DRAFT FINAL

ENVIRONMENTAL ASSESSMENT

FOR THE

ESTABLISHMENT OF MILITARY TRAINING ROUTE – INSTRUMENT ROUTE (IR)-096

FOR

EGLIN AIR FORCE BASE

April 2024

RCS 21-284

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
16 OSS	16th Operational Support Squadron
96 TW	96th Test Wing
ACAM	Air Conformity Applicability Model
AFB	Air Force Base
AFI	Air Force Instruction
AFMAN	Air Force Manual
AGL	above ground level
APE	Area of Potential Effects
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
ATCAA	Air Traffic Control Assigned Airspace
BASH	Bird/Wildlife Aircraft Strike Hazard
BG	Block Group
CAA	Clean Air Act
CCC	Civilian Conservation Corps
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO_2e	carbon dioxide equivalent
COC	Community of Comparison
DAF	Department of the Air Force
dB	decibels
dBA	A-weighted decibels
DNL	day-night average sound level
DoD	Department of Defense
DT	developmental testing
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FDEP	Florida Department of Environmental Protection
FMSF	Florida Master Site File
FONSI	Finding of No Significant Impact
GCR	General Conformity Rule
GHG	greenhouse gas
IFR	Instrument Flight Rules
IR	Instrument Route
JO	Job Order
KIAS	knots in air speed
L_{dnmr}	onset rate-adjusted monthly day-night average sound level
L_{max}	maximum noise level
MOA	Military Operations Area
MR_NMAP	Route Noisemap
MSL	mean sea level
MTR	military training route
NAAQS	National Ambient Air Quality Standards
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NEXRAD	Next Generation Weather Radar
NF	National Forest

NHPA	National Historic Preservation Act
NM	nautical miles
NPS	National Park Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
OT	operational testing
RCW	red-cockaded woodpecker
ROI	region of influence
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SUA	Special Use Airspace
TCP	traditional cultural property
tpy	tons per year
U.S.	United States
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VFR	Visual Flight Rules

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1. PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The Department of the Air Force (DAF) has prepared this Environmental Assessment (EA) to consider the potential consequences to the human and natural environment associated with the Eglin Air Force Base (AFB) 96th Test Wing (96 TW) need for a low-level military training route (MTR) in the Florida Panhandle to support developmental testing (DT) and operational testing (OT), and training, with the ability to transition from water to land.

The Federal Aviation Administration (FAA), who has the authority to create certain types of MTRs, such as Instrument Routes (IRs), defines MTRs as air routes developed for military training/research, development, and test and evaluation conducted below 10,000 feet above mean sea level (MSL), in excess of 250 knots in air speed (KIAS) (Eglin AFB, 2022). The proposed new MTR would be established in the Florida Panhandle near Eglin AFB.

1.2 LOCATION

Eglin AFB is primarily situated among three counties: Santa Rosa County, Okaloosa County, and Walton County (Figure 1-1). In addition, Cape San Blas, part of a peninsula in Gulf County, is part of Eglin AFB. The region of influence (ROI) for this EA is the proposed airspace route and the water and land area beneath, which spans from a point in the northern Gulf of Mexico, across several Florida counties, reaching to Eglin AFB. Figure 1-2 shows the setting of the Proposed Action.

1.3 PURPOSE AND NEED FOR THE ACTION

1.3.1 Background

Eglin AFB is the test and evaluation center for DAF air-delivered weapons, navigation and guidance systems, and command and control systems. The Installation provides developmental test and evaluation across the complete system life cycle for a wide variety of weapons programs. Eglin AFB also provides support for individual and joint training of operational units and hosts major single-service and joint exercises. The Eglin Test and Training Complex consists of four components, not including the cantonment or main base areas: (1) training or test areas/sites, (2) interstitial areas (areas beyond and between the defined boundaries of test areas), (3) water ranges (the Eglin Gulf Test and Training Range and estuarine and riverine areas), and (4) airspace (over land and water). The 96 TW is the Range Operating Authority for the Eglin Test and Training Complex.

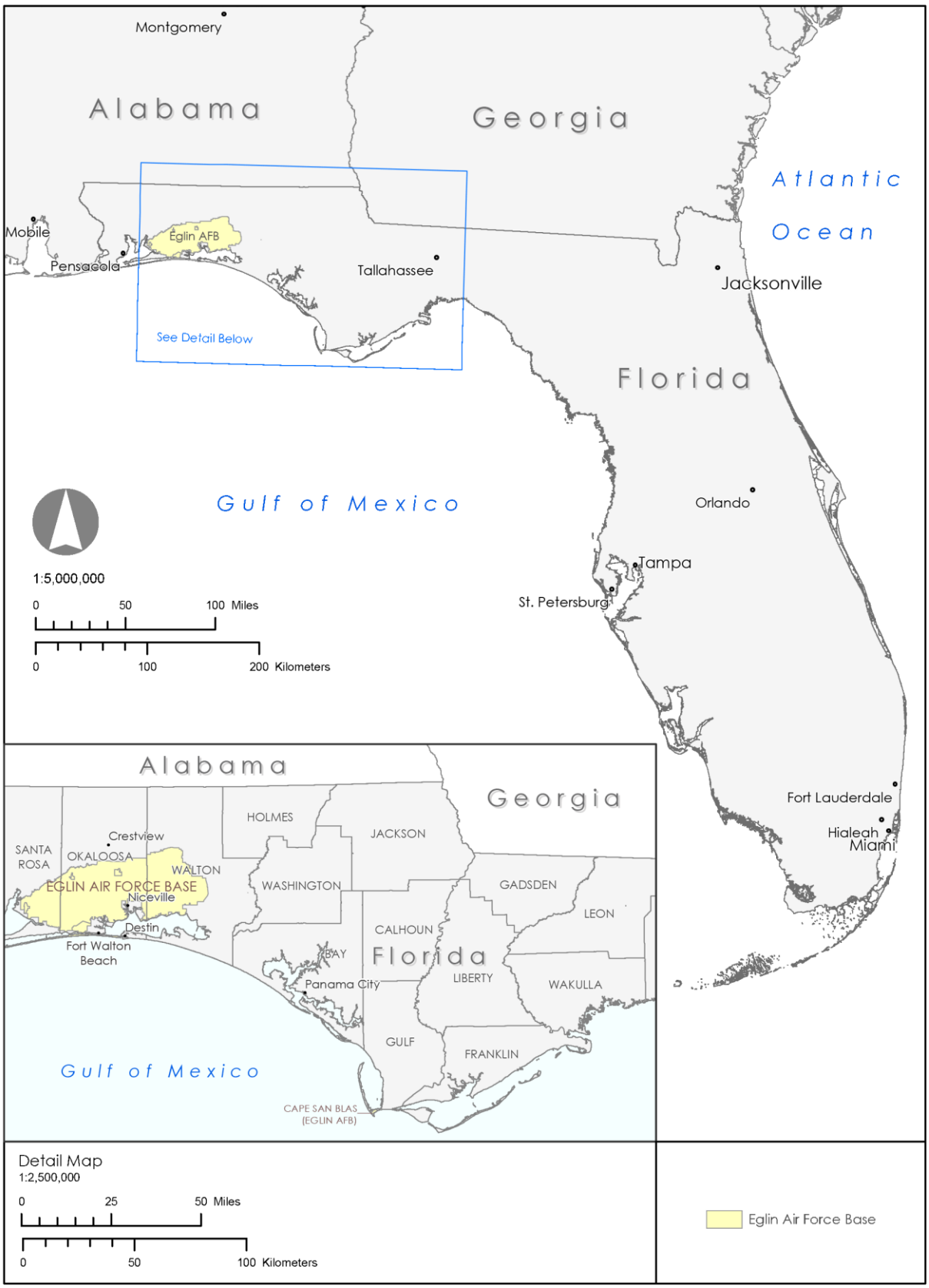

Figure 1-1. Regional Setting

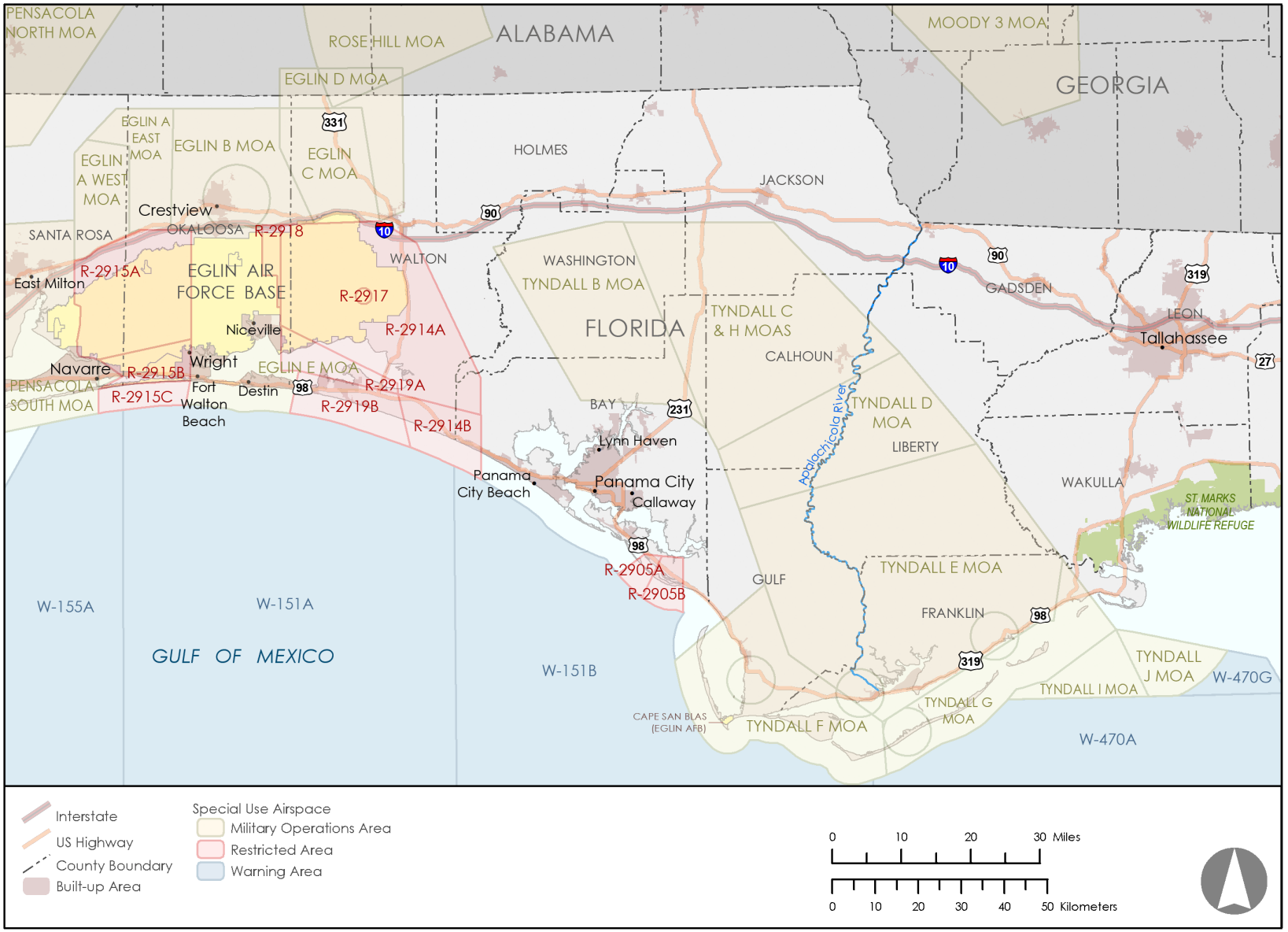

Figure 1-2. Proposed Action Setting

The 96 TW authorizes, schedules, manages, and monitors activities conducted on the Eglin Test and Training Complex. The 96 TW provides complete system life cycle development testing and evaluation for a variety of customers including Air Force Systems Program Offices, the Air Force Research Laboratory, logistics and product centers, Major Commands, other Department of Defense (DoD) services, United States (U.S.) government agencies (e.g., Department of Transportation, National Aeronautics and Space Administration), foreign military sales, and private industry.

The 96 TW is responsible for DT of airborne munitions and operates F-15s, F-16s, A-10s, and soon-to-arrive DT F-35s. The 53rd Wing operates the same type of aircraft as the 96 TW but is responsible for OT of aircraft and weapon systems.

The F-35 aircraft is a fifth-generation aircraft that has the most advanced sensor suite of any fighter in history, including an Active Electronically Scanned Array radar, Distributed Aperture System, Electro Optical Targeting System, and advanced electronic warfare capabilities to locate/track enemy forces, jam radars, and disrupt attacks. These complicated systems and emerging systems of fifth-generation weapons require extensive DT/OT. The 96 TW and 53rd Wing will use the F-35 for the DT/OT of fifth-generation weapons.

The DT/OT fourth-generation aircraft at Eglin AFB routinely test fifth-generation weapons/equipment that either fifth-generation aircraft or their own platforms employ in wartime scenarios. Many of the most expensive and highest visibility DoD acquisition programs require environments that offer medium-to-long-range (more than 100 miles) terrain masking and termination in a land impact area. Programs that could use the proposed route include the AGM-158 Joint Air-to-Surface Standoff Missile Extended Range and the Low-Cost Cruise Missile, which are both part of fifth-generation weapons development and testing. These medium-to-long-range weapons require low-altitude testing (2,000 to 5,000 feet above ground level [AGL]) and routes originating at a launch point within warning airspace and terminating on an air-to-ground range at speeds in excess of 250 KIAS.

1.3.2 Purpose

The purpose of the Proposed Action is for the 96 TW at Eglin AFB to test new weapon systems and their components in an all-weather, long-range, low-altitude setting with a water-to-land transition that terminates in a land range underlying restricted airspace.

1.3.3 Need

The Proposed Action is needed because new or fifth-generation weapons systems require testing at low altitudes, with the ability to terminate in a land impact area such as one of the Eglin land test ranges.

1.4 SCOPE OF THE ENVIRONMENTAL REVIEW

This EA identifies, describes, and evaluates the potential environmental impacts that may result from implementing the Proposed Action alternatives, namely the establishment of an MTR and the types of training and testing that would typically take place along the route.

Additionally, the EA analyzes the No Action Alternative. As appropriate, the affected environment and environmental consequences may be described in terms of site-specific descriptions or regional overview. This document also identifies measures to prevent or minimize environmental impacts.

The National Environmental Policy Act (NEPA) requires federal agencies to consider the environmental consequences of proposed major actions in the decision-making process (42 United States Code [U.S.C.] Section 4321 et seq.). The Council on Environmental Quality (CEQ) was established under NEPA, 42 U.S.C. Section 4342 et seq., to implement and oversee federal policy in this process. In 1978 (revised September 14, 2020), the CEQ issued regulations implementing the NEPA process under 40 Code of Federal Regulations (CFR), Parts 1500–1508. The CEQ regulations require the federal agency considering an action evaluate or assess the potential consequences of the action or alternatives to the action, which may result in the need for an EA or an Environmental Impact Statement (EIS). Under 40 CFR, the following must occur:

- An EA must briefly provide sufficient evidence and analysis to determine whether a Finding of No Significant Impact (FONSI) or EIS should be prepared.
- An EA must facilitate the preparation of an EIS if required.

The proposed activities addressed in this document constitute a major federal action and, therefore, must be assessed in accordance with NEPA. The DAF Environmental Impact Analysis Process (EIAP) is accomplished via procedures set forth in CEQ regulations and 32 CFR Part 989. To comply with NEPA, as well as other pertinent environmental requirements, the decision-making process for the Proposed Action must include the development of an EA to address the environmental issues related to the proposed activities.

Environmental issues are the environmental effects of a proposed action on surrounding natural and socioeconomic environments (e.g., resource problems, needs, benefits, concerns). A direct impact is a distinguishable, evident impact interaction, whereas an indirect impact may occur later in time and/or may result from a direct impact. Generally, environmental issues have a historical context that has influenced the current state.

This EA describes and analyzes impacts to potentially affected resources within and beneath the proposed MTR.

1.5 COOPERATING AGENCY AND INTERGOVERNMENTAL COORDINATION AND CONSULTATIONS

1.5.1 Cooperating Agency

A cooperating agency is defined by CEQ regulations as any federal agency other than a lead agency having jurisdiction by law or special expertise with respect to any environmental issue involved in a proposed action (40 CFR 1508.5).

In accordance with the FAA's jurisdiction by law and the Memorandum of Understanding between the DoD and the FAA for environmental review of Special Use Airspace (SUA) actions under FAA Order Job Order (JO) 7400.2P, *Procedures for Handling Airspace Matters* (FAA, 2023), the DAF invited the FAA to participate as a cooperating agency during the preparation of this EA. The FAA accepted the DAF's invitation via a letter dated March 17, 2023. The FAA is responsible for managing navigable airspace in the United States for public safety and ensuring its efficient use for commercial air traffic, general aviation, and national defense.

FAA Order JO 7400.2P provides guidance to air traffic personnel to assist in applying the requirements in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, to air traffic actions. FAA Order 1050.1F provides the FAA with policies and procedures to ensure agency compliance with NEPA and implementing regulations issued by the CEQ (40 CFR Parts 1500-1508). In accordance with its applicable FAA Order 1050.1F, the FAA conducts an independent evaluation and analysis of the EA and may adopt the EA for purposes of making its decision regarding the FAA's Proposed Action pursuant to 40 CFR 1506.3.

To establish IR-096, the FAA must approve the route. As a cooperating agency with the DAF in preparing this EA, the FAA is involved with the development of the proposal and its assessment. Upon completion of the EA, the DAF will document its determination on the IR-096 proposal. The DAF's goal in its cooperative effort with the FAA is for this EA to fulfill the NEPA requirements of both agencies. If a FONSI is appropriate, the DAF will submit a final IR-096 airspace proposal to FAA requesting action on the airspace modifications as recorded in the Final EA and FONSI. The FAA will review the airspace proposal submitted by the DAF in accordance with its policies and procedures, including FAA Orders 1050.1F, 7400.2L, and 7610.4T (Changes 1, 2, and 3). The Jacksonville Air Route Traffic Control Center (ARTCC) will also coordinate on the IR-096 proposal using FAA Form 7110-4. After the Service Area's operational and environmental review and final approval, the FAA will submit the Form 7110-4 to the National Flight Data Center for publication.

1.5.2 Interagency and Intergovernmental Coordination and Consultations

During the development of this EA, the DAF notified and consulted with federal, state, and local agencies with jurisdiction that could be affected by the Proposed Action. Agencies contacted include but are not limited to the U.S. Fish and Wildlife Service (USFWS), State Historic Preservation Officer (SHPO), and Tribal Councils.

1.5.3 Coordination Process During Route Development

The 96 TW communicated and coordinated with federal, state, and private/public entities during the planning stages of route development to ascertain concerns and competing or conflicting interests.

1.5.3.1 Aeronautical Coordination

The 96 TW contacted the FAA, Jacksonville ARTCC, and Tyndall AFB with regard to aeronautical considerations for the proposed route. The FAA's process for reviewing, approving, and establishing MTRs is governed by FAA Order 7610.4W, Chapter 11. This order establishes roles and coordination between the FAA and the military units requesting MTRs.

They provided the following inputs:

- **Jacksonville Air Route Traffic Control Center**: On April 20, 2022, correspondence between the proponent and the DAF Representative, Lt Col Robert Litwin occurred. Lt Col Litwin noted "Since there were no issues with the previous IR-015, and based on modifications to the proposed new route, the FAA does not anticipate any issues with its creation."
- **Tyndall AFB:** In spring 2022, subject matter experts from the 96 TW corresponded with subject matter experts from the 325th Operations Group, to include the airspace manager for Tyndall AFB. After concerns were voiced, the original proposal would affect arrivals into the Northwest Florida Beaches International Airport, the route was moved north as far as possible to remain within the Tyndall Approach Control Airspace, and the final segment was reduced to a ceiling of 4,000 feet. Arrivals into Northwest Florida Beaches International Airport are at or descending to 5,000 or 7,000 feet, so a crossing altitude of 5,000 feet on the proposed MTR would cause a conflict. Thus, the final portion was reduced to a ceiling of 4,000 feet and moved north, eliminating the conflict and allowing distance for arrivals to descend safely into Northwest Florida Beaches International Airport.

Before the EA can be finalized and the FONSI signed, the FAA will first review the DAF Aeronautical Proposal, conduct a Safety Review Panel for the proposed route, and solicit comments from the aviation community for 45 days after the Draft EA and FONSI are published. Any comments will be addressed in the Final EA and FONSI.

Obstructions

The proposed route segments and altitudes were compared to National Geospatial-Intelligence Agency Digital Vertical Obstruction Files and the FAA Digital Obstruction File data for obstruction data to determine if vertical obstructions were present. FAA data indicated three structures along the route warrant adding cautionary advisories along the segments.

1.5.3.2 Competing Interest Potential and Use Deconfliction

Tyndall AFB

The 96 TW identified a part of the proposed route lies within a section of Tyndall airspace, Tyndall C Military Operations Area (MOA). However, scheduling processes between Eglin AFB and Tyndall AFB are already in place to deconflict airspace usage.

Air Force Special Operations Command

There are two Air Force Special Operations Command MTRs (IR-057 and IR-059) that partially overlap the proposed route. The 96 TW would deconflict usage with the appropriate airspace schedulers at Hurlburt Field through scheduling mechanisms already in place. Additionally, the AP1B[1], the DoD Flight Information Publication that pilots use, will have a note stating IR-057 parallels the proposed IR-096 between points D through F, and IR-059 runs opposite direction to IR-096 between points D through F, with contact information for deconflicting use.

Other Considerations

Coordination with other federal, state, and public/private entities is discussed in each relevant resource section in Chapter 3 (Affected Environment and Environmental Consequences).

1.6 REGULATORY COMPLIANCE

The DAF prepared this EA in accordance with NEPA, which requires a detailed environmental analysis for major federal actions with the potential to significantly affect the quality of human and natural environments.

Applicable regulatory compliance requirements were considered in the preparation of this EA. These include (but are not necessarily limited to) requirements related to the following laws, statutes, regulations, and policies below:

- FAA Order 7610.4W, Chapter 11
- FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*
- Air Force Instruction (AFI) 32-1015, *Integrated Installation Planning*
- Clean Air Act (CAA) (42 U.S.C. Sections 7401–7671q; as amended)
- Coastal Zone Management Act (16 U.S.C. Section 1451 et seq.)
- NEPA (42 U.S.C. Sections 4321–4370h), which requires an environmental analysis for major federal actions with the potential to significantly impact the quality of the human environment
- CEQ Regulations for implementing the procedural provisions of NEPA (40 CFR Parts 1500-1508)
- DAF regulations for implementing NEPA (32 CFR Part 989)
- National Historic Preservation Act (NHPA) (54 U.S.C. Section 300101 et seq.)
- Archeological Resources Protection Act (16 U.S.C. Section 470)
- Endangered Species Act (ESA) (16 U.S.C. Section 1531 et seq.)
- Bald and Golden Eagle Protection Act (16 U.S.C. Sections 668–668d)

[1] National Geospatial-Intelligence Agency. 2022. *Area Planning – Military Training Routes – North And South America*. DoD Flight Information Publication AP1B. St. Louis, MO.

- Migratory Bird Treaty Act (16 U.S.C. Sections 703–712)
- Executive Order (EO) 13045, *Protection of Children from Environmental Health Risks and Safety Risks*
- EO 13175, *Consultation and Coordination with Indian Tribal Governments*
- EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*
- EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*
- EO 14008, *Tackling the Climate Crisis at Home and Abroad*
- Department of Transportation Act, Section 4(f)

Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 U.S.C. Section 303) protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites (FAA, 2020a). Section 4(f) provides that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance or land of a historic site of national, state, or local significance, only if there is no feasible and prudent alternative to using that land and the program or project includes all possible planning to minimize harm resulting from the use. Section 4(f) applies only to agencies within the U.S. Department of Transportation. Public Law 105-85, Division A, Title X, Section 1079, November 18, 1997, exempts military flight operations and designation of airspace, such as the proposed MTR, for such operations from Section 4(f). Thus, Section 4(f) is not discussed further.

Florida-specific regulations relevant to the Proposed Action are discussed in Chapter 3 (Affected Environment and Environmental Consequences) under each of the applicable resource areas.

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2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 ALTERNATIVE DEVELOPMENT PROCESS

NEPA's implementing regulations provide guidance on the consideration of alternatives to a federal agency's proposed action and require rigorous exploration and objective evaluation of reasonable alternatives. Only those alternatives determined to be reasonable and meet the purpose and need require detailed analysis. Per the requirements of 32 CFR Part 989, the DAF EIAP regulations, selection standards are used to identify alternatives for meeting the purpose of and need for the Proposed Action.

The selection standards used to identify alternatives for establishing and maintaining an all-weather, long-range, low-altitude IR for testing and training are based on the information contained in Chapter 1 (Purpose and Need for Action) and Section 2.2 (Proposed Action – Establish a New MTR, IR-096). Based on this information, the DAF determined the Proposed Action and any alternative must meet the following selection standards:

- The route must be able to allow aircraft to test and train at altitudes below 5,000 feet MSL and at speeds above 250 KIAS.
- The route must provide a long-range transition from the Eglin Gulf Test and Training Range into the Eglin Land Test and Training Range.
- The route must be able to support F-35 and next-generation weapon system DT and OT.
- The route, to the extent practicable, should avoid heavily populated areas.
- The route, to the extent practicable, should avoid commercial/private sector airspace locations, including local airports (e.g., Northwest Florida Beaches International Airport and Wakulla County Airport).

2.2 PROPOSED ACTION – ESTABLISH A NEW MTR, IR-096

The Proposed Action is for the 96 TW to request the FAA to create a new low-altitude IR in the southeast United States to meet current OT and DT and training needs, such as a long-range transition from water to land. The point of origin would be over water on the boundary of Warning Area W-470 (Figure 2-1). From W-470, the proposed route would flow north for 22 nautical miles (NM), continuing to flow west/northwest into the DAF restricted airspace block, R-2914A. The floor of the proposed route would be 500 feet AGL, and the ceiling would be 5,000 feet MSL.

