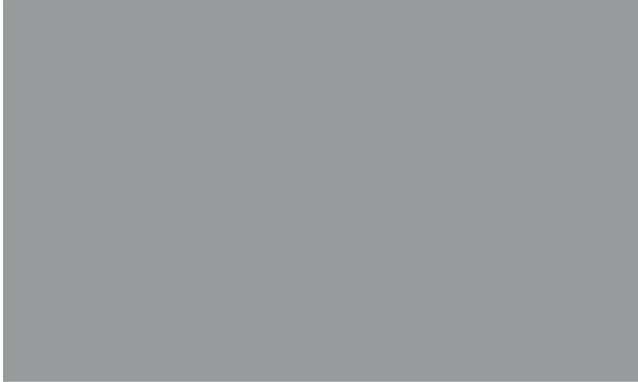
SUBJECT: Eglin AFB Tribal Consultation Procedures for the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida

IAW AFI 90-2002 Air Force Interactions with Federally-recognized Tribes dated 19 Nov 14, the Eglin AFB currently has arrangements with the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida that differ from the usual rules of contact whereby these tribes do not wish to be contacted for work in areas that have been surveyed and have no sites significant to them, unless human remains are found. These arrangements were established in 2008 during government-to-government consultation meetings, and are implemented for all EIAP actions conducted by Eglin AFB.

//signed//

MELINDA A. ROGERS, GS-13
Chief, Environmental Assets Section

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C

Air Quality Calculations



Table C-1. Construction Equipment Use

Equipment Type	Number of Units	Days on Site	Hours Per Day	Operating Hours
Excavators	3	115	4	1,380
Rollers	1	173	8	1,384
Rubber Tired Dozers	2	115	8	1,840
Plate Compactors	1	115	4	460
Trenchers	2	58	8	928
Air Compressors	1	115	4	460
Cement Mixers	2	115	6	1,380
Cranes	1	115	7	805
Generator Sets	2	115	4	920
Loaders/Backhoes	3	230	7	4,830
Pavers	2	58	8	928
Paving Equipment	2	58	8	928

Note: Number of equipment and total days on site based on square footage of building, demolition, and paving.

Table C-2. Construction Equipment Emission Factors (lbs/hour)

Equipment	CO	NO_x	VOC	SO_x	PM₁₀	PM_{2.5}	CO₂
Excavators	0.5828	1.3249	0.1695	0.0013	0.0727	0.0727	119.6
Rollers	0.4341	0.8607	0.1328	0.0008	0.0601	0.0601	67.1
Rubber Tired Dozers	1.5961	3.2672	0.3644	0.0025	0.1409	0.1409	239.1
Plate Compactors	0.0263	0.0328	0.0052	0.0001	0.0021	0.0021	4.3
Trenchers	0.5080	0.8237	0.1851	0.0007	0.0688	0.0688	58.7
Air Compressors	0.3782	0.7980	0.1232	0.0007	0.0563	0.0563	63.6
Cement Mixers	0.0447	0.0658	0.0113	0.0001	0.0044	0.0044	7.2
Cranes	0.6011	1.6100	0.1778	0.0014	0.0715	0.0715	128.7
Generator Sets	0.3461	0.6980	0.1075	0.0007	0.0430	0.0430	61.0
Loaders/Backhoes	0.4063	0.7746	0.1204	0.0008	0.0599	0.0599	66.8
Pavers	0.5874	1.0796	0.1963	0.0009	0.0769	0.0769	77.9
Paving Equipment	0.0532	0.1061	0.0166	0.0002	0.0063	0.0063	12.6

Source: CARB 2015

Note: Emission factors based on state-wide composite emissions from all sizes of units for all equipment types.