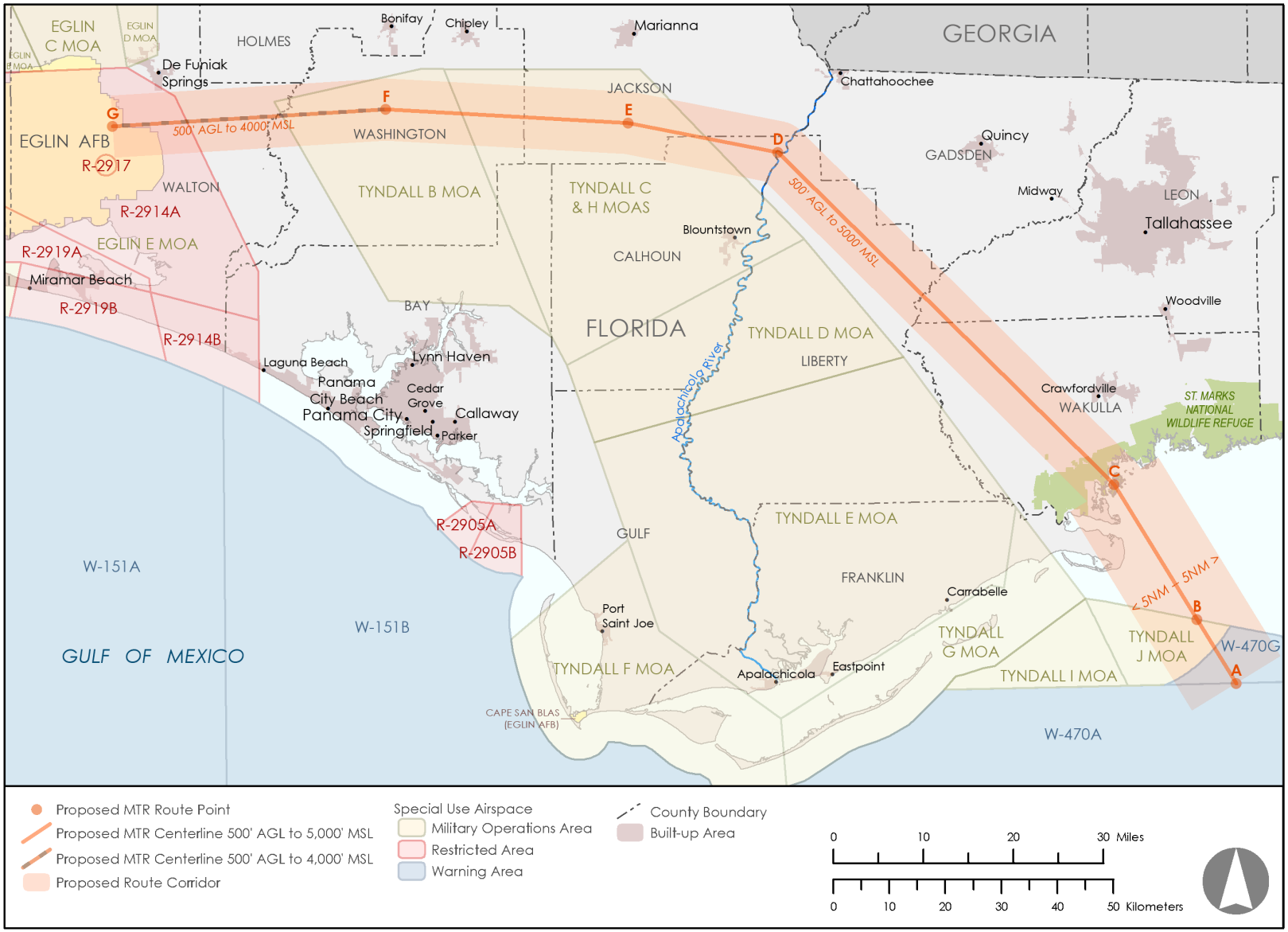

Figure 2-1. The Proposed MTR, IR-096, in Relation to Other Military Special Use Airspace in the Region

Use of the proposed MTR would be Monday through Friday between the hours of 6:00 a.m. to 5:00 p.m. Central Standard Time. The frequency of use based on the number of test requirements, student pilots in training, and pilots on proficiency flights would be approximately four to eight times monthly (one to two times per week). In addition, these missions would not use flares, chaff, or any expenditures along the route.

The Proposed Action would meet the purpose and need of conducting DT/OT with the F-35 and fifth-generation weapons, providing pilots and developing weapon systems with realistic Instrumental Meteorological Conditions flight in a transition from a water environment across the shore to low-level flight over land. The route would establish and maintain an all-weather capability for pilots to train on long-range low-altitude strike training missions.

2.2.1 Description of Proposed Route IR-096

The proposed route is depicted as points at directional changes, which join to form route segments, the details of which are provided in Table 2-1 and shown in Figure 2-1.

Table 2-1. Proposed Route Description

Segments	Parameters	Utilization Notes
A-B	500 feet AGL to 5,000 feet MSL; 5 NM left and 5 NM right	Route would originate over water and enter the littoral area over St. Marks National Wildlife Refuge.
B-C	500 feet AGL to 5,000 feet MSL; 3 NM left and 3 NM right	Crosses littoral area over St. Marks National Wildlife Refuge. Crosses Point C at or above 1,500' AGL due to noise-sensitive area. Able to descend below 1,500' AGL 4 NM past C. Avoids Wakulla County Airport at N29°59'22"/W84°23'43" by 3 NM or 1,500 feet MSL.
C-D	500 feet AGL to 5,000 feet MSL, 3 NM left and 3 NM right	Report over Point C to Tallahassee APP CON on 254.3/128.7. Climb to 1,500' AGL 2 NM prior to Point D and remain at 1,500' AGL until 6 NM past Point D to avoid a noise-sensitive area. Caution IR-019 crosses from NW to SE between Points C to D, IR-021 parallels between Points C and D.
D-E	500 feet AGL to 5,000 feet MSL; 3 NM left and 3 NM right	Pilots would report over Point D to Tyndall Approach Control. Pilots would contact the 14 TW to deconflict with IR-017, which would cross, overlap, or run parallel with the proposed route between Points D and G. Pilots would make all attempts to cross D on the centerline or the northern portion of the route.
E-F	500 feet AGL to 5,000 feet MSL, 3 NM left and 3 NM right	No notes for this segment.
F-G	500 feet AGL to 4,000 feet MSL, 3 NM left and 3 NM right	Pilots would contact the 1st Special Operations Air Operations Squadron at Hurlburt Field to deconflict with IR-059 and IR-057, which overlap the proposed route between Points D and F.

Source: (Eglin AFB, 2022)
14 TW = 14th Test Wing; 16 OSS = 16th Operational Support Squadron; AGL = above ground level; IR = Instrument Route; MSL = mean sea level; NM = nautical miles; NW = northwest; SE = southeast

2.3 ALTERNATIVE 1: CREATE A NEW ROUTE BASED ON THE ORIGINAL IR-015 MTR

Under Alternative 1, the FAA would create a new route, named IR-096, identical to the original IR-015 (Figure 2-2). Under Alternative 1, IR-096 would originate over land east of Tallahassee, Florida, and flow south into the Eglin Gulf Test and Training Range's restricted airspace (R-2914A) then back over land toward the west/northwest. Route altitudes would be principally 500 feet AGL to 5,000 feet MSL, with a corridor of 5 NM on either side of the route centerline.

Alternative 1 meets the purpose and need. It would allow aircraft to test and train at altitudes below 5,000 feet MSL and at speeds above 250 KIAS. Pilots in the Eglin Gulf Test and Training Range needing a water-to-land transition for a particular test or training scenario would enter the route between Point B and Point C (Figure 2-2). Thus, it could fully support all aspects of fifth-generation weapons testing. The frequency of use for Alternative 1 would be the same as that for the Proposed Action.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED

A route originating in W-151 and crossing over Santa Rosa, Okaloosa, and Walton Counties was considered but not carried forward for analysis. The populations of the beachfront areas (Navarre, Fort Walton Beach, Destin, and Sandestin) are expected to continue growing in the future. In addition, the area between W-151 and the Eglin Restricted Areas is highly congested with civil and general aviation aircraft. Other routes considered but dismissed are shown in Figure 2-3.

2.5 NO ACTION ALTERNATIVE

The No Action Alternative represents baseline conditions experienced if the Proposed Action or alternatives are not implemented over time. Under the No Action Alternative, there would not be a new MTR.

Future testing demands and DoD Directive 5100.1, which states one of the DAF's functions is to "organize, train, equip, and provide forces to…conduct global precision attack, to include strategic attack…and prompt global strike," would not be met.

The No Action Alternative would not advance the President's Indo-Pacific Strategy 2022. The capability to conduct DT on advanced fifth-generation weapons in an environment mimicking the Indo-Pacific region would be negated without this MTR.

2.6 IMPACT SUMMARY

Table 2-2 summarizes potential impacts to resources of the affected environment

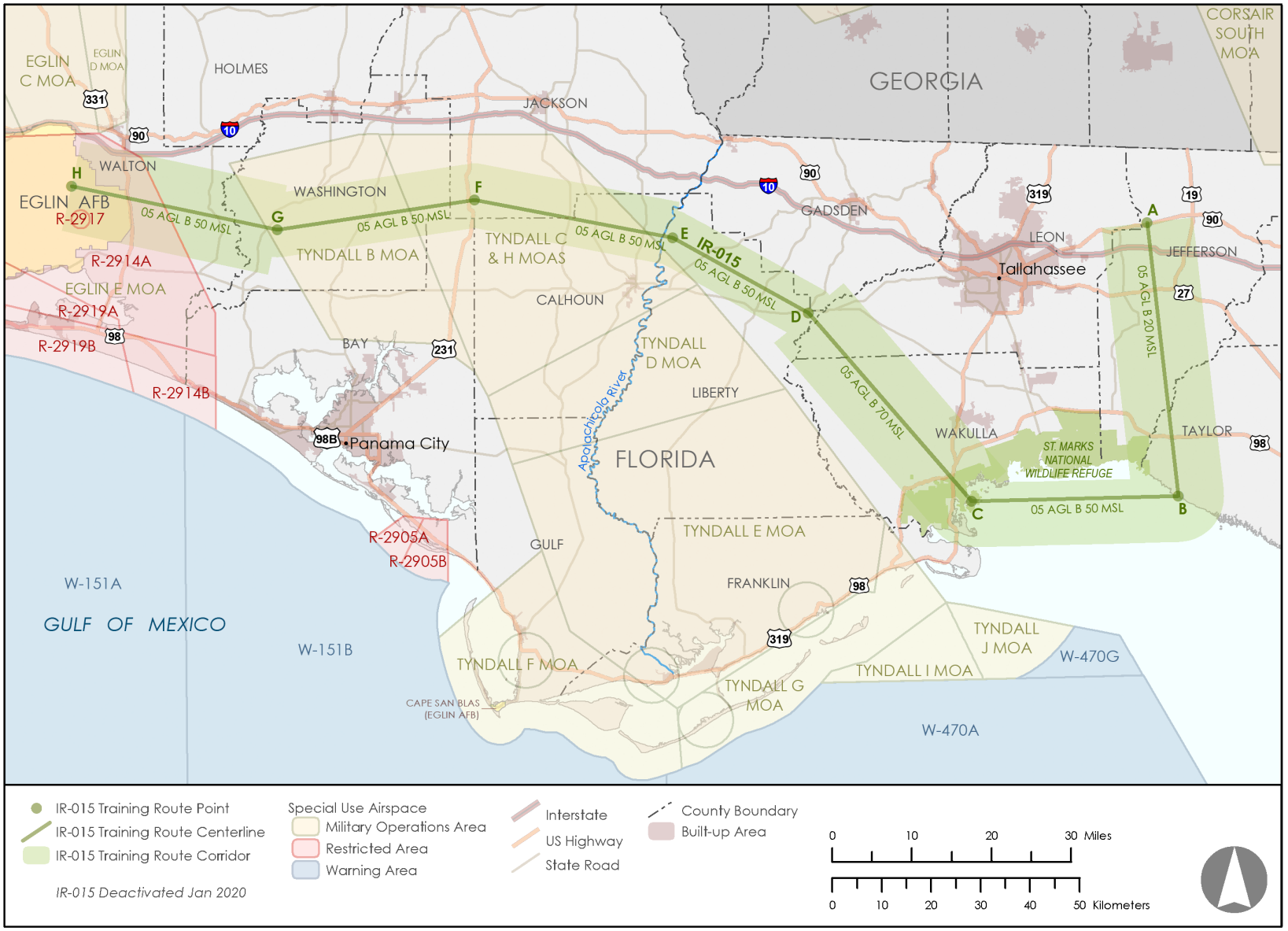

Figure 2-2. Alternative 1 – Establish a New Training Route Based on the Original IR-015

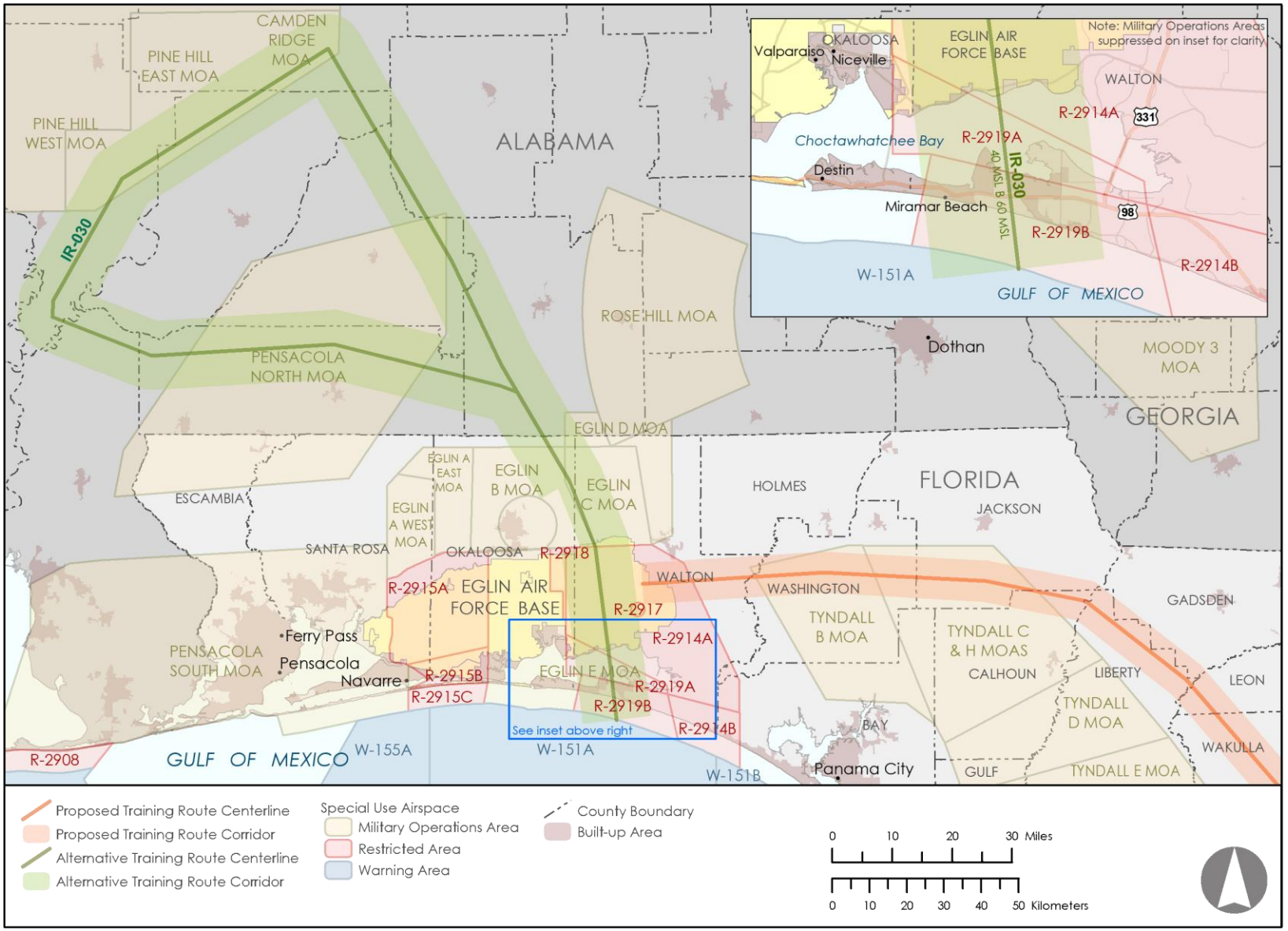

Figure 2-3. Alternatives Considered but Not Carried Forward for Analysis

Table 2-2. Potential Impact to Affected Resources

Resource	Proposed Action	Alternative 1	No Action
Air Quality	All criteria pollutant emissions would be well below the significance indicator levels. Emissions associated with the Proposed Action would not generate significant quantities of any pollutants. Therefore, there would be no significant impacts on air quality under the Proposed Action.	Criteria pollutant emissions would be slightly higher than the Proposed Action, but still well below the significance indicator levels. Emissions associated with Alternative 1 would not generate significant quantities of any pollutants, and there would be no significant impacts on air quality.	Under the No Action Alternative, there would be no change to baseline air quality.
Airspace Management	Due to the very low volume of aircraft operations within the proposed MTR, and with ATC coordination and following of utilization notes, there would be no adverse impacts on airspace management under the Proposed Action.	The proposed MTR would not adversely impact airspace operations or management in the region. Due to the very low volume of aircraft operations within the proposed MTR, and with ATC coordination and following of utilization notes, there would be no adverse impacts on airspace management under Alternative 1.	Under the No Action Alternative, no MTR would be established, and airspace operations and management would continue under current baseline conditions. There would be no impact on airspace operations or management.
Noise	Noise levels at sensitive locations within the proposed corridor would increase by as much as 2.9 dBA L_{dnmr} (2.8 dBA DNL) to as high as 51.8 dBA L_{dnmr} (51.7 dBA DNL). Levels would remain below FAA thresholds for "significant" and "reportable" impacts and would also remain below the 55-dB level identified by USEPA for the protection of public health and welfare with an adequate margin of safety. Individual overflights, which could be as loud as 116 dBA L_{max}, could be startling and/or disruptive, but would be relatively infrequent (fewer than two per average week) and would be limited to daytime hours during weekdays. Noise impacts under the Proposed Action would not be expected to be considered significant.	Noise levels at sensitive locations within the proposed corridor would increase to as high as 50.2 dBA L_{dnmr} (50.2 dBA DNL), an increase of 0.7 dBA L_{dnmr} (0.7 dB DNL). Levels would remain below FAA and USEPA thresholds. Individual overflights, which could be as loud as 116 dBA L_{max}, could be startling and/or disruptive, but would be relatively infrequent (fewer than two per average week) and would be limited to daytime hours during weekdays. Noise impacts under the Alternative 1 would not be expected to be considered significant.	No MTR would be established, ongoing military training activity would not change, and noise levels would remain as they are under baseline conditions. There would be no additional noise impacts under the No Action Alternative.
Land Use	The Proposed Action would not result in incompatible land usage. Noise levels would remain well below 65 dB DNL and would be compatible with all land use categories. Direct overflights would be infrequent (fewer than two per average week) but would potentially cause only annoyance and startle effects to humans, livestock, and wildlife. Impacts under the Proposed Action would not be expected to be considered significant.	Noise levels would remain well below 65 dB DNL and would be compatible with all land use categories. Direct overflights would be infrequent (fewer than two per average week) but would potentially cause only annoyance and startle effects to humans, livestock, and wildlife. Impacts under Alternative 1 would not be expected to be considered significant.	No MTR would be established, ongoing military training activity would not change, and noise levels would remain as they are under baseline conditions. There would be no additional land use impacts under the No Action Alternative.

Table 2-2. Potential Impact to Affected Resources

Resource	Proposed Action	Alternative 1	No Action
Health and Safety	There would be no adverse impacts to safety under the Proposed Action from obstructions, interactions with airfields, or conflicts with aircraft within other military and commercial airspace. Vertical obstructions have been noted and would be avoided. Scheduling and communication between 96 TW and other entities would deconflict route usage with other entities. Thus, the establishment of IR-096 under the Proposed Action would not have a significant adverse effect on the existing health and safety environment.	There are more safety considerations along the alternative MTR, such as a higher number of obstructions to avoid, closer proximity to the Tallahassee and Northwest Florida Beaches International Airports, and more overlap of other flight activity. However, since safety was not a significant issue when IR-015 was originally in existence, and there are no records of mishaps, safety is not expected to be significantly affected under Alternative 1.	Under the No Action Alternative, the existing safety environment would remain unchanged.
Environmental Justice	Increased noise levels from the Proposed Action would not be significant and would not result in adverse or disproportionate environmental impacts or health and safety risks to minority and low-income populations. Therefore, there would be no adverse impacts to minority, low-income, or other sensitive populations associated with implementing the Proposed Action.	Increased noise levels from Alternative 1 would not be significant and would not result in adverse or disproportionate environmental impacts or health and safety risks to minority and low-income populations. Therefore, there would be no adverse impacts to minority, low-income, or other sensitive populations associated with implementing Alternative 1.	Under the No Action Alternative, there would be no change to the existing Environmental Justice conditions.
Biological Resources	Within the proposed MTR corridor, wildlife and domestic animals exposed to overflights may experience stress and behavioral modifications with the initial increase in the soundscape in portions of the corridor and may exhibit startle responses from peak noise levels. However, exposure to overflight noise would be brief and infrequent, allowing animals periods of time between exposures to recover, and some animals would likely acclimate to the new soundscape over time. Animal communication signals may be temporarily masked by aircraft noise but would last only a few seconds. Given the low number of operations (maximum of eight times monthly) and the limitation of operations to daylight hours, combined with BASH protocols and the avoidance zones over St. Marks National Wildlife Refuge and the Apalachicola River and floodplains, the likelihood of a bird/bat/butterfly-aircraft strike is	The types of potential Impacts to wildlife and domestic animals exposed to overflights would be similar to those for the Proposed Action, but there would be the potential for effects to animals located within the additional 260,000 acres under the MTR, including new portions of the St. Marks National Wildlife Refuge and Bradwell Bay Wilderness, approximately 64,000 more acres of wildlife management areas, as well as other new conservation lands. However, exposures would last only a few seconds and average fewer than two per week. BASH protocols would be implemented so that the potential for strikes and noise impacts would be expected to be minimal if this route is created. Overall impacts to wildlife, domestic animals, federally listed species, bald eagles, and migratory birds under Alternative 1 would not reach significant levels.	No changes to the current airspace configuration or ongoing military training operations would occur under the No Action Alternative. Therefore, biological resources would be as described for baseline conditions, with no significant impacts anticipated for plants, animals, special status species, critical habitat, conservation areas, or wildlife management areas.

Table 2-2. Potential Impact to Affected Resources

Resource	Proposed Action	Alternative 1	No Action
	low. Therefore, overall impacts to wildlife, domestic animals, federally listed species, bald eagles, and migratory birds under the Proposed Action would not reach significant levels. (USFWS Section 7 consultation TBD)		
Cultural Resources	There are no known historic properties within the APE that would be expected to be directly or indirectly affected by the Proposed Action. There would be no ground-disturbing activities associated with the Proposed Action. As a result, no archeological resources would be directly or indirectly impacted by the Proposed Action. None of the 19 submerged shipwrecks would be expected to be directly or indirectly impacted by the Proposed Action. Consultation with the Native American tribes and SHPO are currently ongoing as part of this effort. All consultations shall be completed and the results incorporated into the Final EA	There are no known historic properties within the APE that would be expected to be directly or indirectly affected by Alternative 1. There would be no ground-disturbing activities associated with Alternative 1. As a result, no archeological resources would be directly or indirectly impacted by Alternative 1. Consultation with the Native American tribes and SHPO are currently ongoing as part of this effort. All consultations shall be completed and the results incorporated into the Final EA.	No adverse effects would occur to cultural resources under the No Action Alternative. There would be no new route created to support the 96 TW and F-35 tenant unit aircrew at Eglin AFB. Visual, auditory, and vibratory effects would not exceed current levels within the APE.

96 TW = 96th Test Wing; AFB = Air Force Base; APE = Area of Potential Effects; ATC = Air Traffic Control; BASH = Bird/Wildlife Aircraft Strike Hazard; dB = decibel; dBA = A-weighted decibels; DNL = day-night average sound level; EA = Environmental Assessment; FAA = Federal Aviation Administration; IR = Instrument Route; L_{dnmr} = onset rate-adjusted monthly day-night average sound level; L_{max} = maximum noise level; MTR = military training route; SHPO = State Historic Preservation Officer; TBD = to be determined; USEPA = United States Environmental Protection Agency; USFWS = United States Fish and Wildlife Service

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3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter defines each environmental resource area and describes the existing conditions within the ROI of the environmental resources potentially impacted by testing and training operations. This chapter also presents the analysis of the potential impacts associated with the Proposed Action on the affected environment. The analysis examines the potential impacts of each of the proposed alternatives on the following resource areas: air quality, airspace management, noise, land use and recreation, health and safety, environmental justice, biological resources, and cultural resources.

3.1 ISSUES NOT CARRIED FORWARD FOR DETAILED ANALYSES

Resources not impacted or not within or part of the Proposed Action or Alternative 1 were not carried forward for detailed analysis. Because the Proposed Action and Alternative 1 would involve only in-air activities constrained within proposed or alternative new MTRs, and no change to land-based or water-based activities would be expected to occur, geological resources, infrastructure and utilities, water resources, and hazardous materials and waste/debris are not included in this EA for further detailed analysis.

Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 U.S.C. Section 303I) protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. Section 4(f) provides that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance or land of a historic site of national, state, or local significance, only if there is no feasible and prudent alternative to using that land and the program or project includes all possible planning to minimize harm resulting from the use. Section 4(f) applies only to agencies within the U.S. Department of Transportation. The proposal would not require the use or modification of any publicly owned land. Military flight operations and designation of airspace for such operations are exempt from Section 4(f) (Public Law 105-85, Division A, Title X, Section 1079, November 18, 1997; FAA 1050.1F Desk Reference Version 2 [February 2020], FAA Office of Environment and Energy).

Since there would be no new personnel or construction activities associated with the Proposed Action, socioeconomic resources are also not included in this EA for further detailed analysis. Socioeconomic resources are defined as the basic attributes associated with human activities and typically include population, economic activity (i.e., employment and income), and public services. Actions that impact these socioeconomic indicators may have effects on other socioeconomic factors such as housing availability. Since there would be no incoming or departing personnel or construction activities associated with the Proposed Action, there would be no changes in population, economic activity, public services, and housing from baseline conditions and trends. Additionally, during testing and training operations, noise levels, as discussed in Section 3.4 (Noise), would remain below 55 A-weighted decibels (dBA), the average 24-hour exposure limit recommended by the U.S. Environmental Protection Agency (USEPA) to protect the public from all adverse health and welfare effects in residential areas. Therefore, socioeconomic resources are not evaluated further in this EA.

3.2 AIR QUALITY

3.2.1 Definition of the Resource

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the affected air basin, and the prevailing meteorological conditions. The CAA (42 U.S.C. Chapter 85) designates six pollutants as "criteria pollutants" for which the USEPA has established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. The criteria pollutants are carbon monoxide, sulfur dioxide, nitrogen dioxide, ozone, suspended particulate matter less than or equal to 10 microns in diameter, fine particulate matter less than or equal to 2.5 microns in diameter, and lead.

The baseline standards for criteria pollutant concentrations are the NAAQS and state air quality standards. These standards are defined in 40 CFR Part 50 and represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare. Based on measured ambient air pollutant concentrations, USEPA designates whether areas of the United States meet the NAAQS. Those areas demonstrating compliance with the NAAQS are considered "attainment" areas, while those not in compliance are known as "nonattainment" areas. Those areas that cannot be classified on the basis of available information for a particular pollutant are "unclassifiable" and are treated as attainment areas until proven otherwise.

The General Conformity Rule (GCR) (40 CFR Part 93, Subpart B) applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emissions thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year [tpy]) vary by pollutant and also depend on the severity of the nonattainment status for the air quality management area in question.

A conformity applicability analysis is the first step of a conformity evaluation and assesses if a federal action must be supported by a conformity determination. This is typically done by quantifying applicable direct and indirect emissions that are projected to result due to implementation of the federal action. If the results of the applicability analysis indicate that the total emissions would not exceed the *de minimis* emissions thresholds, then the conformity evaluation process is completed.

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. These emissions are generated by both natural processes and human activities. The accumulation of GHGs in the atmosphere regulates Earth's temperature. Climate projections for the United States indicate continued warming in all seasons, higher heat indices, increased drought, and more intense hurricanes (IPCC, 2007). USEPA has determined the combined emissions of six GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) in the atmosphere may "reasonably" be anticipated to endanger public health and welfare (Federal Register Volume 74, Number 239, December 15, 2009, 66496–66546) and, thus, should be considered pollutants covered under the CAA. Currently, there are no standards like the NAAQS for GHGs.

Per the CEQ interim guidance released in January 2023, "Agencies should exercise judgment when considering whether to apply this guidance to the extent practicable to an on-going NEPA

process." The DAF guidance on applying and conducting a Social Cost of GHG Analysis is under development. The DAF guidance will be released shortly, which will provide specifics on applying Social Cost of GHG Analyses and ensuring standardization across the DAF. Therefore, no Social Cost of GHG Analysis should be conducted for EAs and EISs that are currently ongoing.

3.2.1.1 Analysis Methodology

To evaluate air emissions and their impact on the overall ROI, the emissions associated with the project activities were calculated on a pollutant-by-pollutant basis for proposed aircraft operations in the proposed and alternative MTRs.

The analysis of proposed aircraft operations is limited to operations that would occur within the lowest part of the atmosphere known as the mixing layer, because this is where the release of aircraft emissions would affect ground-level pollutant concentrations. In general, aircraft emissions released above the mixing layer would not appreciably affect ground-level air quality. In accordance with the GCR (40 CFR Part 93, Subpart B), where the applicable State Implementation Plan (SIP) or Transportation Implementation Plan does not specify a mixing height, the federal agency can use 3,000 feet (914 meters) AGL as a default mixing height. Since the Florida SIP does not specify mixing heights, the analysis used 3,000 feet AGL as a default mixing height at both alternative locations. Additionally, the analysis did not estimate emissions for proposed aircraft operations within airspaces or training areas above 3,000 feet AGL.

GHGs were included in the analysis. GHGs were calculated for all operations within the MTR regardless of height since the mixing layer is not applicable to GHGs and their associated impacts. The primary source of carbon dioxide emissions would be fuel combustion from aircraft emissions during training activities. Air quality calculations are provided in Appendix A (Air Quality Calculations).

In accordance with Air Force Manual (AFMAN) 32-7002, total net direct and indirect emissions associated with the anticipated usage of the Proposed Action new MTR were estimated using the DAF's Air Conformity Applicability Model (ACAM) (version 5.0.18a) on a calendar-year basis for the start of the action through achievement of "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emissions estimation techniques available including algorithms, emission factors, and methodologies (Air Force Civil Engineer Center, 2020a; Air Force Civil Engineer Center, 2020b).

3.2.1.2 Significance Determination

Because the study area is classified as being in attainment for all pollutants, "insignificance indicators" were used for comparison. Although not applicable in a regulatory capacity, these indicators provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the NAAQS. These insignificance indicators are the 250-tpy Prevention of Significant Deterioration major source threshold for actions occurring in "Clearly Attainment" (i.e., not within 5 percent of any NAAQS) areas and the GCR de minimis values (25 tpy for lead and 100 tpy for all other criteria pollutants) for actions occurring in "Near Nonattainment" (i.e., within 5 percent of any NAAQS) areas. These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant the action will not cause or contribute to an exceedance on one or more NAAQS. For further detail on insignificance indicators,

see Chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II – Advanced Assessments (DAF, 2020).

3.2.2 Affected Environment

An air emissions inventory qualitatively and quantitatively describes the amount of emissions from a facility or within an area. Emissions inventories are designed to locate pollution sources, define the type and size of the sources, characterize emissions from each source, and estimate total mass emissions generated over a period of time, normally a year. Inventory data establish relative contributions to air pollution concerns by classifying sources and determining the adequacy as well as the necessity of air regulations.

Criteria Pollutants

For comparison purposes, Table 3-1**Error! Reference source not found.**Table 3-1 presents USEPA's 2017 National Emissions Inventory (NEI) data for Bay, Calhoun, Franklin, Gadsden, Jackson, Leon, Liberty, Taylor, Wakulla, Walton, and Washington Counties (USEPA, 2022a). The county data include emissions from point sources, area sources, and mobile sources. Point sources are stationary sources identifiable by name and location. Area sources are point sources whose emissions are too small to track individually, such as a home or small office building or a diffuse stationary source, such as wildfires or agricultural tilling. Mobile sources are any kind of vehicle or equipment with gasoline or diesel engine, an airplane, or a ship. Two types of mobile sources are considered: on-road and nonroad. On-road mobile sources consist of vehicles such as cars, light trucks, heavy trucks, buses, engines, and motorcycles. Nonroad sources are aircraft, locomotives, diesel and gasoline boats and ships, personal watercraft, lawn and garden equipment, agricultural and construction equipment, and recreational vehicles.

Table 3-1. Baseline Emissions Inventory for Counties Underlying the Proposed MTR

County	Emissions (tpy)					
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC
Bay County	35,227	7,330	4,958	2,119	1,214	29,099
Calhoun County	7,908	698	1,016	475	39	19,381
Franklin County	53,179	1,716	5,371	4,296	452	32,420
Gadsden County	32,334	3,679	4,616	2,664	254	22,789
Jackson County	18,279	2,933	4,558	1,657	142	19,590
Jefferson County	38,264	2,111	4,927	3,134	304	26,841
Leon County	65,873	5,159	8,585	4,374	392	32,693
Liberty County	19,282	1,047	1,915	1,497	182	32,170
Taylor County	17,249	3,962	1,838	1,039	1,593	35,660
Wakulla County	23,315	1,300	2,323	1,669	163	27,300
Walton County	26,062	3,011	3,986	1,490	105	30,654
Washington County	9,379	2,125	1,059	470	40	18,245
ROI Total	**346,351**	**35,071**	**45,152**	**24,884**	**4,880**	**326,842**

Source: (USEPA, 2022a)

CO = carbon monoxide; MTR = military training route; NO_x = nitrogen oxides; PM_{10} or $_{2.5}$ = particulate matter less than or equal to 10 microns (or 2.5 microns) in diameter; ROI = region of influence; SO_x = sulfur oxides; tpy = tons per year; VOC = volatile organic compound

To identify impacts, calculated air emissions were compared with the annual total emissions of the ROI as represented in the 2017 NEI. All of the affected counties are in attainment for all criteria pollutants (USEPA, 2022b). The air quality analysis focused on emissions associated with aircraft operations within the proposed MTR.

Greenhouse Gases

The six primary GHGs are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Only emissions of carbon dioxide, methane, and nitrous oxide are considered in this EA; the other constituents do not apply. Each GHG has an estimated global warming potential, which is a function of its atmospheric lifetime and its ability to absorb and radiate infrared energy emitted from the Earth's surface.

Hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride are produced in relatively very small quantities and most often by very specific niche industries, such as electronic component manufacturing, so carbon dioxide, methane, and nitrous oxide are the primary GHGs of concern. For the purposes of this EA, GHGs have been calculated and analyzed in terms of carbon dioxide equivalent (CO_2e), which is a term that describes various GHGs in a common unit based on the amount of carbon dioxide that would have the equivalent warming potential.

3.2.2.1 Summary of Air Quality

The counties underlying the Proposed Action new MTR serve as the ROI for the establishment of the proposed route and subsequent aircraft operations. Table 3-2 provides the summary of baseline ROI annual emissions. GHGs are presented as CO_2e.

Table 3-2. Summary ROI Baseline Emissions Inventory

	Emissions (tpy)						
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOCs	CO_2e
ROI Emissions	346,351	35,071	45,152	24,884	4,880	326,842	17,329,015

Source: (USEPA, 2022a)
CO = carbon monoxide; CO_2e = carbon dioxide equivalent; NO_x = nitrogen oxides; PM_{10} or $_{2.5}$ = particulate matter less than or equal to 10 microns (or 2.5 microns) in diameter; ROI = region of influence; SO_x = sulfur oxides; tpy = tons per year; VOC = volatile organic compound

3.2.3 Environmental Consequences

3.2.3.1 Proposed Action

Total combined direct and indirect emissions associated with the Proposed Action (aircraft operations in the proposed new MTR) were estimated through ACAM on a calendar-year basis for the "steady-state" (net gain/loss upon action fully implemented) emissions. Table 3-3 provides the net emissions for the Proposed Action compared against the significance indicator levels. There are currently no thresholds for GHGs, so GHG emissions are provided (as CO_2e) for consideration in decision-making only.

Table 3-3. Proposed Action Flight Operation Emissions

	CO (tpy)	NO_x (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_x (tpy)	VOC (tpy)	Pb (tpy)	CO_2e (tpy)
Proposed Action Emissions	0.10	6.50	0.29	0.26	0.29	0.03	0.00	949
Significance Indicator	250	250	250	250	250	250	25	—
Exceedance?	No	No	No	No	No	No	No	—

CO = carbon monoxide; CO_2e = carbon dioxide equivalent; NO_x = nitrogen oxides; Pb = Lead; PM_{10} or $_{2.5}$ = particulate matter less than or equal to 10 microns (or 2.5 microns) in diameter; SO_x = sulfur oxides; tpy = tons per year; VOC = volatile organic compound

All criteria pollutant emissions would be well below the significance indicator levels. General Conformity applicability assessment is not necessary since the study area is in attainment for all criteria pollutants. See Appendix A (Air Quality Calculations) for the Record of Air Analysis and ACAM analysis.

Climate change presents a global problem caused by increasing concentrations of GHG emissions. Global warming, projected to increase 1.5 degrees Celsius (°C) in the near term, would cause unavoidable increases in multiple climate hazards and present multiple risks to ecosystems and humans. Near-term warming and increased frequency, severity, and duration of extreme events will place many ecosystems at high or very high risk of biodiversity loss. Biodiversity loss and degradation and damages to and transformation of ecosystems are already key risks for every region, due to past global warming, and will continue to escalate with every increment of global warming in the mid to long term. Climate change risks to cities, settlements, and key infrastructure will rise rapidly in the mid and long term with further global warming, especially in places already exposed to high temperatures, along coastlines, or with high vulnerabilities. Multiple climate hazards will occur simultaneously, and multiple climatic and non-climatic risks will interact, resulting in compounding overall risk and risks cascading across sectors and regions. Some responses to climate change result in new impacts and risks (IPCC, 2022).

While the emissions generated from the increased aircraft operations associated with the Proposed Action alone would not be enough to cause global warming, in combination with past and future emissions from all other sources, they would contribute incrementally to the global warming that produces the adverse effects of climate change.

Emissions associated with the Proposed Action would not generate significant quantities of any pollutants. Therefore, there would be no significant impacts on air quality under the Proposed Action.

3.2.3.2 Alternative 1

Total combined direct and indirect proposed aircraft operation emissions associated with Alternative 1 were estimated through ACAM on a calendar-year basis for the "steady-state" (net gain/loss upon action fully implemented) emissions. Table 3-4 provides the net emissions for the Proposed Action compared against the significance indicator levels. There are currently no thresholds for GHGs, so GHG emissions are provided (as CO_2e) for consideration in decision-making only.

Table 3-4. Alternative 1 Flight Operation Emissions

	CO (tpy)	NO_x (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_x (tpy)	VOC (tpy)	Pb (tpy)	CO_2e (tpy)
Alternative 1 Emissions	0.12	8.06	0.36	0.32	0.35	0.03	0.00	1,168
Significance Indicator	250	250	250	250	250	250	25	—
Exceedance?	No	No	No	No	No	No	No	—

CO = carbon monoxide; CO_2e = carbon dioxide equivalents; NO_x = nitrogen oxides; Pb = Lead; PM_{10} or $_{2.5}$ = particulate matter less than or equal to 10 microns (or 2.5 microns) in diameter; SO_x = sulfur oxides; tpy = tons per year; VOC = volatile organic compound

All criteria pollutant emissions would be well below the significance indicator levels. General Conformity applicability assessment is not necessary since the study area is in attainment for all

criteria pollutants. See Appendix A (Air Quality Calculations) for the Record of Air Analysis and ACAM analysis.

Climate change presents a global problem caused by increasing concentrations of GHG emissions. Global warming, projected to increase 1.5 °C in the near term, would cause unavoidable increases in multiple climate hazards and present multiple risks to ecosystems and humans. Near-term warming and increased frequency, severity, and duration of extreme events will place many ecosystems at high or very high risk of biodiversity loss. Biodiversity loss and degradation and damages to and transformation of ecosystems are already key risks for every region, due to past global warming, and will continue to escalate with every increment of global warming in the mid to long term. Climate change risks to cities, settlements, and key infrastructure will rise rapidly in the mid and long term with further global warming, especially in places already exposed to high temperatures, along coastlines, or with high vulnerabilities. Multiple climate hazards will occur simultaneously, and multiple climatic and non-climatic risks will interact, resulting in compounding overall risk and risks cascading across sectors and regions. Some responses to climate change result in new impacts and risks (IPCC, 2022).

While the emissions generated from the increased aircraft operations associated with Alternative 1 alone would not be enough to cause global warming, in combination with past and future emissions from all other sources, they would contribute incrementally to the global warming that produces the adverse effects of climate change.

Emissions associated with Alternative 1 would not generate significant quantities of any pollutants, and there would be no significant impacts on air quality.

3.2.3.3 No Action Alternative

Under the No Action Alternative there would be no change to baseline air quality. Therefore, no significant impacts to air quality or air resources would occur with implementation of the No Action Alternative.

3.2.3.4 Cumulative Impacts

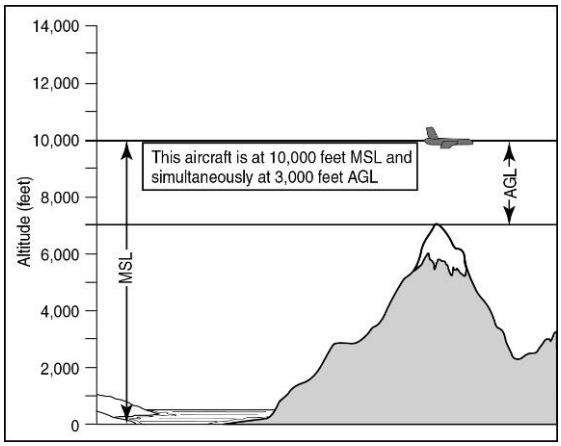
Projects occurring within the ROI associated with construction, transportation, or other activities that include combustion of fossil fuels would produce emissions that would be additive to those produced by implementation of the Proposed Action. In terms of short-term cumulative impacts, the Proposed Action and other projects could produce short-term additive amounts of emissions if they are concurrent. However, air emissions were evaluated and considered insignificant for the region. The addition of the small increases in aircraft emissions associated with this Proposed Action would not be sufficient to elevate the total cumulative air emissions to a significant impact. Projects associated with construction activities, once completed, would have only negligible long-term air quality. The increased air emissions associated with the Proposed Action would not be sufficient to elevate total cumulative air emissions beyond a negligible level.

3.3 AIRSPACE MANAGEMENT

3.3.1 Definition of the Resource

Chapter 1 (Purpose and Need for Action) and Chapter 2 (Description of Proposed Action and Alternatives) describe the Proposed Action for the 96 TW to seek a new MTR IR in the southeast United States to meet current needs, including terrain masking/maneuvering and a water-to-land transition. This section focuses on how those operations and other related military and civilian airspace uses are managed and controlled within the affected environment.

The nation's airspace is structured, regulated, and managed by the FAA to safely accommodate both the individual and common needs of all commercial, general, and military aviation. The FAA has the authority for creating or modifying airspace, such as the Proposed Action. The following subsection describes the airspace categories and classifications of the National Airspace System as it applies to the area of interest.



This discussion refers to altitudes in terms of AGL and MSL, where AGL represents a distance from the ground below a flight and MSL is based on the altitude of a flight above average sea level. The image to the right illustrates how AGL and MSL relate to each other. AGL is used where distance from the underlying terrain is of more concern.

Airspace Classification

The FAA categorizes the National Airspace System as either controlled or uncontrolled based on the complexity, density, and nature of air traffic and the level of safety required within any given area. Controlled airspace in which most air traffic operates is categorized as either Class A, B, C, D, or E (Figure 3-1). Class E and Class G are most relevant to this airspace environment and the Proposed Action.

In controlled airspace, FAA regulations dictate required pilot qualifications, rules of flight, and aircraft equipment necessary to operate within each class. Uncontrolled airspace (Class G) exists outside the other classes and is not normally regulated in any way (AirNav, LLC., 2022; FAA, 2022a).

Class A airspace begins at 18,000 feet MSL (also known as Flight Level 180, or FL180), up to and including 60,000 feet MSL (FL600). Operations within Class A airspace must be conducted under Instrument Flight Rules (IFR). This airspace includes Jet Routes used for en route IFR air traffic, SUA that may extend upward into Class A airspace, and Air Traffic Control Assigned Airspaces (ATCAAs), such as exists for the Eglin AFB Range Complex. Class B, C, and D areas are established around airports having an operational control tower. The designated class depends on the individual air traffic and flight safety needs of each airport. Class B is established at the nation's busiest airports. Class C surrounds most commercial airports.

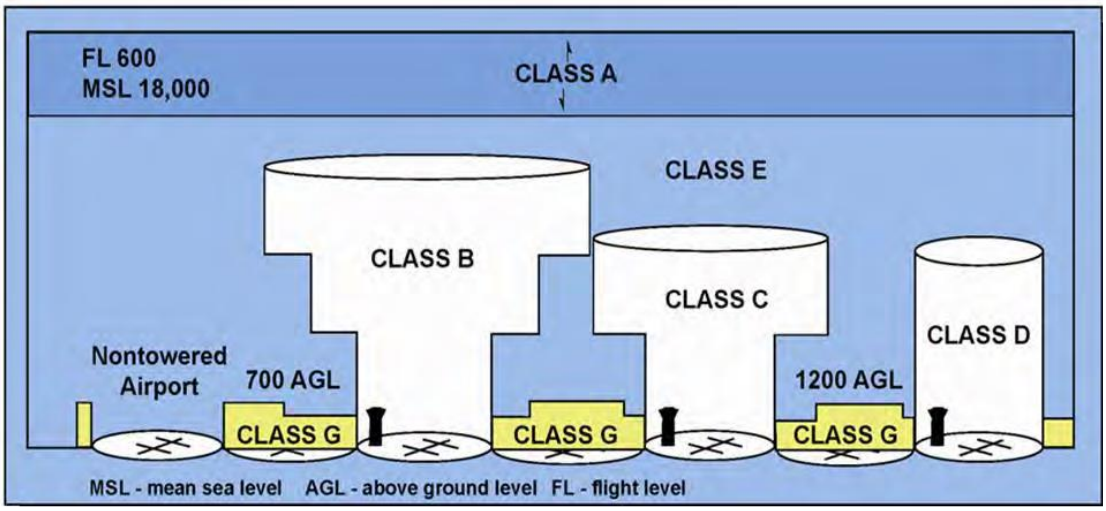


Figure 3-1. Controlled and Uncontrolled Airspace Categories

Class E airspace is controlled airspace not classified as Class A, B, C, or D. Class E airspace encompasses most of the nation's airspace below 18,000 feet MSL (FL180) in both airfield and en route air traffic environments. Different Class E types are designated for airspace that adjoin Class B, C, or D airspace, beginning at the ground surface or at 700 feet AGL (Type E5) or 1,200 feet AGL (Type E6), as needed, to extend the airspace containing the airfield's published instrument approaches.

Class G airspace is uncontrolled, uncharted airspace existing in those less-used air traffic areas where the controlled airspace classes are not designated. Air Traffic Control (ATC) services are not generally provided in Class G airspace. Aircraft operating under Visual Flight Rules (VFR) in this class follow FAA standard "see-and-avoid" procedures, which all pilots, including military, must use in any airspace environment as discussed further in the airspace discussions.

3.3.1.1 Analysis Methodology

The airspace analysis examined the potential effects that military operations may have on the current airspace uses within the ROIs of the Proposed Action and Alternative 1 (Chapter 2, Description of Proposed Action and Alternatives). Potential impacts to airspace operations and management would depend on the different airspace uses in the affected area and the effect of the Proposed Action on nonparticipating IFR and VFR air traffic, as well as ATC and other agency responsibilities for managing airspace uses. The primary objective for everyone involved is to ensure this airspace is structured and managed in a safe, efficient, and secure manner for all civilian and military air traffic. This EA examines any conditions that potentially could adversely affect that objective. Airport exclusion areas for the Proposed Action are defined as 1,500 feet AGL and 3 NM at each airport as per FAA Order JO 7400.2N, Section 25-1-4.

MOAs are unrestricted airspace for nonhazardous military flight activities where the floor may extend below 1,200 feet AGL if doing so would not adversely affect other civil aviation airspace uses.

3.3.1.2 Significance Determination

An action would be determined to have a significant impact on airspace operations and management if the Proposed Action would adversely impact nonparticipating IFR and VFR air traffic, and/or ATC and other agency responsibilities for managing airspace uses. An impact would be significant if it would prevent the airspace from being structured and managed in a safe, efficient, and secure manner for all civilian and military air traffic.

3.3.2 Affected Environment

The affected airspace environment includes the MOAs, ATCAAs, and MTRs within and adjacent to the proposed MTR. Such uses include public and private airport operations and air transit routes. Also addressed, as applicable, are the airspace constraints and FAA-registered obstacles (towers) within this area of interest.

3.3.2.1 Military Operations Areas

Management Responsibilities

The Eglin C, D, and E MOAs are shown in Figure 2-1 and Figure 2-2. These MOAs are situated at the west end of the proposed corridor and Alternative 1 corridor. Additionally, Tyndall B, C, and H MOAs overlap the central portion of both routes. Tyndall J MOA and Warning Area W-470-G overlap the southeastern portion of the proposed MTR.

A MOA is designated airspace separating military training activities from IFR aircraft. VFR aircraft are not restricted from operating within an active MOA where both those pilots and the military use FAA standard see-and-avoid procedures to maintain a safe distance from each other.

The Eglin AFB Range Complex airspace and range uses are scheduled, coordinated, and controlled by the responsible Eglin AFB functions per the local procedures noted above for the Regulatory Framework. The Eglin AFB Airspace and Range Scheduling function schedules and coordinates the airspace uses with the base, other AF users, U.S. Navy, and other users. The Radio Detection and Ranging (RADAR) Approach Control (RAPCON) provides RADAR ATC services to all IFR traffic within the airspace area delegated to RAPCON by the FAA Jacksonville ARTCC ("Jacksonville Center"). Jacksonville Center is responsible for the airspace of north Florida and parts of adjacent states, to include all SUAs.

For everyone involved, flight safety is of utmost importance in how this airspace is used, managed, and controlled. Pilot situational awareness and Military Assumes Responsibility for Separation of Aircraft (MARSA) efforts provide a safe operating distance from other military aircraft, nonparticipating aircraft, and the MOA boundaries during training maneuvers. Responsibilities outlined in FAA Order JO 7400.2N, Procedures for Handling Airspace Matters, and DAF Manual 13-201, Airspace Management, include coordinating with public and private interests and agencies to support airspace and range requirements. DAF Manual 13-201 also addresses participation in the Midair Collision Avoidance Program, which helps inform the local civil aviation community of mission flight activities and the locations and times when those activities occur. Such ongoing interactions help promote a safe flying environment for both military and civil aviation pilots.

Other Airspace Uses

Other airspace uses in the affected environment include the public and private airports discussed below and IFR air transit routes running adjacent to the Eglin AFB Range Complex and Tyndall AFB MOAs. Transit routes generally consist of Federal Airways, Jet Routes, and Area Navigation (RNAV) Routes. Air traffic operating along those transit routes in this region are under Jacksonville Center's control and separated from active MOA and ATCAA operations.

Flight Constraints and Obstacles

Figure 3-2 and Figure 3-3 identify the different flight constraint areas beneath the proposed and alternative MTRs. Most of these constraints have lateral and or vertical flight restrictions pilots observe during mission activities. Military pilots are informed ahead of time about these and any other flight conditions they need to be aware of during their flights.