Table C-3. Construction Equipment Emissions (tons)

Equipment	CO	NO _x	VOC	SO _x	PM ₁₀	PM _{2.5}	CO ₂
Excavators	0.4022	0.9142	0.1170	0.0009	0.0502	0.0502	82.5
Rollers	0.3004	0.5956	0.0919	0.0005	0.0416	0.0416	46.4
Rubber Tired Dozers	1.4684	3.0058	0.3353	0.0023	0.1296	0.1296	220.0
Plate Compactors	0.0061	0.0076	0.0012	0.0000	0.0005	0.0005	1.0
Trenchers	0.2357	0.3822	0.0859	0.0003	0.0319	0.0319	27.2
Air Compressors	0.0870	0.1835	0.0283	0.0002	0.0130	0.0130	14.6
Cement Mixers	0.0309	0.0454	0.0078	0.0001	0.0031	0.0031	5.0
Cranes	0.2419	0.6480	0.0716	0.0006	0.0288	0.0288	51.8
Generator Sets	0.1592	0.3211	0.0494	0.0003	0.0198	0.0198	28.1
Loaders/ Backhoes	0.9813	1.8706	0.2908	0.0019	0.1446	0.1446	161.3
Pavers	0.2726	0.5009	0.0911	0.0004	0.0357	0.0357	36.2
Paving Equipment	0.0247	0.0492	0.0077	0.0001	0.0029	0.0029	5.9
Total	4.21	8.52	1.18	<0.1	0.50	0.50	680.0

Table C-4. Emissions from Painting

VOC Content	0.84	lbs/gallon		
Coverage	400	sqft/gallon		
Emission Factor	0.0021	lbs/sqft		
Building/Facility	Area [sqft]	Wall Surface	VOC [lbs]	VOC [tons]
All Buildings Combined	59,191	118,382	248.6	0.124
Total	59,191	118,382	248.6	0.12

Source: SCAQMD 1993

Table C-5. Emissions from Delivery of Equipment and Supplies

Number of Deliveries	4						
Number of Trips	2						
Miles Per Trip	30						
Days of Construction	230						
Total Miles	55,200						
Pollutant	CO	NO_x	VOC	SO_x	PM₁₀	PM_{2.5}	CO₂
Emission Factor (lbs/mile)	2.2E-02	2.4E-02	3.0E-03	2.6E-05	8.6E-04	7.4E-04	2.7E+00
Total Emissions (lbs)	1,211.6	1,308.9	165.2	1.4	47.3	40.8	150,112.8
Total Emissions (tons)	0.61	0.65	0.08	0.0007	0.02	0.02	75.1

Source: CARB 2015

Table C-6. Particulates from Surface Disturbance

TSP Emissions	37.4	lb/acre				
PM ₁₀ /TSP	0.45					
PM _{2.5} /PM ₁₀	0.15					
Period of Disturbance	30	days				
Capture Fraction	0.5					
Building/Facility	Area [acres]	TSP [lbs]	PM₁₀ [lbs]	PM₁₀ [tons]	PM_{2.5} [lbs]	PM_{2.5} [tons]
All Facilities	6.5	7,247	3,261	1.63	245	0.12
Total	6.5	7,247	3,261	1.63	245	0.12

Source: USEPA 1995

Table C-7. Emissions from Construction Worker Commutes

Number of Workers	40						
Number of Trips	2						
Miles Per Trip	30						
Days of Construction	58						
Total Miles	139,200						
Pollutant	CO	NO_x	VOC	SO_x	PM₁₀	PM_{2.5}	CO₂
Emission Factor (lbs/mile)	1.1E-02	1.1E-03	1.1E-03	1.1E-05	8.5E-05	5.3E-05	1.1E+00
Total Emissions (lbs)	1,468	154	150	1	12	7	153,055
Total Emissions (tons)	0.73	0.08	0.08	1.5	0.01	0.00	76.5

Source: CARB 2015

Table C-8. Total Construction Emissions (tons)