Obstacles such as communications towers, antennas, wind turbines, and other structures that may affect navigable airspace are evaluated by the FAA according to the standards and criteria outlined in 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace. An obstacle may have an adverse effect on VFR air navigation if its height is greater than 200 feet above the surface at its site. The DAF is also a member of the DoD Siting Clearinghouse that involves a collaborative process for evaluating potential impacts of proposed windfarm sitings near DoD airfields and training ranges, and in areas used for military flight operations. This process includes exploring mitigation options to support renewable energy initiatives while being compatible with DoD test and training mission activities. The FAA will notify military airspace managers of any new proposals that may affect military operations and airspace uses. Any obstacles taller than the different criteria for airport and off-airport environments must meet specific lighting, charting and notice, and other requirements to ensure a safe airspace operating environment for all military and civilian aircraft.

There are 13 obstacles in the Alternative 1 corridor that exceed a height of 400 feet AGL. There are three obstacles in the proposed corridor that exceed a height of 400 feet AGL. Pilots are briefed on any existing or new obstructions/obstacles that may pose a risk to flight safety in any low-altitude training environment. Therefore, these obstacles are not considered an issue for the Proposed Action.

3.3.2.2 Military Training Routes

MTRs are corridors generally established below 10,000 feet MSL for conducting low-altitude navigation training at speeds in excess of 250 knots (about 288 miles per hour). MTRs consist of a sequence of segments where each one has defined floor/ceiling altitude limits with lateral nautical-mile limits left and right of centerline. That is, MTR segments have very specific floors, ceilings, and widths. MTRs are established as IRs or Visual Routes based on the associated visual/instrument rules governing their use. These routes are fully described in a DoD Flight Information Publication along with special operating procedures and any flight restrictions pilots must observe while operating along these routes. MTRs are also shown on aeronautical charts for awareness of their locations and times of use are publicized via Notices to Airmen to help inform VFR pilots of their scheduled utilization.

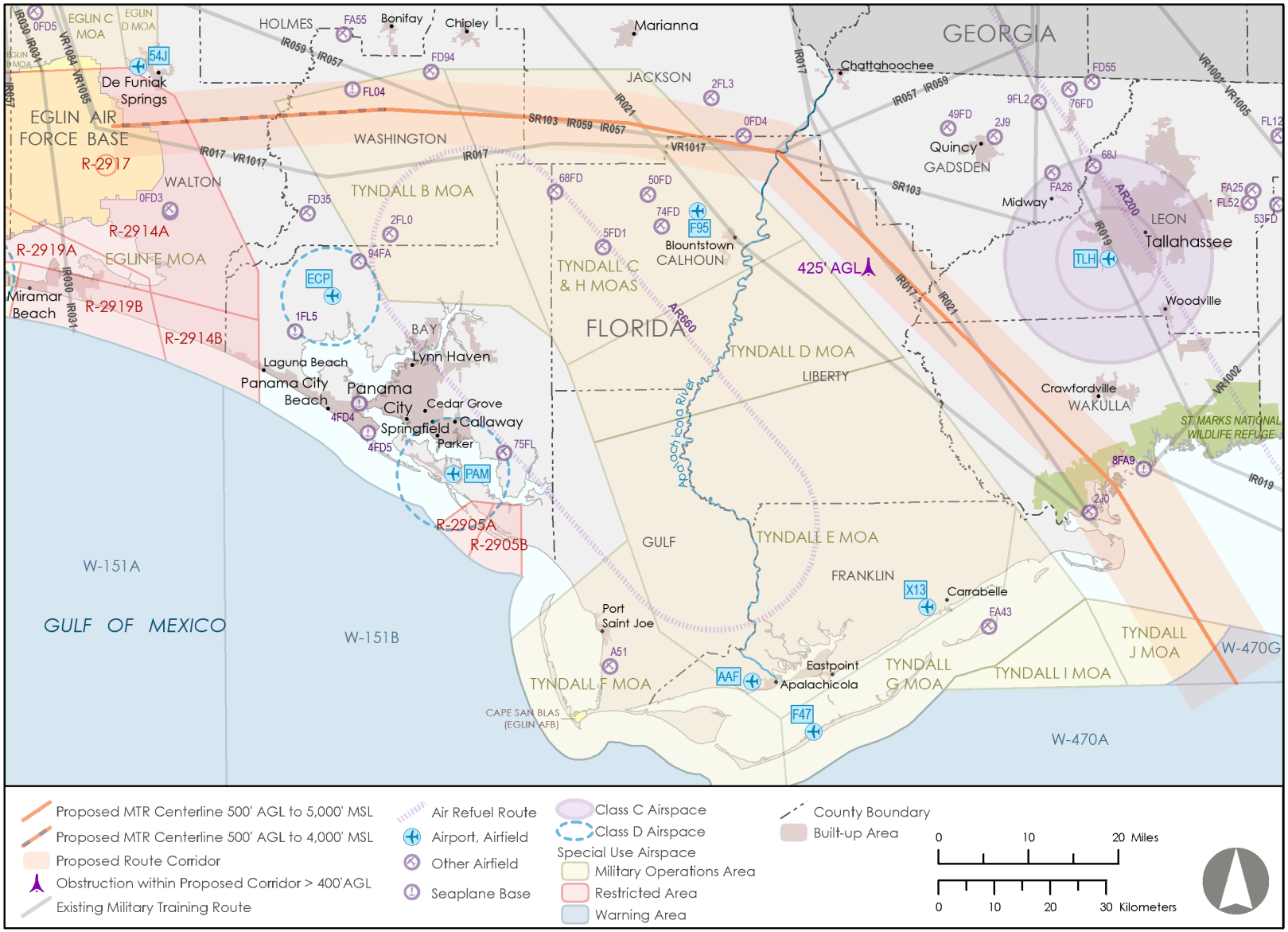


Figure 3-2. Proposed Action Airspace Affected Environment

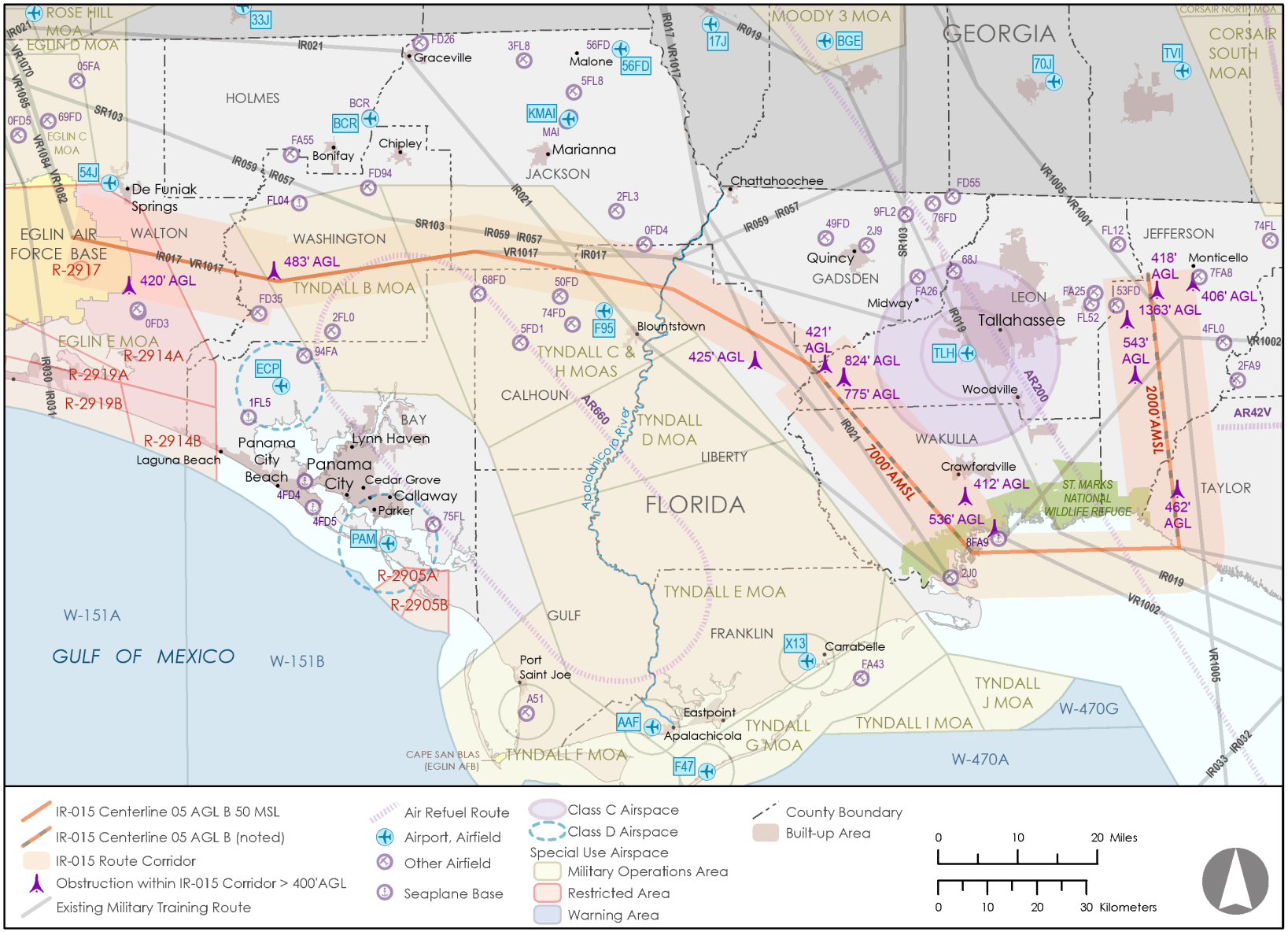


Figure 3-3. Alternative 1 Airspace Affected Environment

There are several other MTRs that overlap, parallel, or intersect the Proposed Action and Alternative 1 routes. Routes IR-017, IR-021, IR-057, IR-059, SR-103, VR-1002, and VR-1017 occur within the proposed IR-096 corridor, and all of these plus IR-019, VR-1001, and VR-1005 occur within the Alternative 1 corridor.

Pilots would deconflict air traffic in these MTRs through coordination with Tyndall Approach Control and the 16th Operational Support Squadron (16 OSS) at Hurlburt Field.

Training flights already occur down to 100 feet AGL along those MTRs. Several different Visual Routes or IRs follow the same centerline in the same or opposite directions. These individual routes are scheduled and used independently or in conjunction with mission activities. No changes are currently planned for any existing MTRs.

3.3.2.3 Air Traffic Control Assigned Airspace

An ATCAA is uncharted airspace frequently structured and used to extend the vertical limits of MOA boundaries where higher-altitude flight activities are conducted. Because the ceiling for the proposed IR-096 and Alternative 1 route would be below 7,000 ft AGL, ATCAAs would not be impacted. No changes are proposed for the existing ATCAAs.

3.3.2.4 Airports

The known public and private airports located beneath and near the boundaries of the Proposed Action and Alternative 1 are shown in Figure 3-2 and Figure 3-3 and listed in Table 3-5 and Table 3-6.

Many of these airports are FAA basic role, general aviation airports where they are unattended and do not have a control tower, navigational aids, instrument approach capabilities, or onsite fuel or other aviation services. Provisions for enabling public access to these airports have been established, as necessary and appropriate, to meet requirements in FAA Order JO 7400.2, *Procedures for Handling Airspace Matters*, for MOAs extending below 1,200 feet AGL over public and private airports.

Table 3-5 and Table 3-6 notes the published average annual operations conducted at the public airports. These uses may not be considered reflective of their less typical use by VFR general aviation aircraft (AirNav, LLC., 2022). No data is available for any other VFR air traffic that may fly through the affected area while en route between other airports in this greater region.

Considering the limited airport operations in this more remote environment, VFR air traffic levels within the affected airspace area are considered low density. Exclusion areas for the public airports for the Proposed Action are defined as 1,500 feet AGL and 3 NM at each airport as per FAA Order JO 7400.2N, Section 25-1-4. Military pilots will maintain a safe operating distance from each airport as necessary if and when operating in their vicinity.

1 **Table 3-5. Public and Private Airports in Area of Interest for the Proposed Action**

Type	Name	ID	Within MTR Corridor	Within 3 NM of MTR Corridor	Location	Airport Use	Avg Annual Operations
Airport, Airfield	Calhoun County Airport	F95	-	-	5 Miles NW of Blountstown, FL	Public	1,976
	Cattle Creek Ranch Airport	50FD	-	-	5 Miles SW of Altha, FL	Private	-
	Clarksville Airport	74FD	-	-	2 Miles N of Clarksville, FL	Private	-
	Crystal Village Airport	2FL0	-	-	20 Miles SW of Wausau, FL	Private	-
	DeFuniak Springs Airport	54J	-	Yes	2 Miles W of DeFuniak Springs, FL	Public	17,885
	Dugger Field	0FD3	-	-	3 Miles E of Freeport, FL	Private	-
	Folsom Airport	2FL3	-	Yes	3 Miles S of Cypress, FL	Private	-
	Garner Field	FA55	-	-	5 Miles E of Bonifay, FL	Private	-
	Hartzog Field	FD94	-	Yes	5 Miles SW of Chipley, FL	Private	-
	Maran Airport	68FD	-	-	4 Miles NE of Fountain, FL	Private	-
	Marianna Municipal Airport	MAI	-	-	4 Miles NE of Marianna, FL	Public	28,105
	Northwest Florida Beaches International Airport	ECP	-	-	16 Miles NW of Panama City, FL	Public	70,445
	Redhead Airport	FD35	-	-	4 Miles NE of Ebro, FL	Private	-
	Ron Wood Airport	5FD1	-	-	7 Miles E of Clarksville, FL	Private	-
	Tri-County Airport	BCR	-	-	6 Miles NE of Bonifay, FL	Public	-
	Wakulla County Airport	2J0	Yes	Yes	3 Miles S of Panacea, FL	Public	2,392
	Watson Farm Airport	49FD	-	-	3 Miles E of Quincy, FL	Private	-
	Yoder Field	0FD4	Yes	Yes	10 Miles N of Blountstown, FL	Private	-
Seaplane	Pate Lake Seaplane Base	FL04	Yes	Yes	6 Miles SE of Caryville, FL	Private	-
	Seashell Seaplane Base	8FA9	Yes	Yes	9 Miles SE of Crawfordville, FL	Private	-

Avg = average; E = east; FL = Florida; ID = identification; IR = Instrument Route; MTR = military training route; N = north; NE = northeast; NM = nautical miles; NW = northwest; S = south; SE = southeast; SW = southwest; W = west

Notes:

1. Air facilities listed are within 10 NM of the proposed IR-096 corridor.
2. Heliports are not listed.
3. Avg annual operations are derived from AirNav where available, expressed in annual counts (http://www.airnav.com/airports/).

Table 3-6. Public and Private Airports in Area of Interest for Alternative 1

Type	Name	ID	Within MTR Corridor	Within 3 NM of MTR Corridor	Location	Airport Use	Avg Annual Operations
Airport, Airfield	Angel's Field	FL52	-	Yes	11 Miles E of Tallahassee, FL	Private	-
	Black Creek Pass Airport	FA25	-	Yes	12 Miles SW of Tallahassee, FL	Private	-
	Calhoun County Airport	F95	-	Yes	5 Miles NW of Blountstown, FL	Public	1,976
	Cattle Creek Ranch Airport	50FD	-	Yes	5 Miles SW of Altha, FL	Private	-
	Charlotte's Field	53FD	Yes	Yes	19 Miles W of Tallahassee, FL	Private	-
	Clarksville Airport	74FD	-	Yes	2 Miles N of Clarksville, FL	Private	-
	Crystal Village Airport	2FL0	-	-	20 Miles SW of Wausau, FL	Private	-
	DeFuniak Springs Airport	54J	-	Yes	2 Miles W of DeFuniak Springs, FL	Public	17,885
	Dugger Field	0FD3	-	Yes	3 Miles E of Freeport, FL	Private	-
	Folsom Airport	2FL3	-	-	3 Miles S of Cypress, FL	Private	-
	Garner Field	FA55	-	-	5 Miles E of Bonifay, FL	Private	-
	Hartzog Field	FD94	-	-	5 Miles SW of Chipley, FL	Private	-
	Ingalls Field	FL12	-	-	1 Mile SE of Miccosukee, FL	Private	-
	Lakeview Airstrip	7FA8	-	Yes	1 Mile SSE of Monticello, FL	Private	-
	Maran Airport	68FD	-	Yes	4 Miles NE of Fountain, FL	Private	-
	Mount Olive Farm Airport	2FA9	-	-	3 Miles SE of Lamont, FL	Private	-
	Northwest Florida Beaches International Airport	ECP	-	-	16 Miles NW of Panama City, FL	Public	70,445
	Redhead Airport	FD35	Yes	Yes	4 Miles NE of Ebro, FL	Private	-
	Ron Wood Airport	5FD1	-	-	7 Miles E of Clarksville, FL	Private	-
	Stock Island Airport	94FA	-	-	16 Miles N of Panama City, FL	Private	-
	Tallahassee International Airport	TLH	-	-	4 Miles SW of Tallahassee, FL	Public	983,310
	Turkey Scratch Plantation Airport	4FL0	-	Yes	2 Miles S of Lamont, FL	Private	-
	Unicorn Place Airport	69FD	-	-	10 Miles NW of DeFuniak Springs, FL	Private	-
	Wakulla County Airport	2J0	Yes	Yes	3 Miles S of Panacea, FL	Public	2,392
	Yoder Field	0FD4	-	Yes	10 Miles N of Blountstown, FL	Private	-
Seaplane	Pate Lake Seaplane Base	FL04	-	-	6 Miles SE of Caryville, FL	Private	-
	Seashell Seaplane Base	8FA9	Yes	Yes	9 Miles SE of Crawfordville, FL	Private	-

Avg = average; E = east; FL = Florida; ID = identification; IR = Instrument Route; MTR = military training route; N = north; NE = northeast; NM = nautical miles; NW = northwest; S = south; SE = southeast; SW = southwest; W = west

Notes:

1. Air facilities listed are within 10 NM of the Alternative 1 corridor.
2. Heliports are not listed.
3. Avg annual operations are derived from AirNav where available, expressed in annual counts (http://www.airnav.com/airports/).

1

3.3.3 Environmental Consequences

3.3.3.1 Proposed Action

All aircraft operations under each alternative would be subject to the regulatory requirements currently governing military and civilian aircraft operations and pilot responsibilities within the affected airspace environment. Federal aviation regulations address those standard requirements all pilots, including military, must adhere to in seeing and avoiding other aircraft in any airspace environment. Those requirements also would apply to the airspace uses proposed for all alternatives. The respective controlling entities would schedule and manage the proposed airspace actions and projected flight activities under all alternatives as described in Section 3.3.2 (Affected Environment) for the current airspace uses.

Civil aviation could operate within this aeronautical environment in the same safe, familiar manner as currently flown within the area. Considering the projected civil and military flight densities in this joint-use airspace and available information on the scheduled use of the MTRs, this alternative would have no known adverse effects on the low-density VFR or IFR air traffic in the affected area.

No information is available on the future use of the public and private airports as those operations would be expected to remain within the current low use levels discussed in Section 3.3.2.4 (Airports).

The Proposed Action, modeled for noise and air emission analysis included 92 flight operations annually for the F-35A and F-15E combined. This would represent approximately less than 2 operations per week. Aircraft would follow the utilization notes in Table 2-1 for avoidances, coordination, and deconfliction. Due to the very low volume of aircraft operations within the proposed MTR, and with ATC coordination and following of utilization notes, there would be no adverse impacts on airspace management associated with the establishment of the Proposed Action. The F-35A and F-15E were selected to conservatively model all aircraft types that could be flown.

3.3.3.2 Alternative 1

Similar to the discussion above related to the Proposed Action (Section 3.3.3.1, Proposed Action), the new MTR would not adversely impact airspace operations or management in the region. Due to the very low volume of aircraft operations, and with ATC coordination and following of utilization notes, there would be no adverse impacts on airspace management associated with the establishment of the route under Alternative 1.

3.3.3.3 No Action Alternative

Under the No Action Alternative, no MTR would be established, and airspace operations and management would continue under current baseline conditions. Therefore, there would be no impact on airspace operations or management.

3.3.3.4 Cumulative Impacts

There have been no specific activities identified in the region with the potential to cumulatively impact airspace operations or management within the ROI. The approved expansion of Northwest Florida Beaches International Airport in Panama City, Florida would add aircraft to the region, but would occur well south of the proposed MTR, and commercial aircraft typically ascend rather quickly to cruising altitudes and would not be likely to operate within the proposed MTR airspace. The Proposed Action would have a negligible impact on the total airspace operations within the region. Due to the fact the increase in operations associated with the Proposed Action would be minimal, and operational utilization measures have been identified for coordination, deconfliction, and avoidance (Table 2-1), there would not be any cumulative impacts to airspace operations or management in the region.

3.4 NOISE

3.4.1 Definition of the Resource

Noise is considered unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. Although noise can affect several resource areas, this section focuses on potential noise impacts on human annoyance and health. Noise impacts on biological resources (e.g., wildlife), cultural resources, land use, and environmental justice/protection of children are discussed in sections dedicated to those resources.

Noise metrics are units of measure used to describe noise and predict its impacts. The noise metrics and impact thresholds used in this analysis are described below.

Decibels (dB). Characteristics of a sound that affect how the sound is perceived include its level and frequency. Sound level is described using a logarithmic unit of measure, the dB. Differences in sound level of less than 3 dB are typically not noticeable by a person with normal hearing in a non-laboratory setting. Sounds at different frequencies (pitches) are not heard equally well by human ears. Dog whistles, for example, generate sound that may be intense, but is at frequencies inaudible to human ears. Sound intensities adjusted to account for the differential sensitivity of human ears to various frequencies are termed dBA. Figure 3-4 lists typical levels (in dBA) of common sounds.

Maximum Noise Level (L_{max}). The way a sound changes over time is also important to how it is perceived. An aircraft overflight, for example, becomes louder as the aircraft approaches the listener and then becomes quiet again as the aircraft recedes into the distance. Several noise metrics have been created to describe time-varying sound levels. The L_{max} metric is simply the highest sound level reached for a fraction of a second during a single event. This easily understood metric is important in judging the interference caused by a noise event with conversation, TV listening, sleep, or other common activities.

Day-Night Average Sound Level (DNL). Actual sound environments are a complex mixture of many time-varying sounds. The DNL metric describes complex acoustic environments by summing individual noise events and averaging the acoustic energy over a 24-hour period. Because it is an average, this metric reflects the sound level and duration of the events as well as

the number of events that occur. The DNL metric adds 10 dBA to events that occur between 10:00 p.m. and 7:00 a.m. to account for the increased intrusiveness of noise events that occur at night when ambient noise levels are relatively low. The DNL metric does not provide specific information on the number of noise events or the specific individual sound levels that occur. For example, a DNL of 65 dBA could result from a few very noisy events or a large number of quieter events. However, it has been found to correlate with the percentage of people highly annoyed by noise, and has been adopted by the DoD, FAA, and other federal agencies, as the primary metric for prediction of community reaction. At sound levels exceeding 65 dB DNL, not all land uses are considered to be compatible in accordance with DoD and FAA guidelines. In locations where DNL is less than 65 dB, a relatively small percentage of the population can be expected to be highly annoyed. For example, at 52 dB DNL, approximately 2 percent of people would be expected to be highly annoyed by the noise (Finegold, Harris, & von Gierke, 1994).

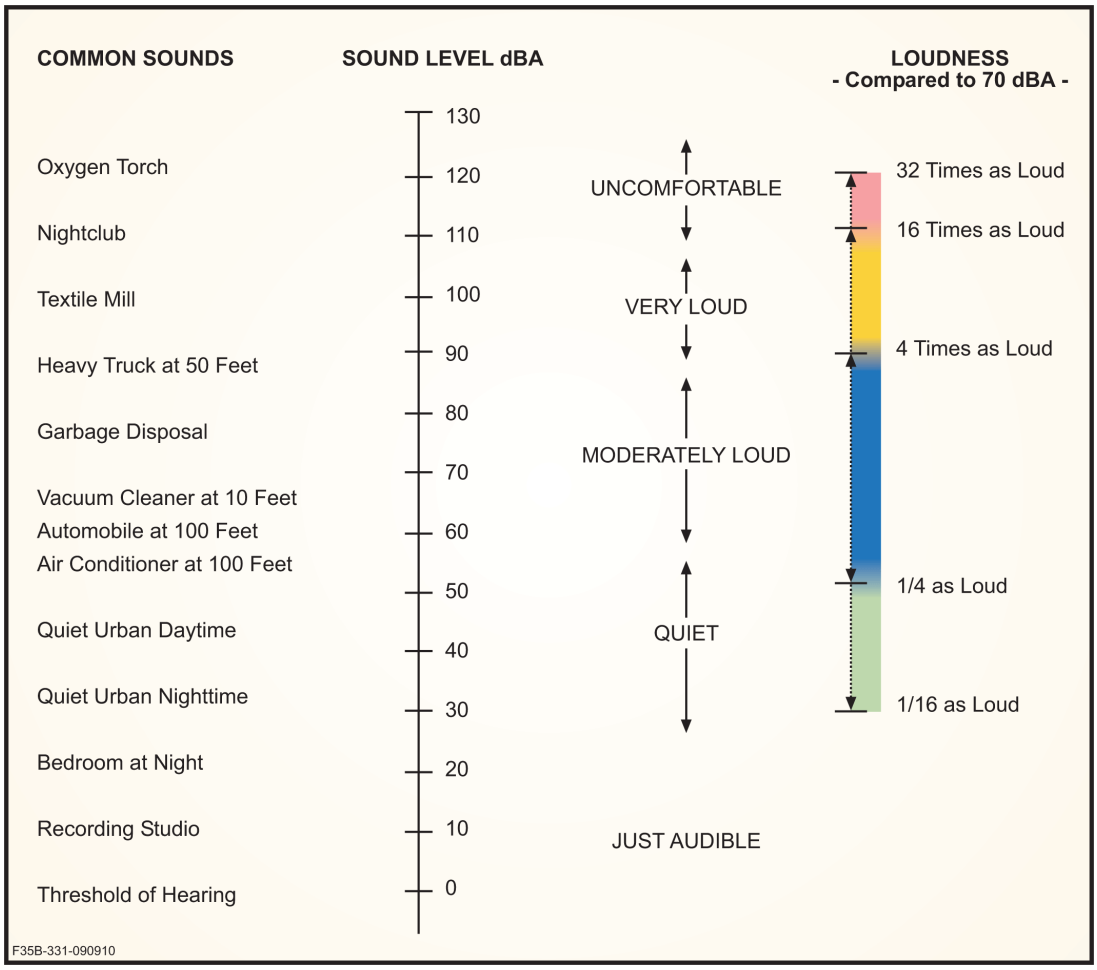


Figure 3-4. Typical A-Weighted Levels of Common Sounds

Onset Rate-Adjusted Monthly Day-Night Average Sound Level (L_{dnmr}). L_{dnmr} is a version of DNL modified to account for the effects of operational noise in training airspace. The metric L_{dnmr} adds up to 11 dB to the noise levels of overflights at low altitude and high airspeed to account for the potential "surprise factor" associated with sudden onset noise. For this analysis, SUA operations were distributed equally among all 12 months, such that the "busy month" operations tempo is

the same as an "average month" operations tempo. The onset-rate penalty, which is incorporated into the L_{dnmr} metric but is not included in the DNL metric, is important for the accurate assessment of community reaction to low-altitude flying operations.

3.4.1.1 Analysis Methodology

Noise modeling was conducted using the model MOA and Route Noisemap (MR_NMAP) (version 3), which is approved by the DAF for modeling of aircraft noise in training airspace. MR_NMAP models flight operations as occurring either 1) as dispersed operations within a defined volume of airspace such as a MOA or 2) as occurring on or at defined distances from a defined flight track such as an MTR, aerial refueling route, or strafing track. Additional information on noise modeling as well as details regarding baseline and proposed flight operations are presented in Appendix E (Noise Modeling).

3.4.1.2 Significance Determination

Changes in noise level are assessed against DoD and FAA impact thresholds. The DAF EIAP regulations (32 CFR Part 989) specify environmental impacts should be considered in terms of the potentially affected environment and degree of the effects of the action to assess significance. FAA regulations contained in FAA Order 1050.1F state increases at noise-sensitive locations of greater than 1.5 dB DNL, where end-state noise levels are 65 dBA DNL, or greater, are significant. FAA Order 1050.1F also establishes "reportable impacts," which are defined as an increase at a noise-sensitive location of 3 dB or greater to a level between 60 and 65 dB DNL or an increase of 5 dB or greater to a level between 45 and 60 dB DNL. Reportable impacts are not necessarily significant but are an indicator expected noise level changes may be of concern in a relatively quiet baseline environment.

USEPA has established 55 dB as a sound level protective of public health and welfare with an adequate margin of safety (USEPA, 1974). While this sound level does not have direct regulatory implications for the conclusions of this analysis, it is useful as a point of reference.

3.4.2 Affected Environment

The sparsely inhabited areas that make up the majority of the area beneath the Proposed Action and Alternative 1 corridors are characterized by low ambient sound levels (i.e., sound levels when military aircraft operations are not under way). The National Park Service (NPS) conducted a large-scale study linking measured sound levels to characteristics of the environment (e.g., land cover, nighttime light level) and generated a nationwide ambient sound map (NPS, 2022). The study shows nearby human activities are a primary factor in predicting ambient noise levels. Time-averaged daytime ambient sound levels in urbanized areas are predicted to be approximately 47 dBA, while less developed areas are predicted to be as low as 34 dBA. The sound metric used in the NPS study reflects the sound level exceeded 50 percent of the time. While this metric is not directly comparable to the L_{dnmr} or DNL metrics, the NPS study results provide a useful point of reference.

The Homeland Infrastructure Foundation-Level Data database was searched to identify noise-sensitive locations within the Proposed Action and Alternative 1 corridors (National Geospatial-Intelligence Agency, 2022). Daycares, hospitals, nursing homes, and schools in the affected area are shown in Figure 3-5. It is worth noting two of the school locations identified represent multiple named schools are located near each other. Places of worship were not studied

because their noise-sensitivity is typically greatest during evenings and weekends, and proposed flight operations would not occur during these times.

As shown in Figure 3-5, much of the area beneath the Proposed Action or Alternative 1 corridors is beneath existing military training airspace and experiences military aircraft noise under baseline conditions. Several existing MTR corridors cross the affected area supporting low-altitude military aircraft operations. The Tyndall MOAs and Restricted Area 2914A also overlap portions of the Proposed Action IR-096 and Alternative 1 IR-096 (identical to the original IR-015) corridors supporting operations within a wide range of altitudes. Noise levels generated by ongoing military training operations in existing MTRs and SUA are below 50 dB Ldnmr/DNL.

IR-015 was disestablished in January 2021, and noise generated by flying operations on this route is not part of baseline conditions.

3.4.3 Environmental Consequences

3.4.3.1 Proposed Action

Proposed aircraft operations would increase time-averaged noise levels beneath the Proposed Action corridor, but time-averaged noise levels within the corridor would remain well below 65 dB L_{dnmr} and DNL (Table 3-7). The relatively low calculated time-averaged noise levels reflect the infrequency of flight operations – only one to two flight operations per average week. The highest time-averaged sound level at the locations studied would occur at the Home Sweet Home Adult Living Facility (shown as Location "N5" in Figure 3-5). At this location, the noise level would increase by 2.9 dBA L_{dnmr} (2.8 dBA DNL) to 51.8 dBA L_{dnmr} (51.7 dBA DNL). Changes in time-averaged noise levels at noise-sensitive locations would not be "significant" or "reportable" as defined in FAA Order 1050.1F and would also remain below the 55 dB level identified by USEPA for the protection of public health and welfare with an adequate margin of safety.

Noise levels at the various sensitive locations studied differ because of several factors:

- Locations within avoidance areas would be overflown at higher minimum altitudes and would therefore experience lower time-averaged noise levels. As described in Section 2.2 (Proposed Action – Establish a New MTR, IR-096), the Proposed Action route structure incorporates a 2,000 feet MSL (approximately 1,900 feet AGL) minimum altitude avoidance area when overflying St. Marks National Wildlife Refuge (NWR)/Wakulla County Airport and until crossing Highway 319. When crossing the Apalachicola River and for several miles thereafter, aircrews would be required to maintain a minimum altitude of a 1,500 feet MSL (approximately 1,400 feet AGL). Portions of the Proposed Action route affected by avoidance areas are shown in Figure 3-5.
- As discussed in Section 3.4.2 (Affected Environment), ongoing military training operations in existing SUA and MTRs result in baseline sound level being higher in some portions of the Proposed Action IR-096 corridor than in others. Noise levels under the Proposed Action reflect a combination of baseline levels and noise that would be generated by aircraft on IR-096.
- Proposed Action IR-096 operations would contribute less to overall noise levels at locations farther from the MTR centerline. Most aircraft fly near the MTR centerline while locations near the edge of the MTR corridor are directly overflown very infrequently. At locations where noise levels would be less than 45 dB Ldnmr or DNL, noise levels in Table 3-7 are stated as "<45." As discussed in Section 3.4.1 (Definition of the Resource), time-averaged sound levels less than 45 dB are below any currently accepted guidelines for aircraft noise land use compatibility.

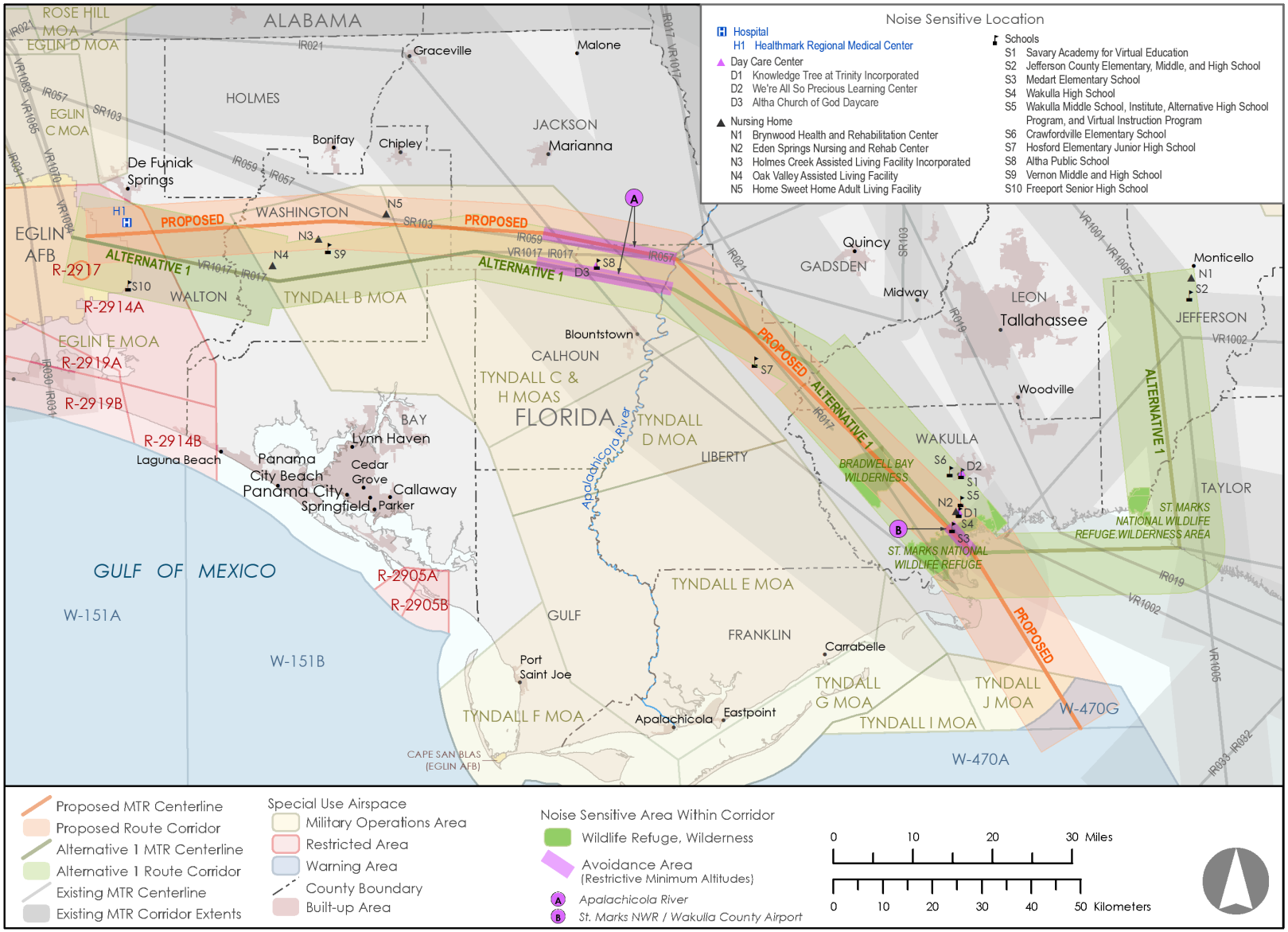


Figure 3-5. Sensitive Locations Beneath the Proposed and Alternative 1 MTR Corridors

1 **Table 3-7. L_{dnmr} and DNL Under the Proposed Action and Baseline Conditions**

Receptor ID	Also Affected By:			Distance to IR-096 Centerline (Feet)	L_{dnmr} (dBA)			DNL (dBA)		
	Avoidance Area[1]	SUA	Other MTR		Baseline	Proposed Action	Change	Baseline	Proposed Action	Change
D1	Y	N	Y	12,461	<45	<45	0	<45	<45	0
D3	Y	Y	Y	14,872	49.5	49.6	0.1	49.5	49.6	0.1
H1	N	Y	Y	7,572	48.3	51.3	3	48.1	50.9	2.8
N2	Y	N	Y	12,150	<45	<45	0	<45	<45	0
N3	N	Y	Y	11,457	<45	<45	0	<45	<45	0
N5	N	Y	Y	6,839	48.9	51.8	2.9	48.9	51.7	2.8
S3	Y	N	Y	2,583	<45	<45	0	<45	<45	0
S4	Y	N	Y	12,713	<45	<45	0	<45	<45	0
S5	Y	N	Y	18,857	<45	<45	0	<45	<45	0
S8	Y	Y	Y	13,369	49.4	49.6	0.2	49.4	49.6	0.2
S10	N	Y	Y	34,659	48.3	48.4	0.1	48.1	48.1	0

< = less than; dBA = A-weighted decibels; DNL = day-night average sound level; ID = identification; IR = Instrument Route; L_{dnmr} = onset rate-adjusted monthly day-night average sound level; MSL = mean sea level; MTR = military training route; N = No; NWR = National Wildlife Refuge; SUA = Special Use Airspace; Y = Yes

Note:

1. Aircrew crossing the St. Marks NWR/Wakulla County Airport avoidance area are instructed to maintain an altitude at or above 2,000 feet MSL until after crossing Highway 319. Aircrew crossing the Apalachicola River, and for several miles, thereafter, are instructed to maintain at or above 1,500 feet MSL.

High-airspeed and low-altitude direct overflights are experienced as rapidly rising sound levels followed by a sound level maximum and then a quick return to ambient sound levels as the aircraft recedes into the distance. Such overflights have the potential to be startling, but are also brief, with the entire event typically lasting only a few seconds.

Individual overflights within the Proposed Action IR-096 and in existing military training airspace under baseline conditions have the potential to be quite loud. Direct overflight by an F-35A and F-15E aircraft at 500 feet AGL results in approximately 116 dBA L_{max} and 112 dBA L_{max}, respectively (Table 3-8). Approximately 70 percent of the proposed operations (approximately one per week) would be flown by F-35A aircraft, and the other 30 percent of IR-096 operations would be flown by F-15E or similar aircraft (approximately one every other week).

Table 3-8. Representative Individual Overflight L_{max}

Representative Aircraft[1]	Engine Power Setting	Airspeed (NM/Hour)	L_{max} (dBA) at Various Distances (Feet)[2]		
			500	1,400	1,900
F-35A	85 %ETR	420	116	105	101
F-15E (PW220)	90 %NC	420	112	101	97
F-18E	83 %NC	360	106	95	91
C-130	900 CTIT	250	91	81	77
A-10	5333 NF	350	98	86	81
T-1	80 %NC	240	84	71	67

Source: SELCALC3 using local median acoustic atmospheric conditions (66 degrees Fahrenheit and 67 percent relative humidity)
% = percent; CTIT = turbine inlet temperature in degrees Celsius; dBA = A-weighted decibels; ETR = engine thrust request; L_{max} = maximum noise level; NC = core engine speed; NF = fan speed; NM = nautical miles
Notes:
1. The aircraft types listed are representative of the wide variety of aircraft types that use the military training airspace and flight configurations used by those aircraft.
2. Noise levels listed are for direct aircraft overflights. Aircraft flying at higher altitudes and/or at some lateral distances from a listener generate lower sound levels than those listed.

Overflights that are not at the Proposed Action IR-096 floor altitude of 500 feet AGL and/or not directly overhead relative to a listener would be less loud than the highest expected potential L_{max} values listed in Table 3-8.

Locations within the St. Marks NWR/Wakulla County Airport avoidance area would be overflown no lower than approximately 1,900 feet AGL, and locations within the Apalachicola River avoidance area would be overflown no lower than approximately 1,400 feet AGL. Overflights at higher altitudes would result in lower L_{max} values (Table 3-8).

Most of the area beneath the Proposed Action IR-096 and Alternative 1 corridors is overlain by existing MTRs and SUA (see Figure 3-5), and people in these areas experience overflight noise under baseline conditions. Table 3-8 lists L_{max} values associated with overflights by representative aircraft types (e.g., F-18E, C-130, A-10, and T-1) that use the existing military training airspace.

Noise impacts generated by flights on Proposed Action IR-096 would be expected to consist of annoyance and activity interference. People engaged in activities that require a quiet setting, such as conversation, watching television, or appreciating nature, would be more likely to become annoyed by overflight noise. Overflight noise is also more likely to be noticed and/or considered annoying in locations with low ambient sound levels, which exist in the majority of the Proposed Action IR-096 corridor.

Because late-night operations between 10:00 p.m. and 7:00 a.m. would be extremely rare under the Proposed Action, sleep disturbance associated with the Proposed Action would be rare. It should be noted while normal operation times proposed for the route are 6:00 a.m. to 10:00 p.m., Monday – Friday, flight operations beginning at 6:00 a.m. would be extremely rare.

As discussed in Section 3.4.1 (Definition of the Resource), the additional annoyance associated with the potential for startle is accounted for in calculation of the Ldnmr noise metric. As noted previously, the relatively low number of operations that would occur on Proposed Action IR-096 (i.e., fewer than two per average week) results in time-averaged noise levels being relatively low. The highest Ldnmr value at any of the noise-sensitive locations identified (i.e., 51.8 dB Ldnmr) is associated with approximately 2 percent of people being highly annoyed.

In summary, the Proposed Action would not exceed thresholds established in FAA Order 1050.1F for "significant" or "reportable" impacts at sensitive locations, and noise levels would remain below the 55 dB noise level identified by USEPA as being protective of public health and welfare. Individual overflight noise could be disruptive and annoying, particularly for people engaged in noise-sensitive activities and for people in areas with low ambient sound levels. However, operations would be relatively infrequent (fewer than two per week on average), would not occur during the late-night (i.e., 10:00 p.m. to 7:00 a.m.), and would be short-lived due to the high airspeeds typically used by aircraft on MTRs. Furthermore, much of the Proposed Action IR-096 corridor is beneath existing military training airspace and experiences overflight noise under baseline conditions. In this potentially affected environment, the degree of effects of the Proposed Action would not be expected to be considered significant.

3.4.3.2 Alternative 1

Implementation of Alternative 1 would result in noise impacts similar to those described for the Proposed Action, but different areas would be affected, as depicted in Figure 3-5. Alternative 1 would include the same number of aircraft operations, aircraft types, altitudes, and other mission parameters as the Proposed Action. The locations and names of noise-sensitive locations identified beneath the Alternative 1 corridor are shown in Figure 3-5. Table 3-9 lists calculated noise levels and factors relevant to noise levels, such as whether the location is within an avoidance area.

The highest time-averaged sound level at the locations studied would occur at the Altha Church of God Daycare (shown as Location "D3" in Figure 3-5). At this location, the time-averaged noise level would increase by 0.7 dBA Ldnmr (0.7 dBA DNL) to 50.2 dBA Ldnmr (50.2 dBA DNL). Changes in time-averaged noise levels at noise-sensitive locations would not be "significant" or "reportable" as defined in FAA Order 1050.1F and would remain below the 55 dB level identified by USEPA for the protection of public health and welfare with an adequate margin of safety. The relatively low calculated Ldnmr values at sensitive locations are associated with approximately two percent or less of affected people being expected to become highly annoyed due to noise.

1 **Table 3-9. L_{dnmr} and DNL Under Alternative 1 and Baseline Conditions**

Receptor ID	Also Affected By:			Distance to Alternative 1 Centerline (Feet)	L_{dnmr} (dBA)			DNL (dBA)		
	Avoidance Area[1]	SUA	Other MTR		Baseline	Alt 1	Change	Baseline	Alt 1	Change
D1	Y	N	Y	10,369	<45	<45	0	<45	<45	0
D2	Y	N	Y	28,841	<45	<45	0	<45	<45	0
D3	Y	Y	Y	5,284	49.5	50.2	0.7	49.5	50.2	0.7
H1	N	Y	Y	17,180	48.3	49.5	1.2	48.1	49.2	1.1
N1	N	N	Y	28,831	<45	<45	0	<45	<45	0
N2	Y	N	Y	10,024	<45	<45	0	<45	<45	0
N3	N	Y	Y	23,468	<45	<45	0	<45	<45	0
N4	N	Y	Y	9,507	<45	47.2	2.2	<45	46.9	1.9
S1	N	N	Y	28,807	<45	<45	0	<45	<45	0
S2	Y	N	Y	25,880	<45	<45	0	<45	<45	0
S3	Y	N	Y	919	<45	<45	0	<45	<45	0
S4	Y	N	Y	10,707	<45	<45	0	<45	<45	0
S5	Y	N	Y	16,512	<45	<45	0	<45	<45	0
S6	N	N	Y	23,934	<45	<45	0	<45	<45	0
S7	N	N	Y	16,298	<45	<45	0	<45	<45	0
S8	Y	Y	Y	6,780	49.4	50.1	0.7	49.4	50.1	0.7
S9	N	Y	Y	16,361	<45	<45	0	<45	<45	0
S10	N	Y	Y	23,903	48.3	48.8	0.5	48.1	48.5	0.4

< = less than; Alt = Alternative; dBA = A-weighted decibels; DNL = day-night average sound level; ID = identification; L_{dnmr} = onset rate-adjusted monthly day-night average sound level; MSL = mean sea level; MTR = military training route; N = No; NWR = National Wildlife Refuge; SUA=Special Use Airspace; Y = Yes

Note:

1. Pilots crossing the St. Marks NWR / Wakulla County Airport avoidance area are instructed to maintain at or above 2,000 feet MSL until after crossing Highway 319.

Under Alternative 1, individual direct overflights would generate Lmax values equivalent to those described for the Proposed Action (see Table 3-8). Because the majority of overflights would be at altitudes higher than the MTR floor altitude and/or at some lateral distance from the listener, Lmax would typically be lower than the values listed in Table 3-8. As shown in Figure 3-5, the Alternative 1 (disestablished IR-015) corridor is overlain by existing SUAs and other MTR corridors, and people in these areas experience military aircraft overflights under baseline conditions. Avoidance areas under Alternative 1 would exist in the same areas as described for the Proposed Action (see Figure 3-5) and would require the same minimum altitudes. As is the case under the Proposed Action, minimum overflight altitudes established would result in lower single-event Lmax and time-averaged noise levels in the avoidance areas.

Noise impacts under Alternative 1 would be expected to consist of annoyance and activity interference. Levels would remain below FAA and USEPA thresholds. Individual overflights, which could be as loud as 116 dBA L_{max}, could be startling and/or disruptive, but would be relatively infrequent (fewer than two per average week) and would be limited to daytime hours during weekdays. In this potentially affected environment, the degree of effects of Alternative 1 would not be expected to be considered significant.

3.4.3.3 No Action Alternative

Under the No Action Alternative, no MTR would be established, and ongoing military training activity would not change. Noise levels would not change relative to baseline conditions. There would be no additional noise impacts under the No Action Alternative.

3.4.3.4 Cumulative Impacts

Although no specific development projects with associated cumulative effects are known at this time, it is foreseeable some additional development will likely occur within the Proposed Action IR-096 or Alternative 1 corridors during next few years, and that development could include one or more noise-sensitive facilities (e.g., hospitals, daycares, nursing homes, or schools). If one or more new noise-sensitive facilities were to be constructed, those facilities would experience overflight noise levels similar to those described for existing sensitive facility(s), which could result in additional (cumulative) noise impacts. Noise levels beneath the proposed MTR are below 65 dB L_{dnmr}/DNL, and all land uses are considered compatible in such areas. Although noise generated on the proposed MTR could result in occasional temporary negative effects (e.g., activity interference), cumulative noise impacts at any hypothetical new facility(s) would not be expected to be considered significant.

There are no foreseeable substantive changes to military training options in airspace units that overlap the proposed MTR. The Formal Training Unit Optimization EIS considered the effects of changes in operational tempo in Eglin E MOA, Rose Hill MOA, and Warning Area 151, which do not overlap the Proposed Action or Alternative 1 MTR corridor. Because flying operations in affected area are not expected to change, there would be no cumulative noise impacts of this action in combination with the Proposed Action or alternatives.

3.5 LAND USE AND RECREATION

3.5.1 Definition of the Resource

"Land use" refers to the management and use of land by people. The attributes of land use include general land use patterns, land ownership, land management plans, and special use areas. General land use patterns characterize the types of uses within a particular area. Specific uses of land typically include residential, commercial, industrial, agricultural, military, and recreational. Land use also includes areas set aside for preservation or protection of natural resources, wildlife habitat, vegetation, or unique features. Management plans, policies, ordinances, and regulations determine the types of allowable uses or the types of uses that protect specially designated or environmentally sensitive uses.

3.5.1.1 Analysis Methodology

A qualitative method was used to assess potential land use impacts and is based on whether the Proposed Action would result in a change to the existing land use, the degree to which the existing land use would be affected by the change, and if the change would be compatible with adjacent land uses and development. Land use impacts also considered the effects of flight operations and if the change in noise exposure would have an adverse impact on land use compatibility. Incompatible land use impacts that would result from noise generated from flight operations were evaluated using the Air Installation Compatible Use Zone guidelines presented in the Eglin AFB study (Leidos, 2018).

3.5.1.2 Significance Determination

Impacts to land use would be considered significant if project activities were (1) inconsistent or noncompliant with applicable land use plans or policies, (2) preventing or displacing continued use or occupation of an area or severely diminishing its attributes for ongoing uses, or (3) incompatible with affected areas to the extent public health or safety is threatened.

Land uses that include sensitive noise receptors (e.g., residences, public buildings, schools, churches, hospitals, and certain recreational uses) are generally incompatible when exposed to noise exposures of 75 dB DNL or greater. Almost all land uses except airfields (i.e., aprons, runways, taxiways), manufacturing, agriculture, and mining are incompatible with noise exposures greater than 80 dB DNL.

Impacts to recreation resources would be considered significant if there were a change in access or availability of recreation sites or activities or a change in the qualities of an area and thereby reducing the recreational opportunities.

3.5.2 Affected Environment

The analysis considers the effects of noise on underlying land uses by identifying uses and activities and change in noise exposure and overflight, in consideration of the sensitivity to noise of activities, uses, and specially managed areas.

Land under both alternatives is generally in less populated and remote areas, where natural attributes of the land predominate Figure 3-6. Predominant uses are agriculture, cattle grazing, conservation, and outdoor recreation and hunting. The effects of noise on humans include annoyance, sleep disturbance, and health impacts. The effects of noise on animals and wildlife are less well understood. Behavioral effects, such as startle response, have been observed; however, direct physiological effects of noise on animals and wildlife are difficult to measure in the field.

Current noise levels within the ROI are currently under 65 dB DNL. There are no land use restrictions or planning recommendations in areas with noise levels below 65 dB DNL. Current conditions are compatible with general land use. Most current noise occurrences are associated with existing MTRs and overflights within the region. Numerous private and municipal airports and airfields exist within the region with associated flights. Additional information on current noise levels is presented in Section 3.4 (Noise).

The ROI consists of portions of 12 counties. Isolated residences, small clusters of homes, and small communities are widely dispersed. Table 3-10 provides a description of the areas within each county.

These areas are valued and used for resource productive uses (such as forestry, mining, and energy production), agriculture, conservation, livestock production, and outdoor recreation. Small rural communities and transport and utility networks are interspersed through this region. Controls on land use are under the managing entity—counties, in the case of private ownership, and by designated state and federal agencies for publicly owned land (local, state, or federal).