Activity/Source	CO	NO_x	VOC	SO_x	PM₁₀	PM_{2.5}	CO₂
Heavy Equipment	4.21	8.52	1.18	0.0075	0.50	0.50	679.96
Painting	0.00	0.00	0.12	0.0000	0.00	0.00	0.00
Delivery of Equipment	0.61	0.65	0.08	0.0007	0.02	0.02	75.06
Surface Disturbance	0.00	0.00	0.00	0.0000	1.63	0.12	0.00
Worker Commutes	0.73	0.08	0.08	1.4961	0.01	0.00	76.53
Total Emissions	5.6	9.3	1.5	1.7	3.6	0.8	839.2

Source: CARB 2015, SCAQMD 1993, USEPA 1995

Table C-9. Worker Commutes

Trips Generated	Weekday	348	Saturday	87	Sunday	22	
Annual Number of Trips	96,135						
Miles Per Trip	30						
Days of Work	260						
Total Miles	90,480						
Pollutant	CO	NO_x	VOC	SO_x	PM₁₀	PM_{2.5}	CO₂
Emission Factor (lbs/mile)	1.1E-02	1.1E-03	1.1E-03	1.1E-05	8.5E-05	5.3E-05	1.1E+00
Total Emissions (lbs)	954.4	99.8	97.6	1.0	7.7	4.8	9.9E+04
Total Emissions (tons)	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	49.7

Source: CARB 2015

Table C-10. Heating Emission

Heating Fuel	Natural Gas						
Region	South						
Gross Area	59,191	sf					
Heating Requirements	101.2	Btu/sf					
Annual Heating	5,990,129	Btu/year					
Heating Value	1,020	Btu/scf					
Annual Fuel Use	5,873	scf/year					
Pollutant	CO	NO_x	VOC	SO_x	PM₁₀	PM_{2.5}	CO₂
Emission Factors (lb/1000 scf)	84	190	5.5	0.6	7.6	7.6	1.2E+05
Total Emissions (tpy)	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	352.4

Source: USEPA 1995, DOE 2003

Table C-11. Aircraft Operational Emissions

Power Setting	Time In Mode (min.)	Fuel Flow Rate (lb/hr)	CO	NO _x	VOC	SO _x	PM ₁₀	PM _{2.5}	GHG
			Emission Factors (lb/1000 lb fuel)						
Idle (Taxi)	15.9	115	64.00	2.43	57.70	1.06	0.0265	0.0239	3,252
Approach	5.1	215	23.26	8.37	2.51	1.06	0.0053	0.0048	3,252
Climb out	4.53	400	1.20	7.00	0.00	1.06	0.0133	0.0122	3,252
Takeoff	0.4	425	1.01	7.81	0.00	1.06	0.0127	0.0117	3,252
Number of Landing and Take-Off Cycles		6,724							
			Emissions (tpy)						
Idle (Taxi)	15.9	115	6.56	0.25	5.91	0.11	0.00	0.00	333.19
Approach	5.1	215	1.43	0.51	0.15	0.07	0.00	0.00	199.80
Climb out	4.53	400	0.12	0.71	0.00	0.11	0.00	0.00	330.18
Takeoff	0.4	425	0.01	0.07	0.00	0.01	0.00	0.00	30.98
Total	25.93		8.1	1.5	6.1	0.3	0.0	0.0	894

Source: AFCEC 2014

Note: Pratt and Whitney PT6A-27 engine used as a surrogate for the Pratt and Whitney 119c engine.

Table C-12. Total Operational Emissions (tons per year)

Activity/Source	CO	NO _x	VOC	SO _x	PM ₁₀	PM _{2.5}	CO ₂
Heating Emissions	0.25	0.56	<0.1	<0.1	<0.1	<0.1	352
Worker Commutes	0.48	<0.1	<0.1	<0.1	<0.1	<0.1	50
Aircraft Operational Emissions	8.1	1.5	6.1	0.3	<0.1	<0.1	894
Total Operational Emissions	8.8	2.1	6.1	0.3	<0.1	<0.1	1,296

Source: CARB 2015, USEPA 1995, DOE 2003

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