Table 3-10. Counties Under the Proposed Action and Alternative 1

County	Population (2021 Estimate)	Total Area (Sq Mi)	Population Density (Person per Sq Mi)	Sq Mi Under Proposed IR-096	Percent of County (%)	Sq Mi Under Alternative 1	Percent of County (%)
Bay	180,076	764	236	0	0	10.11	1.32
Calhoun	14,324	567	25	50.41	8.89	119.41	21.06
Franklin	11,914	534	22	11.70	2.19	0.42	0.08
Gadsden	45,787	516	89	9.04	1.75	18.32	3.55
Jackson	47,409	916	52	149.87	16.36	99.18	10.83
Jefferson	14,278	598	24	0	0	263.01	43.98
Leon	291,863	667	438	26.87	4.03	74.20	11.12
Liberty	8,333	836	10	143.72	17.19	141.90	16.97
Taylor	21,709	1,042	21	0	0	121.52	11.66
Wakulla	32,855	607	54	176.38	29.06	275.08	45.32
Walton	71,049	1,058	67	128.16	12.11	240.28	22.71
Washington	25,094	580	43	187.98	32.41	234.08	40.36

Source: (U.S. Census Bureau, 2020)
% = percent; IR = Instrument Route; sq mi = square mile

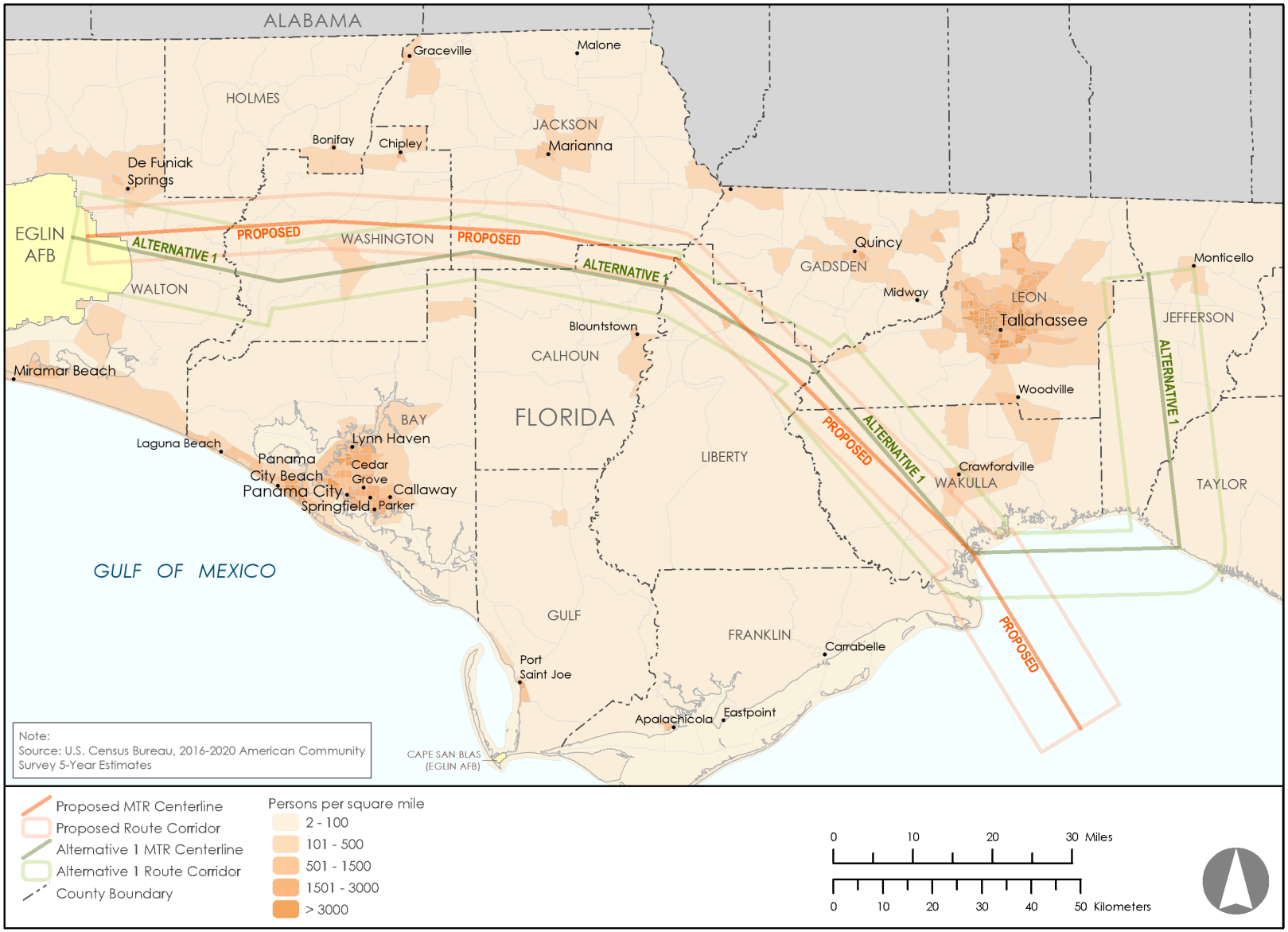


Figure 3-6. Population Within the ROI

As summarized in Table F-1, Land Use Summary Under the Proposed Action and Alternative 1, in Appendix F (Land Use Supplemental Information), state-wide land use land cover includes eight Level 1 categories: Urban/Built-Up; Agriculture; Rangeland; Upland Forest; Water; Wetland; Barren; and Special Transportation, Communication, and Utilities. Upland Forest and Wetland comprise approximately 80 percent of the land underneath the ROI, confirming the rural nature of the land and area. In contrast, approximately 5 percent of the ROI is comprised of Urban/Built-Up (FDEP, 2022a). Level 1 is defined as a general, broad-based way to describe land cover. It is most often used for analyzing large areas. See Table F-1 in Appendix F for further breakdown of categories within the ROI, as well as Figure 3-7 and Figure 3-8.

A multitude of recreation and conservation areas exist under the ROI (see Table 3-11). Water management areas and state parks are especially popular for outdoor recreation activities. These lands offer a variety of water and land-based activities including bicycling, canoeing, hiking, camping, swimming, boating, hunting, fishing, horseback riding, and off-road all-terrain vehicle usage. Also, the Florida National Scenic Trail passes through portions of these lands (Figure 3-9 and Figure 3-10).

A total of approximately 160,000 acres of conservation lands and 200 miles of existing trails occurs under the Proposed Action ROI. In contrast, nearly 400,000 acres of conservation lands and 350 miles of existing trails occur under the Alternative 1 ROI. These existing trails include hiking, multi-use/other, and paddling categories.

Table 3-11. Conservation Lands Under the Proposed Action and Alternative 1

Manager	Total Acres Under Proposed Action	Total Acres Under Alternative 1
County	581	500
Fish and Wildlife	13,144	55,987
Non-Governmental Organization	2,232	15,875
Other or Unknown State Land	1,604	32,385
Regional Water Districts	15,377	39,955
State Fish and Wildlife	0	64,138
State Park and Recreation	15,288	13,930
Unknown	0	21
Other or Unknown Local Government	0	3
United States Forest Service	114,442	176,024
TOTAL	**162,668**	**398,818**

In addition, the ROI overlays portions of four major federally managed lands: Bradwell Bay Wilderness, St. Marks NWR, St. Marks Wilderness, and Apalachicola National Forest (NF). Bradwell Bay Wilderness, located in Wakulla County, comprises over 24,000 acres and is managed by the U.S. Forest Service. St. Marks NWR and St. Marks Wilderness are managed by the USFWS and comprise approximately 83,000 acres and 17,000 acres, respectively, in Wakulla, Jefferson, and Taylor Counties. Apalachicola NF is the largest U.S. national forest in the state of Florida, covering portions of Franklin, Leon, Liberty, and Wakulla Counties. It encompasses over 570,000 acres and is the only national forest located in the Florida Panhandle. These federally managed lands consist of a diverse habitat, including saltmarshes, hardwood swamps and wetlands, freshwater ponds and lakes, pine flatwoods, sandhills, and mixed uplands.

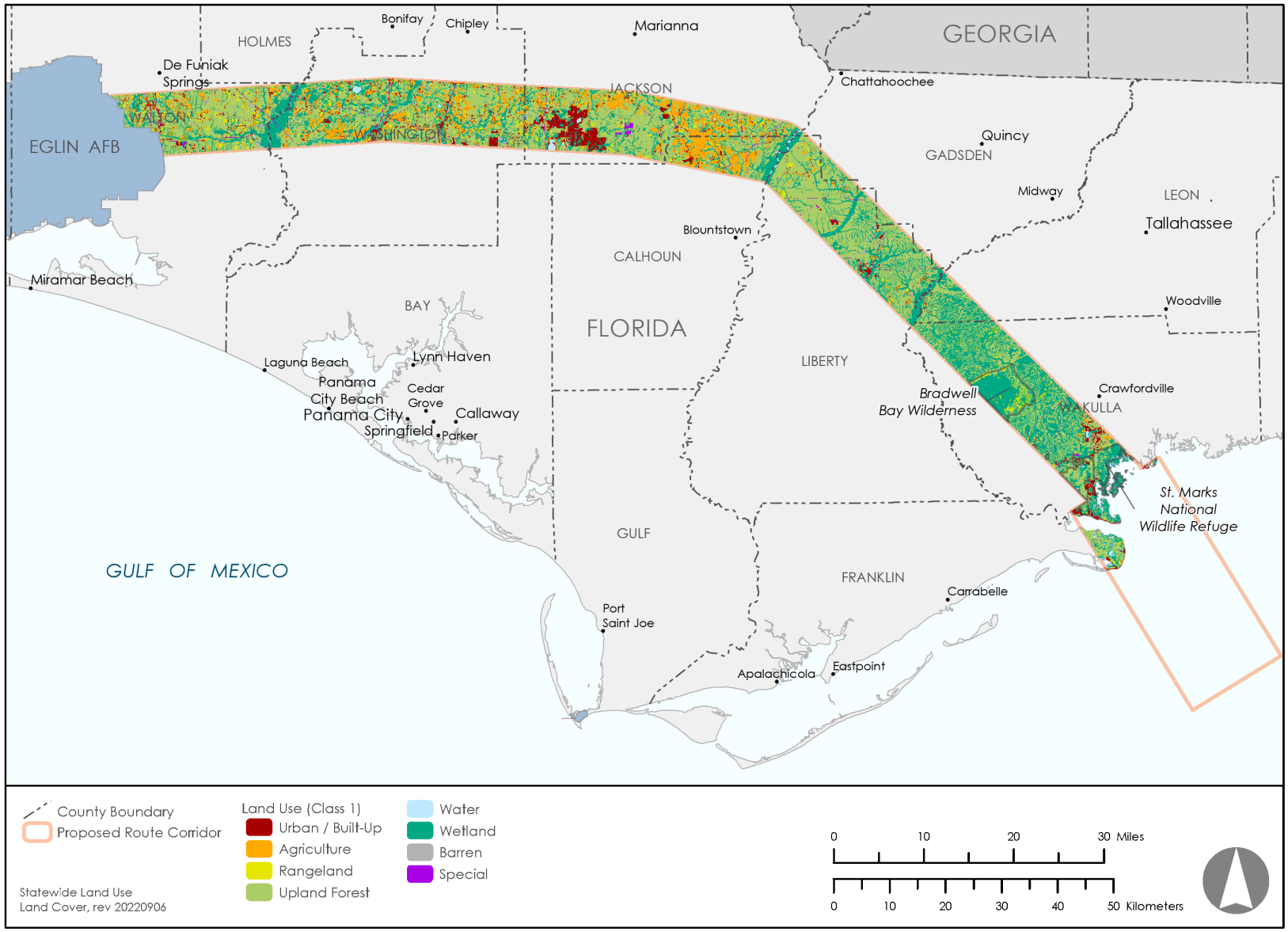


Figure 3-7. Land Use Beneath the Proposed Training Route, IR-096

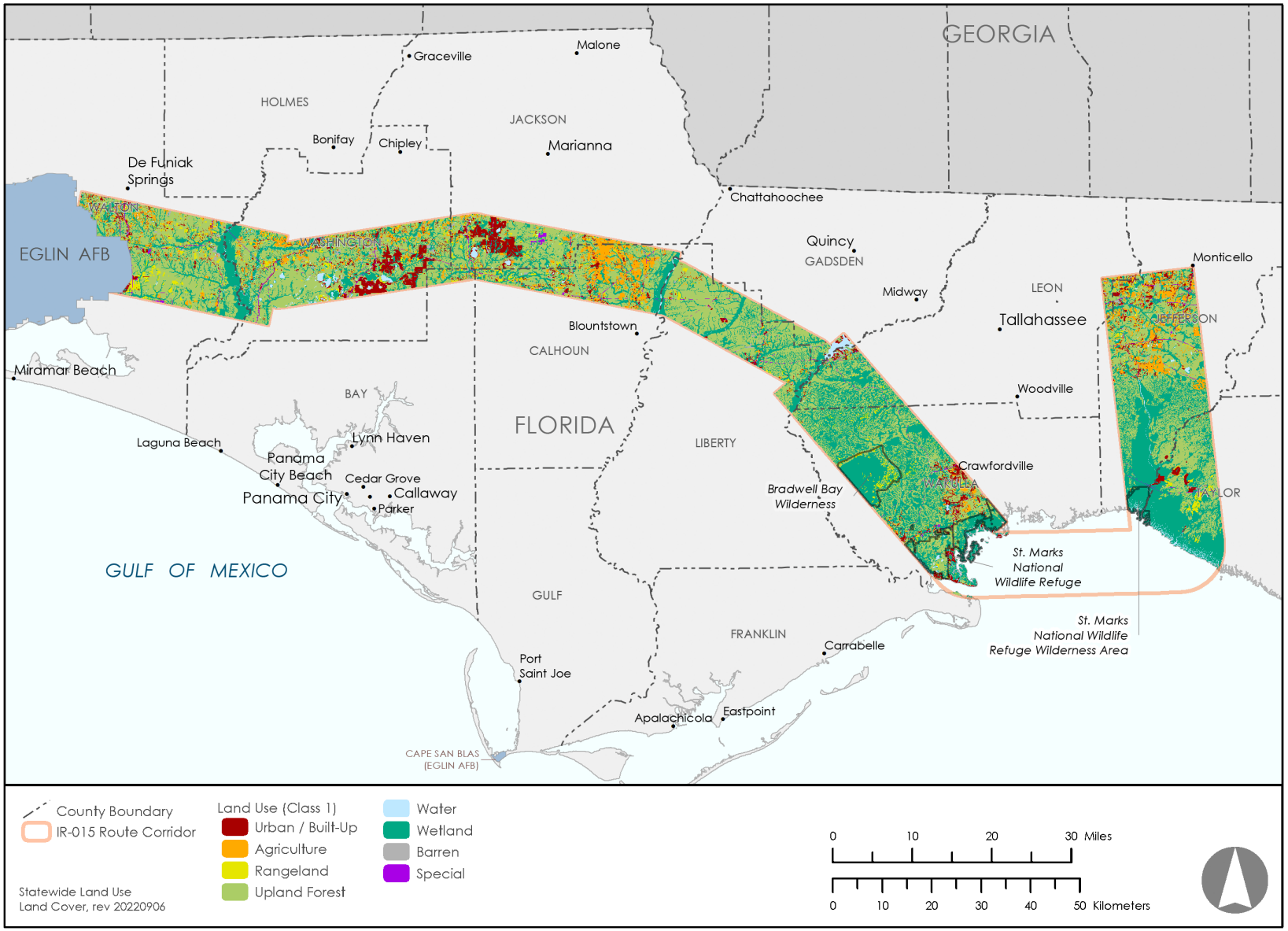


Figure 3-8. Land Use Beneath the Alternative 1 Training Route

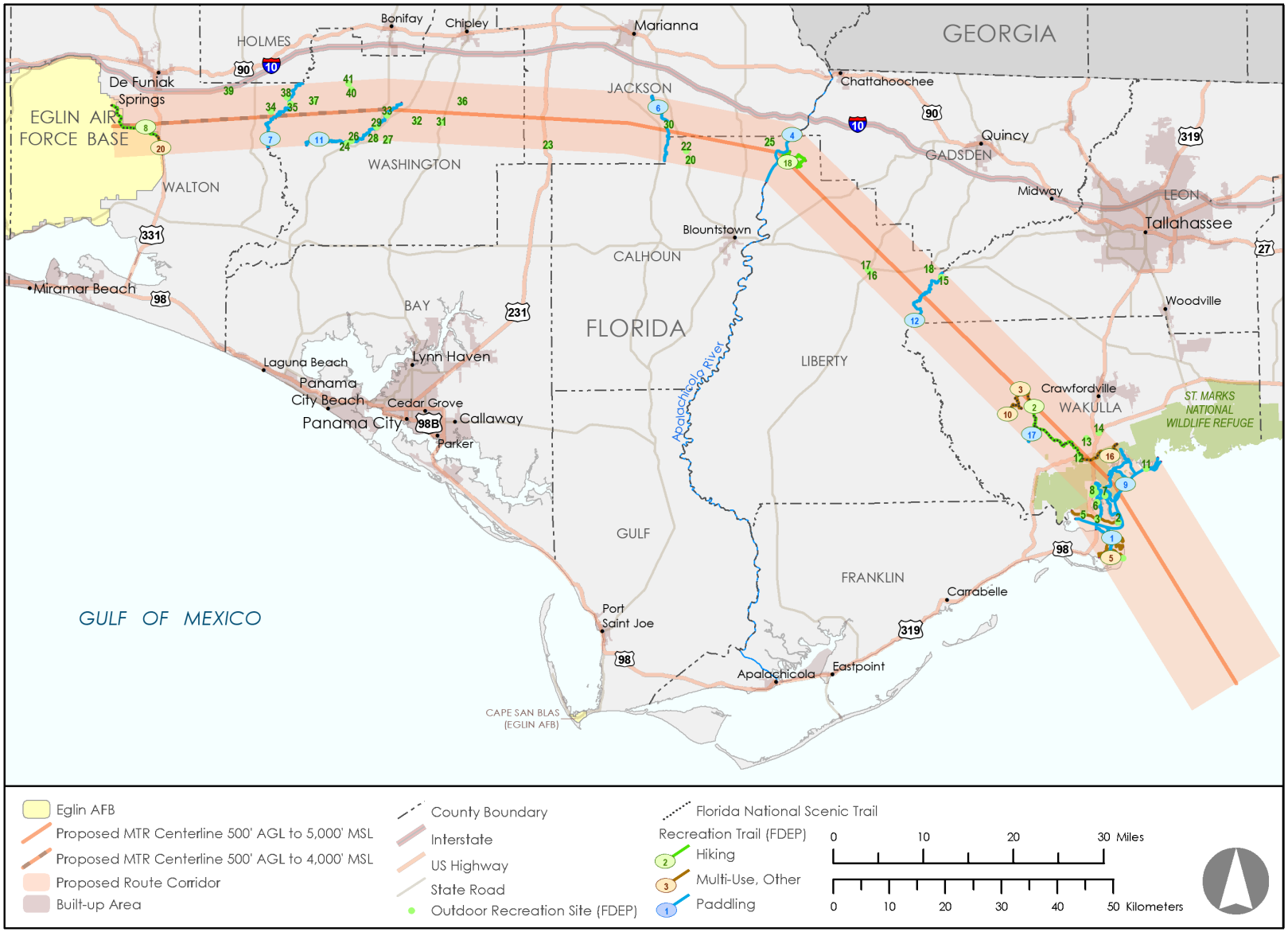


Figure 3-9. Recreation Areas Beneath the Proposed Training Route, IR-096

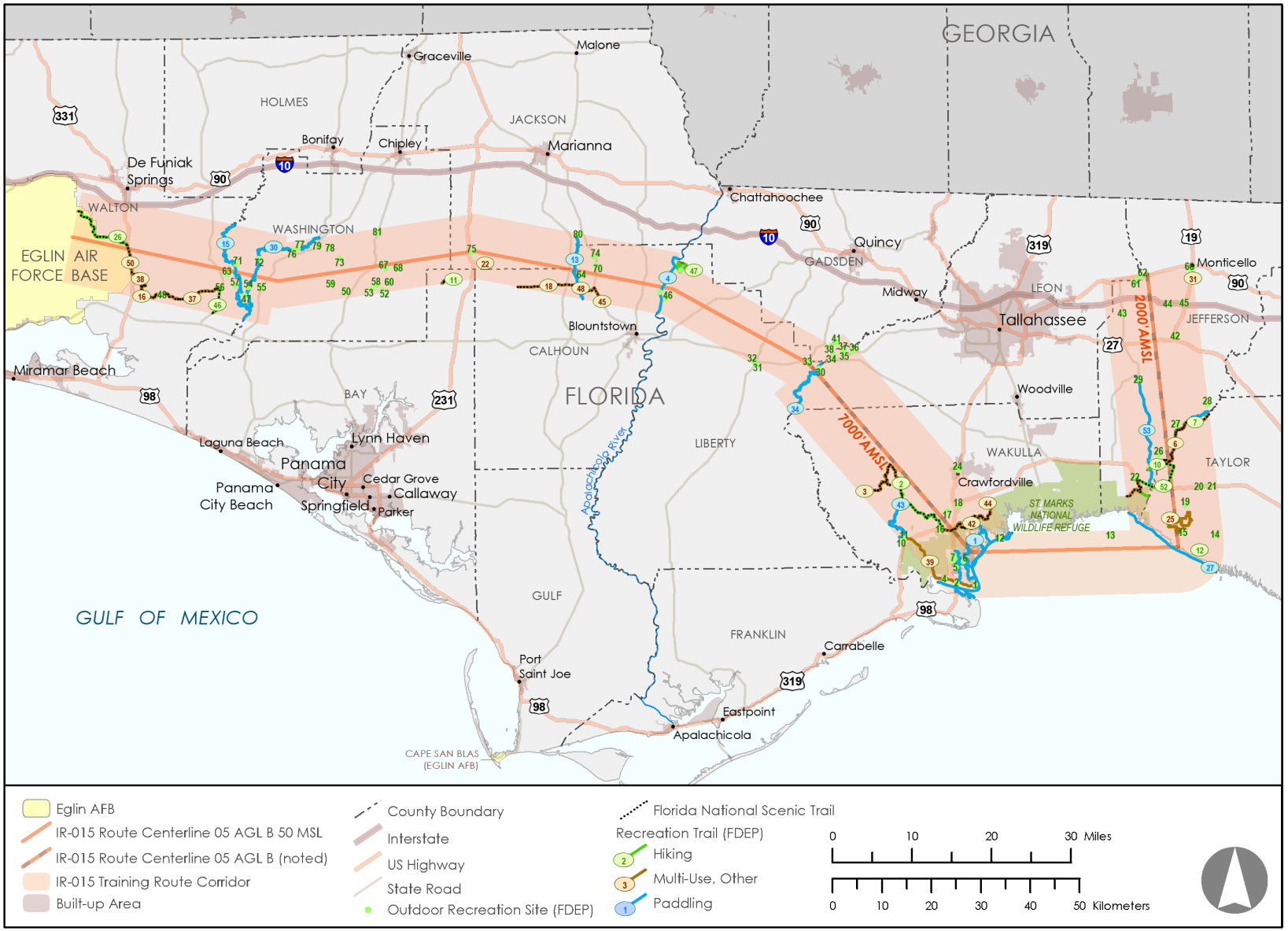


Figure 3-10. Recreation Areas Beneath the Alternative 1 Training Route

3.5.3 Environmental Consequences

3.5.3.1 Proposed Action

Use of the proposed MTR would be Monday through Friday between the hours of 6:00 a.m. to 5:00 p.m. The frequency of use based on the number of test requirements, student pilots in training, and pilots on proficiency flights would be approximately four to eight times monthly (one to two times per week). In addition, these missions would not use flares, chaff, or any expenditures along the route.

Land use and recreational resources are evaluated to determine if any proposed project activity would preclude or alter the suitability of an area for ongoing or intended land uses. In general, land use impacts would occur if project activities were (1) inconsistent or noncompliant with applicable land use plans or policies, (2) preventing or displacing continued use or occupation of an area or severely diminishing its attributes for ongoing uses, or (3) incompatible with affected areas to the extent public health or safety is threatened.

Recreation resources would be affected if there were a change in access or availability of recreation sites or activities, or a change in the qualities of an area and thereby reducing the recreational opportunities.

General Land Use

Noise levels (L_{dnmr} and DNL) would stay well below 65 dBA along the entire route under the Proposed Action. Even so, individual overflights may startle people and could briefly interfere with speech causing a short-term-annoyance. However, these noise events would be infrequent. Because the area is mostly rural and sparsely populated, low impacts are expected due to the insignificant change in noise levels. Impacts to rangeland with cattle and livestock are also expected to be low due to noise levels being well below the nuisance threshold and infrequent direct overflights at lower altitudes. Northwest Florida is not a high production cattle area in comparison to the other portions of Florida. Since the late 1990s, cattle and livestock production estimates in Northwest Florida has slightly decreased and are not expected to grow in the future (USDA, 2022).

Managed Lands

There would be potential startle effects from low-level overflights. Direct overflights by F-35A at 500 feet AGL in typical airspeed configuration could generate noise levels as high as 116 dBA L_{max} as a short-duration, maximum noise scenario. These events would occur less than twice per week on average and would be limited to workdays between 6 a.m. and 5 p.m. Because these events would occur in unpopulated and undeveloped areas, low-to-moderate impacts would be expected. Additionally, when considering the insignificant increases in time-averaged noise levels, there would be a low probability of disrupting field workers' tasks. Average noise levels would remain compatible with land uses on private and public land.

Wilderness

A portion of Bradwell Bay Wilderness lies underneath the Proposed Action. As defined in the 1964 Wilderness Act, Wilderness character includes five tangible qualities associated with the biophysical environment: Natural Quality, Untrammeled Quality, Undeveloped Quality, Opportunities for

Solitude or Primitive and Unconfined Recreation Quality, and Other Features of Value Quality (NPS, 2021). Of these, opportunities for solitude or primitive and unconfined recreation would be somewhat impacted due to the low noise increases that would permanently alter the time-averaged soundscape. However, the overall wilderness character of the area would not be degraded, and significant impacts to wilderness would not occur.

Recreation

Florida Department of Environmental Protection (FDEP) Florida Outdoor Recreation Inventory reflects a total of 40 locations under the Proposed Action ROI (FDEP, 2022b). These are described in Table 3-12 and include boat ramps, parks, campgrounds, sport fields, etc. There would be low-to-moderate impacts to recreation (e.g., hiking, hunting, fishing, camping, parks) due to startling effects from infrequent low-level overflights. The startling effect from low-level flights would also potentially affect precision sports that require a degree of concentration. However, due to the number of existing MTRs and other airspaces in the immediate area with currently existing low-altitude overflights, people in the area are already subjected to similar noise levels, and significant impacts would not occur.

Table 3-12. FDEP Florida Outdoor Recreation Inventory

FDEP Florida Outdoor Recreation Inventory			
Proposed Action			
Map ID	**Site Name**	**Map ID**	**Site Name**
1	Bald Point State Park	22	Altha Park
2	Mashes Sands Park & Boat Ramp	23	Compass Lake – City Square – Public Boat Ramp
3	Holiday Park And Campground	24	Hightower Springs Landing
4	Holiday Campground	25	Ocheesee Recreational Park
5	Bayside Marina	26	Brunson Landing
6	Levy Bay Boat Ramp	27	Vernon Sportsplex
7	Fiddlers Point Boat Ramp	28	Shady Grove Road Ballfield
8	Panacea RV Park	29	Vernon Park Landing
9	Rock Landing Marina	30	Peacock Bridge Public Boat Ramp
10	Woolley Memorial Park	31	Possum Palace Park
11	Shell Point Beach Park	32	Bonnett Pond Community Park
12	Apalachicola Wildlife Management Area	33	Holmes Creek Boat Ramp – Culpepper Landing
13	Lake Ellen Boat Ramp	34	Morrison Spring
14	Medart Recreation Park	35	Douglas Ferry – Billy Lee Park – Hinson Crossroads
15	The Woodlands Campground	36	St Joseph Community Park
16	Hosford/Telogia Sports Complex	37	Yates Mill Pond
17	Hosford School Playground	38	Cedar Log Landing Public Boat Ramp
18	Apalachicola Bradwell Unit	39	Douglass Crossroads Park
19	Torreya State Park	40	Pate Pond Boat Ramp
20	Pennington Field	41	Five Point Recreation Center
21	Altha Tennis Courts		
Alternative 1			
Map ID	**Site Name**	**Map ID**	**Site Name**
1	Mashes Sands Park & Boat Ramp	42	Asa May House
2	Holiday Park And Campground	43	Plantation Woods
3	Holiday Campground	44	Koa Tallahassee East Campground

Table 3-12. FDEP Florida Outdoor Recreation Inventory

FDEP Florida Outdoor Recreation Inventory			
4	Bayside Marina	45	A Campers World
5	Levy Bay Boat Ramp	46	Beaverdam Creek Tract – Apalachicola River
6	Fiddlers Point Boat Ramp	47	Boynton Cutoff Boat Landing
7	Panacea RV Park	48	Lafayette Creek Wildlife Management Area
8	Rock Landing Marina	49	Redd's Landing Public Boat Ramp
9	Woolley Memorial Park	50	Daniels Park
10	Sopchoppy Elementary School Tennis Courts	51	J.E. Carter Landing
11	Depot Park-Sopchoppy	52	Zamora Park
12	Shell Point Beach Park	53	Boat Lake Park
13	Big Bend Seagrasses Aquatic Preserve	54	Shell Landing
14	Big Bend Water Management Area – Hickory Mound Unit	55	Campbell Park of Washington County
15	Econfina River State Park	56	Seven Runs Creek Park
16	Apalachicola Wildlife Management Area	57	Dead River Park
17	Lake Ellen Boat Ramp	58	Wilder Park
18	Medart Recreation Park	59	Jack Haddock Landing
19	Big Bend Water Management Area – Snipe Island Unit	60	Sunny Hills – Gap Pond
20	Econfina River Conservation Area	61	Letchworth-Love Mounds Archaeological State Park
21	Lower Econfina River Wildlife Management Area	62	Lake Miccosukee South Public Boat Ramp
22	Aucilla Wildlife Management Area	63	Choctawhatchee River & Holmes Creek Water Management Area
23	Hickory Park	64	Chipola River Water Management Area
24	Hudson Park	65	Torreya State Park
25	Azalea Park	66	Monticello Ecological Park
26	Wacissa Conservation Area – Goose Pasture	67	Sunny Hills Golf Club
27	Middle Aucilla Conservation Area	68	Dave Taylor Landing
28	Middle Aucilla Wildlife Management Area	69	Pennington Field
29	Wacissa Springs Public Boat Ramp	70	Altha Tennis Courts
30	The Woodlands Campground	71	Jenkins Landing
31	Hosford/Telogia Sports Complex	72	Live Oak Landing – Holmes Creek
32	Hosford School Playground	73	Dogwood Acres Camp
33	Apalachicola Bradwell Unit	74	Altha Park
34	Blount Landing	75	Compass Lake – City Square – Public Boat Ramp
35	Wainwright Landing	76	Hightower Springs Landing
36	Elk Horn Landing	77	Brunson Landing
37	Ben Stoutamire Landing	78	Vernon Sportsplex
38	Pat Thomas Park	79	Shady Grove Road Ballfield
39	Whip-Poor-Will Sportsman's Lodge	80	Peacock Bridge Public Boat Ramp
40	Whip-Poor-Will Landing	81	Possum Palace Park
41	Ingrams Marina		

Source: (FDEP, 2022b)
FDEP = Florida Department of Environmental Protection; ID = identification

In summary, noise levels generated by air operations under the Proposed Action would be compatible with all land uses beneath the associated MTR, and noise impacts on the public are expected to be relatively minor and limited to annoyance and speech/activity interference. Increases in time-averaged noise levels would not be significant or reportable as defined in FAA Order 1050.1F (FAA, 2020b). Other existing MTRs, R-2914A, and Tyndall C MOA currently

experience low-altitude overflights to which local communities and residents have become familiar. To minimize noise impacts on surrounding communities, various noise abatement procedures, including avoidance areas of specific noise-sensitive areas as described in Table 2-1**,** will be implemented. Additional information on noise-level reduction measures is presented in Section 3.4 (Noise).

3.5.3.2 Alternative 1

Land use impacts under Alternative 1 are expected to be similar to the Proposed Action. Alternative 1 would include the same number of aircraft operations and mission parameters. Because Alternative 1 spans further east, it covers a greater amount of land area and overlays more population centers near Tallahassee. FDEP Florida Outdoor Recreation Inventory reflects a total of 81 locations under Alternative 1. These locations include boat ramps, parks, campgrounds, sport fields, wildlife management areas, and golf courses. Also, a portion of St. Marks NWR Wilderness Area along with various other conservation areas are found within the ROI. St. Marks NWR Wilderness attracts many types of outdoor activities, including fishing, birdwatching, hiking, and seasonal hunting.

Alternative 1, IR-017, and VR-1017 share the same path on the western end in Walton, Washington, and a small portion of Jackson Counties, which would be similar in sound levels. Avoidance areas under Alternative 1 would exist in the same areas as described for the Proposed Action and would require the same minimum altitudes. In general, similar noise levels generated by air operations under Alternative 1 would be compatible with all land uses beneath the associated MTR, and noise impacts on the public are expected to be minor and limited to annoyance and speech/activity interference.

3.5.3.3 No Action Alternative

No impacts on land use would occur under the No Action Alternative. No MTR would be established, and land use conditions would remain the same as existing conditions as identified in Section 2.6 (Impact Summary).

3.5.3.4 Cumulative Impacts

The Proposed Action route avoids major cities, and it is unlikely the small, rural municipalities would expand to the extent that the route is incompatible from a land use perspective. Currently, there is an industrial park under construction in Washington County, just south of Chipley, Florida. This construction project does not fall underneath the Proposed Action. The only likely future development would exist in Bay County due to Panama City and the expansion of that city, which lies far to the south of the Proposed Action ROI. The Bay County Land Use Plan is designed and modified in conjunction with Tyndall AFB and is attuned to compatible land use philosophies.

Various conservation corridor type of efforts may exist or be planned, but these are generally beneficial for the Proposed Action, as less development and preservation of open space would be instituted.

In the last few years, there has been an increase across the Florida Panhandle's rural areas of new communication towers associated with fifth-generation wireless/cellular companies and

community-level efforts, including police and emergency management services. In jurisdictions with comprehensive zoning, wireless telecommunications facilities must conform to local land use controls. However, in some rural areas and small communities, policies may not exist for the placement of these towers (Scenic America, 2022). Therefore, the possibility exists for these to conflict with the proposed activities, creating a need for additional obstruction avoidance planning.

3.6 HEALTH AND SAFETY

3.6.1 Definition of the Resource

Health and safety as addressed in this section refers to if or how the Proposed Action would potentially pose a safety risk to the public. The affected environment for safety is focused on flight safety, and encompasses the airspace associated with the Proposed Action and alternatives and the land area beneath that airspace. No flares would be expended along the route eliminating any risk of fire typically associated with these items.

Flight safety is based on the physical risks associated with aircraft flight and the prevention of mishaps that could result in damage to property or injury or loss of life. A variety of DAF regulations governs the various aspects of safety. For example, policies related to flight safety include AFI 91-202, The DAF Mishap Prevention Program, and DoD Instruction 6055.07, Mishap Notification, Investigation, Reporting, and Record Keeping. These policies detail procedures for mishap prevention, notification, investigation, reporting, and record keeping. In addition, military aircraft fly in accordance with FAA regulations at 14 CFR Part 91 *General Operating and Flight Rules*, which govern such things as operating near other aircraft, right-of-way rules, aircraft speed, and minimum safe altitudes. These rules include the use of testing and training flight areas, arrival and departure routes, and airspace restrictions as appropriate to help control air operations.

The military services define four major categories of aircraft mishaps (A to D), with “Class A” mishaps defined as the most serious. A Class A mishap results in one or more of the following: (1) a direct mishap cost totaling $2 million or more, (2) a fatality or permanent total disability, or (3) the destruction of a DoD aircraft. Because of the scope of potential impacts associated with its occurrence, this document will focus only on Class A mishaps. All total, the F-35 has experienced five Class A mishaps since 2000 with no fatalities (Air Force Safety Center, 2022b).

3.6.1.1 Analysis Methodology

The analysis of potential impacts to public health and safety evaluates flight safety risks from expected and typical levels of aircraft operations within the Proposed Action and Alternative 1 routes. Specifically, the analysis evaluates the potential for accidents to occur as a result of aircraft mishaps from various sources, such as mechanical failure, adverse weather, and risk of collisions between obstructions, other aircraft and wildlife (i.e., a Bird/Wildlife Aircraft Strike Hazard [BASH]), and how DAF BASH reduction programs help avoid strikes. Historical statistics of flight mishaps for a given aircraft are used as the basis for assessing the potential for a mishap

related to the Proposed Action. The DAF integrates preventative safety measures and incorporates knowledge of risks such as obstacles or conditions where bird density is high, potential airspace and airport conflicts into daily operations to reduce the potential for accidents. Data sources for the analysis include aviation statistics from the Air Force Safety Center (Air Force Safety Center, 2022a) and National Transportation Safety Board. With regard to obstacles, the DAF compared the proposed route to National Geospatial-Intelligence Agency Digital Vertical Obstruction Files and the FAA Digital Obstruction File data for obstruction data (FAA, 2022b) to determine if vertical obstructions are present.

A summary of planned measures to reduce safety risk are described in Chapter 2 (Description of Proposed Action and Alternatives), Table 2-1, and Section 4.4 (Health and Safety).

3.6.1.2 Significance Determination

Safety impacts would be significant if the Proposed Action resulted in an increased safety risk to the public from aircraft mishaps not manageable through existing safety programs and procedures.

3.6.2 Affected Environment

Existing Flight Safety

With regard to flight safety, the affected environment within the ROI is characterized by the existence of multiple different types of military and commercial airspace, military, private and commercial airports, and numerous daily aircraft flights. Figure 3-11 shows existing military routes, airspace, airports, and obstructions for the Proposed Action, and Figure 3-12 shows a single-day snapshot of aircraft flights overlaid with the original IR-015 route, which is the same as the Alternative 1 route, IR-096. Coordination and communication between the military, commercial airports and the FAA ensures flight activities occur in a safe manner throughout the ROI.

Nationwide, aircraft accidents are rare and with respect to flight safety the current existing condition of the ROI is safe. Mishap rates for general aviation (e.g., small private aircraft) for accidents averaged 6.4 incidents per 100,000 flying hours over the past 20 years. The average commercial airlines accident rate since 2001 is 16 per 100,000 flying hours (National Transportation Safety Board, 2022). Lifetime, the average Class A mishap rate for the F-35 is 2.2 mishaps per 100,000 flying hours (Air Force Safety Center, 2022b).

DAF personnel are provided continuous safety training throughout their career with the DAF. Specifically, all DAF pilots use state-of-the-art simulators for training purposes that include all facets of flight operations and comprehensive emergency response procedures that minimize the mishap risks associated with pilot error. Highly trained maintenance crews perform inspections on each aircraft in accordance with DoD regulations. Maintenance activities are monitored to ensure aircraft are equipped to withstand the rigors of operational and training events safely. For in-flight emergencies such as mechanical failure or bird strike, military pilots are trained to take all appropriate emergency measures, including avoiding populated areas, if possible.

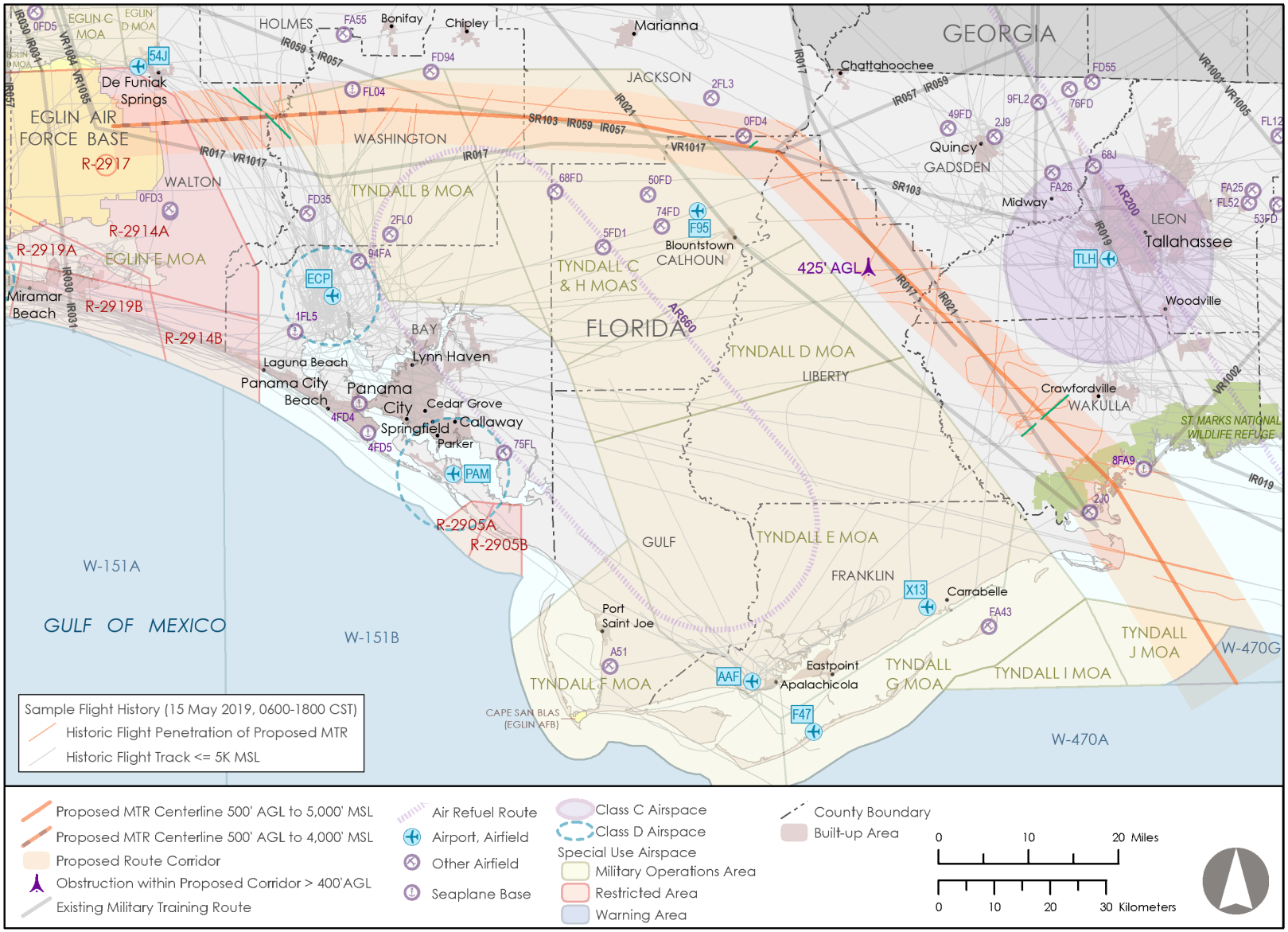
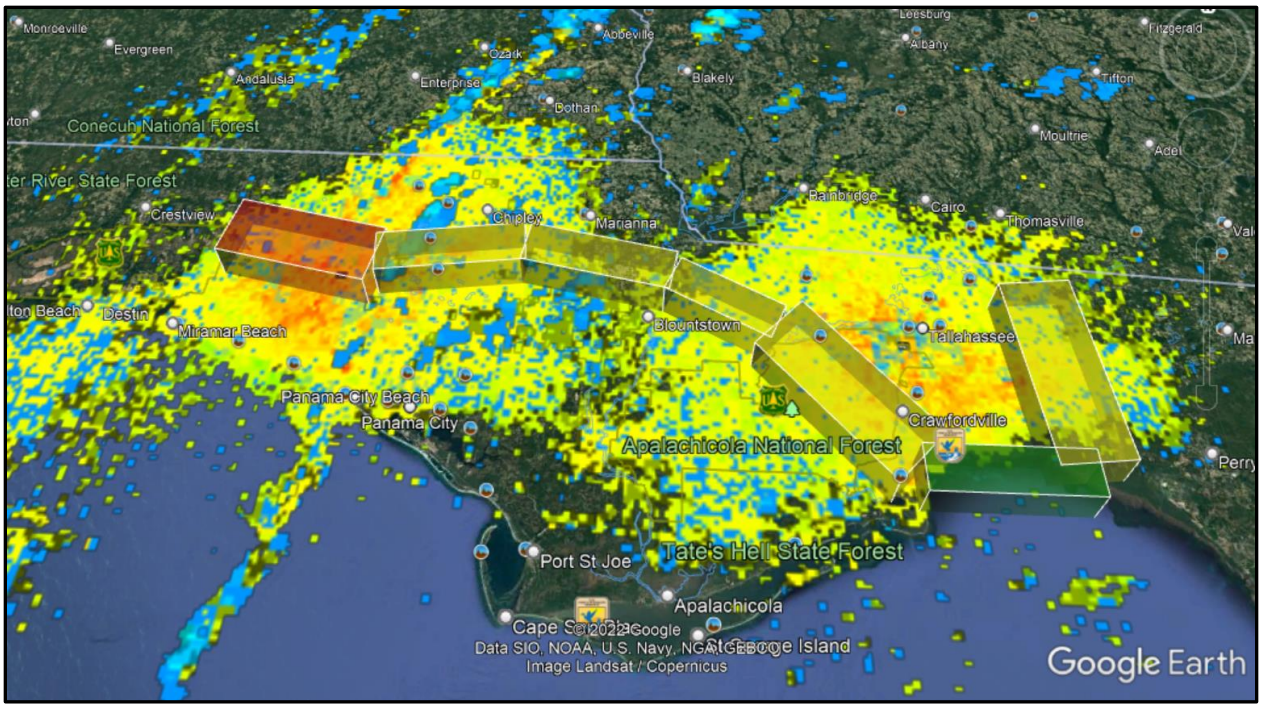


Figure 3-11. Affected Environment for Flight Safety for the Establishment of the Proposed Training Route, IR-096



(Note: NEXRAD Radar of bird signatures overlaid on the original IR-015 show potential bird-aircraft strike risk where red is high, yellow is medium, and green is low.)

Figure 3-12. Avian Hazard Database Snapshot

Bird-Aircraft Strike Hazards

Ninety percent of bird strikes occur at altitudes under 3,000 feet AGL (FAA, 2022a) so there is potential for the flights along the proposed route to encounter birds. Over the period of 2000 to 2019, 11 aircraft across the DAF have been destroyed and four fatalities have occurred from bird/wildlife-aircraft strikes (DAF, 2022a). The DAF Avian Hazard Advisory System uses Next Generation Weather Radar (NEXRAD) and two models to determine potential bird strike risk in near real time (DAF, 2022b) (see Figure 3-12). These two sources of information provide information on the inherent safety characteristics of aircraft, and bird–aircraft collision risk of the ROI. The DAF BASH Reduction Program focuses on reducing strike hazards through awareness, bird control, bird avoidance, and aircraft design and uses the DAF Avian Hazard Advisory System to manage the threat for a specific route, airspace block or area.

Migratory waterfowl (e.g., ducks, geese, and swans) are typically the most hazardous birds to low-flying aircraft, because of their size and their propensity for migrating in large flocks at a variety of elevations and times of day. Turkey vultures can pose an elevated risk within the ROI, especially during the winter months (DeFusco, 1993). It should be noted the ROI is not located within a major migratory corridor (flyway) for waterfowl, or other types of birds (Figure 3-13). Nationwide, incidents with bald eagles have steadily increased as eagle populations have increased (FAA, 2022c). There are several active and inactive bald eagle nests in and around the ROI, with highest concentrations along the coast. There are relatively few eagle nests along the proposed route itself.

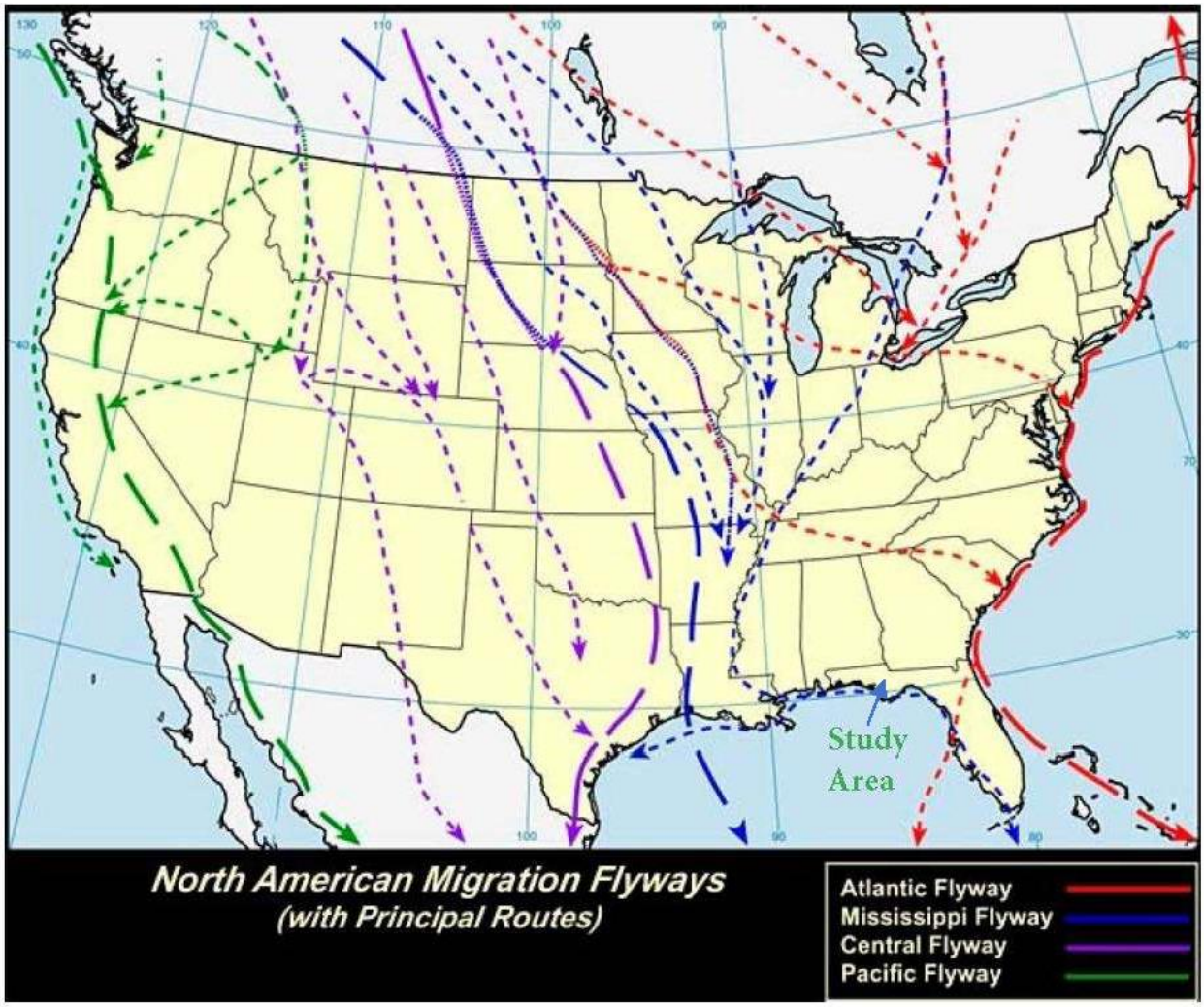


Figure 3-13. U.S. Migratory Bird Flyways

3.6.3 Environmental Consequences

3.6.3.1 Proposed Action

Under the Proposed Action, there would be an increase in aircraft flights in the ROI of up to eight times a month. The effect on the health and safety environment would be negligible, and no appreciable increase to safety incident rates or likelihood of mishaps would be expected to occur. The current Class A mishap rate for the F-35 is 2.2 mishaps per 100,000 flying hours or 0.000022 mishaps per hour. Assuming eight flights a month at 420 knot speed, over a distance of 160 miles, the total flying hours per month would be less than 3 hours. The potential for or probability of an accident would be near zero considering the Class A Mishap rate of the F-35.

Six structures are located along the proposed route (Figure 3-11) and would be avoided as pilots would adjust altitude and course accordingly. The proposed route overlaps with Tyndall airspace and arrivals into the Northwest Florida Beaches International Airport; but, because the MTR occupies a different altitude in the airspace (4,000 feet AGL) than the airport arrivals (5,000 feet AGL), there would be no conflict or safety concerns.

There is a potential for bird-aircraft collisions and the DAF monitors and manages the risk on a near real-time basis through the Avian Hazard Advisory System. The DAF Avian Hazard Advisory System models and tracks the status of bird strike hazards, informs pilots, and reduces the potential for encounters of aircraft with birds. Known bird attractants such as landfills, are factored into the bird strike risk models, and along with NEXRAD radar data of bird activity, are relayed to pilots.

Most importantly, pilots are trained to respond to inflight emergencies and hazards in the safest manner possible, including avoiding populated areas.

As a result of coordination and communication, there would be no adverse impacts to safety under the Proposed Action from obstructions, interactions with airfields, or conflicts with aircraft within other military and commercial airspace. Vertical obstructions have been noted and would be avoided. Scheduling and communication between 96 TW and other entities would deconflict route usage with other entities.

Therefore, the establishment of MTR IR-096 under the Proposed Action would not be expected to have a significant adverse effect on the existing health and safety environment.

3.6.3.2 Alternative 1

Under Alternative 1, the 96 TW would create a new route. While this route would be subject to the same coordination, communication and schedule deconfliction between other military and commercial airspace users, there are more safety considerations, such as a higher number of obstructions to avoid, closer proximity to the Tallahassee and Northwest Florida Beaches International Airports, and more overlap of other flight activity. There are no records of mishaps, and safety is not expected to be significantly affected if this route is established.

3.6.3.3 No Action Alternative

Under the No Action Alternative, the existing safety environment would not change.

3.6.3.4 Cumulative Impacts

Cumulative health and safety impacts consider past, present and reasonably foreseeable future actions. Discussion of potential safety impacts in Section 3.6.3.1 (Proposed Action) includes other types of flight activity and airspace in the study area and capture the past and present. Reasonably foreseeable future actions include continued and expanded use of airports and airspace. Airport expansions are planned for Tallahassee International Airport and Northwest Florida Beaches International Airport within the next 5 years (Casey, 2022; CHA Consulting, 2021). Figure 3-14 shows the overlapping use of the study area with other military routes, airspace, numerous private airfields, and a single-day snapshot of commercial flights. Flights along the proposed IR-096 route, together with all other forms of existing aircraft activity in the study area, and reasonably foreseeable future actions could potentially have a cumulative safety impact. However, significant cumulative health and safety impacts are not expected as commercial and military flights would remain in separate airspace, and close coordination and communication between military and commercial air traffic controllers and pilots would continue.

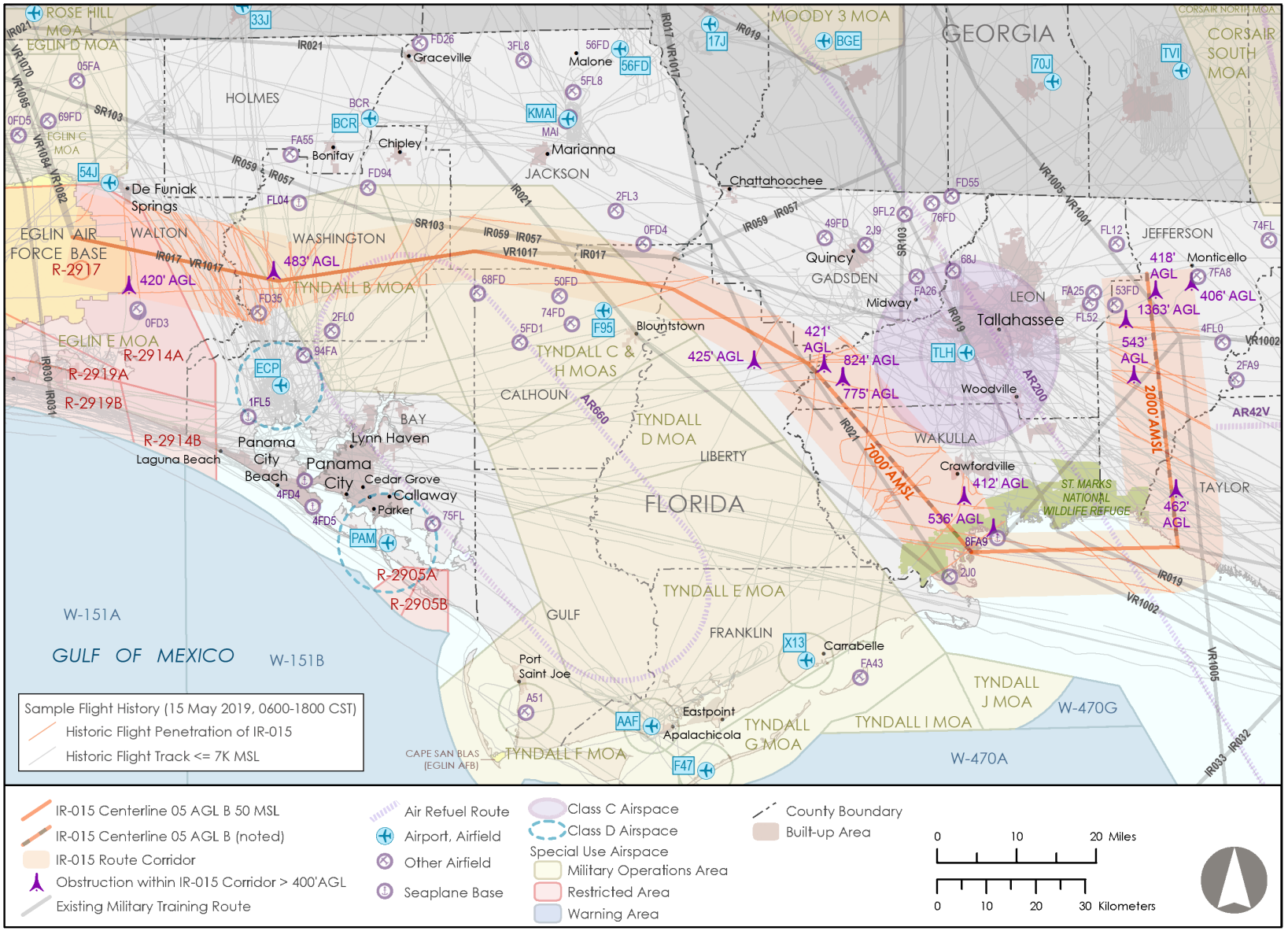


Figure 3-14. Affected Environment for Flight Safety for Establishment of the Alternative 1 Training Route

3.7 ENVIRONMENTAL JUSTICE

3.7.1 Definition of the Resource

The resource considered for environmental justice is potentially affected populations that meet certain characteristics based on race, income, and age. The resource is relatively defined to understand if impacts from an action occur in areas disproportionately composed of minorities and low-income persons. While not specifically part of environmental justice analysis, this section also considers similar impacts to youth and elderly populations. This concern arises because large impact projects have historically used sites where real estate values are lower and/or more industrialized. Locations with low property values tend to attract development of affordable and marginal housing. This dynamic tends to perpetuate and often pre-dates the enactment of community land use ordinances. The intent of environmental justice is to reduce the burden of impacts on socially and economically vulnerable populations.

3.7.1.1 Analysis Methodology

Analysis of environmental justice and other sensitive receptors is conducted pursuant to EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, and EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. If there is a potential for the Proposed Action or alternatives to result in adverse impacts to resource areas that may affect human populations, analysis is conducted to determine whether environmental justice Communities of Comparison (COCs) would be disproportionately impacted. This analysis focuses on increased aircraft noise resulting from the action as the primary impact to these populations. Per DAF guidelines for environmental justice analysis, census data (i.e., percentages of populations identifying themselves as minority, low income, etc.) was used to determine potential impacts to these populations. The guidelines also address youth (under 18) and elderly (65 and older) as additional sensitive populations (Air Force Civil Engineer Center, 2020c).

The smallest census data which has the information necessary for analysis of potential impacts to environmental justice populations is used to determine potential impacts. The smallest group of census data that contains the needed information for this analysis is the Census Block Group (BG). Each BG partially or wholly encompassed by the Proposed Action or Alternative 1 is defined as an ROI. Table 3-13 and Table 3-14 lists the BGs within the ROI.

3.7.1.2 Significance Determination

To identify disproportionate impacts from baseline or action noise levels, a COC is needed. The COC for the Proposed Action is the nine counties occurring under the proposed training route corridor (Table 3-13). The COC for Alternative 1 is the 12 counties occurring beneath it (Table 3-14). The percentages of minority and low-income persons are calculated for the COC and then compared to each BG within the ROI. If the percentage of minorities or low-income persons in an ROI is equal to or greater than the percentage of minorities or low-income persons in the COC, there is a potential for a disproportionate impact to the environmental justice population in that ROI (Air Force Civil Engineer Center, 2020c).

Table 3-13. Environmental Justice Communities and Sensitive Populations – Baseline Conditions (Proposed Military Training Route Corridor)

Geographic Unit	Total Population	Population for Whom Poverty Is Determined	Minority		Low Income		Youth		Elderly	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent
Block Groups (ROI)										
BG1, CT101	1,336	1,336	87	7%	56	4%	234	18%	334	25%
BG2, CT101	914	914	30	3%	188	21%	274	30%	114	12%
BG2 CT, 9701.02	373	373	36	10%	0	0%	0	0%	180	48%
BG1, CT204	513	513	222	43%	0	0%	46	9%	135	26%
BG2, CT208	1,205	1,205	631	52%	344	29%	323	27%	200	17%
BG3, CT208	902	902	545	60%	262	29%	147	16%	208	23%
BG4, CT208	1,115	1,115	219	20%	464	42%	162	15%	139	12%
BG1, CT2106	494	494	131	27%	7	1%	64	13%	237	48%
BG1, CT2111	1,072	1,063	78	7%	297	28%	124	12%	396	37%
BG 2, CT2109.01	496	453	54	11%	49	11%	125	25%	118	24%
BG2, CT2110	1,674	1,672	414	25%	126	8%	449	27%	260	16%
BG2, CT2111	913	913	211	23%	122	13%	161	18%	157	17%
BG3, CT2110	499	499	85	17%	47	9%	84	17%	120	24%
BG3, CT2111	1,103	1,083	122	11%	47	4%	142	13%	273	25%
BG4, CT2111	824	824	12	1%	96	12%	141	17%	261	32%
BG2, CT27.02	832	832	29	3%	112	13%	151	18%	196	24%
BG4, CT27.02	737	737	0	0%	45	6%	130	18%	150	20%
BG1, CT9501	897	897	126	14%	113	13%	178	20%	155	17%
BG1, CT9502.02	932	878	540	58%	173	20%	161	17%	45	5%
BG1, CT9800	1,276	NI	857	67%	NI	NI	0	0%	8	1%
BG2, CT 9501	1,139	1,139	118	10%	172	15%	284	25%	163	14%
BG2, CT9502.02	514	514	38	7%	168	33%	42	8%	129	25%
BG1, CT101.01	607	607	45	7%	34	6%	16	3%	298	49%
BG1, CT102.04	1,958	1,851	73	4%	23	1%	541	28%	222	11%
BG2, CT101.01	1,464	1,464	12	1%	423	29%	372	25%	466	32%
BG2, CT101.02	1,269	1,269	142	11%	83	7%	358	28%	203	16%
BG2, CT102.05	2,915	2,897	1,047	36%	290	10%	777	27%	303	10%
BG3, CT101.01	274	246	17	6%	4	2%	56	20%	58	21%
BG3, CT101.02	830	830	0	0%	237	29%	198	24%	218	26%
BG3, CT102.05	765	762	42	5%	68	9%	160	21%	104	14%
BG4, CT102.07	418	418	20	5%	50	12%	41	10%	94	22%
BG1, CT9502.01	1,063	933	180	17%	56	6%	124	12%	294	28%
BG1, CT9504	1,357	1,357	249	18%	232	17%	262	19%	217	16%

Table 3-13. Environmental Justice Communities and Sensitive Populations – Baseline Conditions (Proposed Military Training Route Corridor)

Geographic Unit	Total Population	Population for Whom Poverty Is Determined	Minority		Low Income		Youth		Elderly	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent
BG2, CT9503.05	545	545	0	0%	19	3%	111	20%	195	36%
BG2, CT9503.06	487	487	113	23%	13	3%	164	34%	45	9%
BG2, CT9504	927	927	256	28%	272	29%	106	11%	246	27%
BG2, CT9505.01	1,040	1,032	249	24%	175	17%	246	24%	159	15%
BG3, CT9503.05	1,027	1,027	41	4%	289	28%	357	35%	177	17%
BG3, CT9504	570	570	9	2%	96	17%	113	20%	152	27%
BG1, CT9701.02	1,859	1,859	47	3%	86	5%	426	23%	356	19%
BG1, CT9702	1,405	1,400	108	8%	592	42%	322	23%	426	30%
BG1, CT9703.03	1,805	1,803	377	21%	304	17%	383	21%	399	22%
BG2, CT9702	666	653	99	15%	127	19%	82	12%	174	26%
BG2, CT9703.02	3,410	859	1,486	44%	150	17%	196	6%	278	8%
BG2, CT9703.03	2,194	2,194	196	9%	330	15%	192	9%	472	22%
BG3, CT9702	1,084	1,081	241	22%	458	42%	191	18%	118	11%
BG3, CT9703.02	1,527	1,527	645	42%	282	18%	127	8%	379	25%
BG4, CT9703.02	1,126	1,126	455	40%	609	54%	330	29%	196	17%
Counties										
Calhoun	14,324	12,289	3,254	23%	2,001	16%	2,878	20%	2,605	18%
Franklin	11,914	10,323	2,824	24%	2,102	20%	1,881	16%	2,753	23%
Gadsden	45,787	42,318	31,017	68%	9,032	21%	9,947	22%	8,192	18%
Jackson	47,409	39,674	16,455	35%	7,193	18%	8,771	19%	9,413	20%
Leon	291,863	278,529	128,458	44%	54,572	20%	54,420	19%	39,217	13%
Liberty	8,333	6,874	2,082	25%	1,425	21%	1,524	18%	1,198	14%
Wakulla	32,855	29,407	6,850	21%	2,193	7%	6,872	21%	4,887	15%
Walton	71,049	69,134	11,360	16%	7,996	12%	14,492	20%	13,986	20%
Washington	25,094	22,334	5,749	23%	5,311	24%	4,863	19%	4,412	18%
COC	**548,628**	**510,882**	**208,049**	**38%**	**91,825**	**18%**	**105,648**	**19%**	**86,663**	**16%**
State of Florida	21,216,924	20,793,628	9,885,702	47%	2,772,939	13%	4,214,444	20%	4,347,912	20%
United States	326,569,308	318,564,128	130,317,933	40%	40,910,326	13%	73,296,738	22%	52,362,817	16%

Sources: (U.S. Census Bureau, 2022a; U.S. Census Bureau, 2022b; U.S. Census Bureau, 2022c)
% = percent; BG = Block Group; CT = Census Tract; COC = Community of Comparison; NI = No Information; ROI = region of influence
Note:
1. Gray highlights indicate BGs with disproportionate minority or low-income communities.

Table 3-14. Environmental Justice Communities and Sensitive Populations – Baseline Conditions (Alternative 1 Training Route Corridor)

Geographic Unit	Total Population	Population for Whom Poverty Is Determined	Minority		Low Income		Youth		Elderly	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent
Block Groups (ROI)										
BG2, CT3.01	915	915	44	5%	535	58%	158	17%	162	18%
BG1, CT101	1,336	1,336	87	7%	56	4%	234	18%	334	25%
BG2, CT101	914	914	30	3%	188	21%	274	30%	114	12%
BG2, CT103.01	1,434	1,434	486	34%	32	2%	303	21%	254	18%
BG2, CT103.02	830	684	82	10%	40	6%	190	23%	256	31%
BG3, CT102	900	900	0	0%	324	36%	79	9%	260	29%
BG4, CT102	1,607	1,607	226	14%	229	14%	412	26%	252	16%
BG2, CT208	1,205	1,205	631	52%	344	29%	323	27%	200	17%
BG3, CT208	902	902	545	60%	262	29%	147	16%	208	23%
BG4, CT208	1,115	1,115	219	20%	464	42%	162	15%	139	12%
BG5, CT208	664	664	292	44%	31	5%	155	23%	184	28%
BG2, CT2110	1,674	1,672	414	25%	126	8%	449	27%	260	16%
BG2, CT2111	913	913	211	23%	122	13%	161	18%	157	17%
BG3, CT2110	499	499	85	17%	47	9%	84	17%	120	24%
BG3, CT2111	1,103	1,083	122	11%	47	4%	142	13%	273	25%
BG4, CT2111	824	824	12	1%	96	12%	141	17%	261	32%
BG1, CT2501.03	1,425	1,425	1,117	78%	645	45%	538	38%	138	10%
BG1, CT2501.04	819	738	191	23%	23	3%	66	8%	287	35%
BG1, CT2501.06	783	719	464	59%	175	24%	76	10%	176	22%
BG1, CT2502	586	586	244	42%	184	31%	64	11%	285	49%
BG2, CT2501.04	283	233	238	84%	76	33%	30	11%	59	21%
BG2, CT2502	1,415	1,384	680	48%	252	18%	359	25%	245	17%
BG3, CT2501.04	1,595	1,595	414	26%	187	12%	203	13%	283	18%
BG3, CT2502	786	778	267	34%	150	19%	250	32%	171	22%
BG4, CT2502	1,786	1,786	86	5%	80	4%	277	16%	459	26%
BG1, CT25.15	1,753	1,753	1,243	71%	128	7%	526	30%	267	15%
BG2, CT25.07	1,021	1,020	451	44%	9	1%	137	13%	320	31%
BG2, CT25.15	974	974	395	41%	89	9%	212	22%	278	29%
BG4, CT25.15	1,964	1,964	325	17%	122	6%	454	23%	414	21%
BG4, CT27.02	737	737	0	0%	45	6%	130	18%	150	20%
BG1, CT9501	897	897	126	14%	113	13%	178	20%	155	17%
BG1, CT9502.02	932	878	540	58%	173	20%	161	17%	45	5%
BG1, CT9800	1,276	NI	857	67%	NI	NI	0	0%	8	1%
BG2, CT9501	1,139	1,139	118	10%	172	15%	284	25%	163	14%

Table 3-14. Environmental Justice Communities and Sensitive Populations – Baseline Conditions (Alternative 1 Training Route Corridor)

Geographic Unit	Total Population	Population for Whom Poverty Is Determined	Minority		Low Income		Youth		Elderly	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent
BG2, CT9502.02	514	514	38	7%	168	33%	42	8%	129	25%
BG1, CT9502.0	1,368	1,368	0	0%	209	15%	193	14%	379	28%
BG1, CT101.01	607	607	45	7%	34	6%	16	3%	298	49%
BG1, CT101.02	808	808	127	16%	13	2%	162	20%	159	20%
BG1, CT102.04	1,958	1,851	73	4%	23	1%	541	28%	222	11%
BG1, CT102.05	1,888	1,888	415	22%	20	1%	376	20%	198	10%
BG1, CT102.07	1,628	1,628	122	7%	92	6%	309	19%	406	25%
BG2, CT101.01	1,464	1,464	12	1%	423	29%	372	25%	466	32%
BG2, CT101.02	1,269	1,269	142	11%	83	7%	358	28%	203	16%
BG2, CT102.04	1,407	1,407	289	21%	0	0%	407	29%	34	2%
BG2, CT102.05	2,915	2,897	1,047	36%	290	10%	777	27%	303	10%
BG2, CT102.08	2,539	2,415	394	16%	35	1%	381	15%	392	15%
BG3, CT101.01	274	246	17	6%	4	2%	56	20%	58	21%
BG3, CT101.02	830	830	0	0%	237	29%	198	24%	218	26%
BG3, CT102.05	765	762	42	5%	68	9%	160	21%	104	14%
BG4, CT102.07	418	418	20	5%	50	12%	41	10%	94	22%
BG1, CT9502.01	1,063	933	180	17%	56	6%	124	12%	294	28%
BG1, CT9504	1,357	1,357	249	18%	232	17%	262	19%	217	16%
BG2, CT9503.05	545	545	0	0%	19	3%	111	20%	195	36%
BG2, CT9503.06	487	487	113	23%	13	3%	164	34%	45	9%
BG2, CT9504	927	927	256	28%	272	29%	106	11%	246	27%
BG2, CT9505.01	1,040	1,032	249	24%	175	17%	246	24%	159	15%
Bl3, CT9503.05	1,027	1,027	41	4%	289	28%	357	35%	177	17%
BG3, CT9504	570	570	9	2%	96	17%	113	20%	152	27%
BG3, CT9505.01	919	919	218	24%	111	12%	29	3%	194	21%
BG1, CT9703.01	2,525	2,502	316	13%	628	25%	736	29%	434	17%
BG1, CT9703.02	1,216	1,216	49	4%	336	28%	316	26%	170	14%
BG1, CT9703.03	1,805	1,803	377	21%	304	17%	383	21%	399	22%
BG2, CT9702	666	653	99	15%	127	19%	82	12%	174	26%
BG2, CT9703.02	3,410	859	1,486	44%	150	17%	196	6%	278	8%
BG2, CT9703.03	2,194	2,194	196	9%	330	15%	192	9%	472	22%
BG3, CT9702	1,084	1,081	241	22%	458	42%	191	18%	118	11%
BG3, CT9703.02	1,527	1,527	645	42%	282	18%	127	8%	379	25%
BG4, CT9703.02	1,126	1,126	455	40%	609	54%	330	29%	196	17%
Counties										

Table 3-14. Environmental Justice Communities and Sensitive Populations – Baseline Conditions (Alternative 1 Training Route Corridor)

Geographic Unit	Total Population	Population for Whom Poverty Is Determined	Minority		Low Income		Youth		Elderly	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent
Bay	180,076	177,623	43,555	24%	23,110	13%	38,057	21%	31,522	18%
Calhoun	14,324	12,289	3,254	23%	2,001	16%	2,878	20%	2,605	18%
Franklin	11,914	10,323	2,824	24%	2,102	20%	1,881	16%	2,753	23%
Gadsden	45,787	42,318	31,017	68%	9,032	21%	9,947	22%	8,192	18%
Jackson	47,409	39,674	16,455	35%	7,193	18%	8,771	19%	9,413	20%
Jefferson	14,278	12,409	5,735	40%	2,108	17%	2,317	16%	3,293	23%
Leon	291,863	278,529	128,458	44%	54,572	20%	54,420	19%	39,217	13%
Liberty	8,333	6874	2,082	25%	1,425	21%	1,524	18%	1,198	14%
Taylor	21,709	17,884	6,201	29%	3,711	21%	4,196	19%	4,342	20%
Wakulla	32,855	29,407	6,850	21%	2,193	7%	6,872	21%	4,887	15%
Walton	71,049	69,134	11,360	16%	7,996	12%	14,492	20%	13,986	20%
Washington	25,094	22,334	5,749	23%	5,311	24%	4,863	19%	4,412	18%
COC	**764,691**	**718,798**	**219,985**	**38%**	**120,754**	**17%**	**150,218**	**20%**	**125,820**	**16%**
State of Florida	21,216,924	20,793,628	9,885,702	47%	2,772,939	13%	4,214,444	20%	4,347,912	20%
United States	326,569,308	318,564,128	130,317,933	40%	40,910,326	13%	73,296,738	22%	52,362,817	16%

Sources: (U.S. Census Bureau, 2022a; U.S. Census Bureau, 2022b; U.S. Census Bureau, 2022c)
% = percent; BG = Block Group; CT = Census Tract; COC = Community of Comparison; IR = Instrument Route; NI = No Information; ROI = region of influence
Note:
1. Gray highlights indicate BGs with disproportionate minority or low-income communities.

3.7.2 Affected Environment

3.7.2.1 Proposed Action

Table 3-13 provides baseline demographic conditions for the areas underlying the proposed training route corridor. Also shown in Table 3-13 is the existing proportion of environmental justice populations in the BGs located in the ROI and the counties under the proposed training route corridor (Figure 3-15). The counties compose the COC for the environmental justice analysis. As identified in Table 3-13, the COC has a lower proportion of minority populations than the state of Florida or the nation. The COC has a higher proportion of low-income populations than the state of Florida or the nation. BGs with disproportionate minority or low-income communities are highlighted in gray. Eleven sensitive receptors, including two daycares, one hospital, three nursing homes, and five schools are located under the proposed training route corridor (Figure 3-16).

3.7.2.2 Alternative 1

Table 3-14 provides baseline demographic conditions for the areas underlying the Alternative 1 route. Also shown in Table 3-14 is the existing proportion of environmental justice populations in the BGs located in the ROI and the counties beneath the Alternative 1 route (Figure 3-17). The counties compose the COC for the environmental justice analysis. As identified in Table 3-14, the COC has a lower proportion of minority populations than the state of Florida or the nation. The COC has a higher proportion of low-income populations than the state of Florida or the nation. BGs with disproportionate minority or low-income communities are highlighted in gray. Eighteen sensitive receptors, including 3 daycares, 1 hospital, 4 nursing homes, and 10 schools are located under the Alternative 1 route (Figure 3-16).

3.7.3 Environmental Consequences

3.7.3.1 Proposed Action

Noise levels would increase in areas underlying the proposed training route corridor but would remain below 55 dBA L_{dnmr}/DNL, the level identified by USEPA as protecting human health and welfare (Section 3.4, Noise). Sensitive receptors such as daycares, hospitals, nursing homes, and schools under the proposed training route corridor were evaluated for noise impacts (Figure 3-16).

Five of the 11 sensitive receptors under the proposed training corridor would experience increases in noise levels. These increases would range from 0.1 to 2.9 dBA L_{dnmr} with total dBA L_{dnmr} ranging from 48.4 to 51.8. The highest L_{dnmr} of 51.8 dBA would occur at the Home Sweet Home Adult Living Facility. Overflights may also startle individuals. However, overflights at very high engine power and at the lowest allowable altitude would be rare, and L_{max} exposure would last only a few seconds. The increase in noise levels would not be significant and would not result in adverse environmental impacts or health and safety risks to human populations. Therefore, there would be no adverse impacts to minority, low-income, or other sensitive populations associated with implementing the Proposed Action.

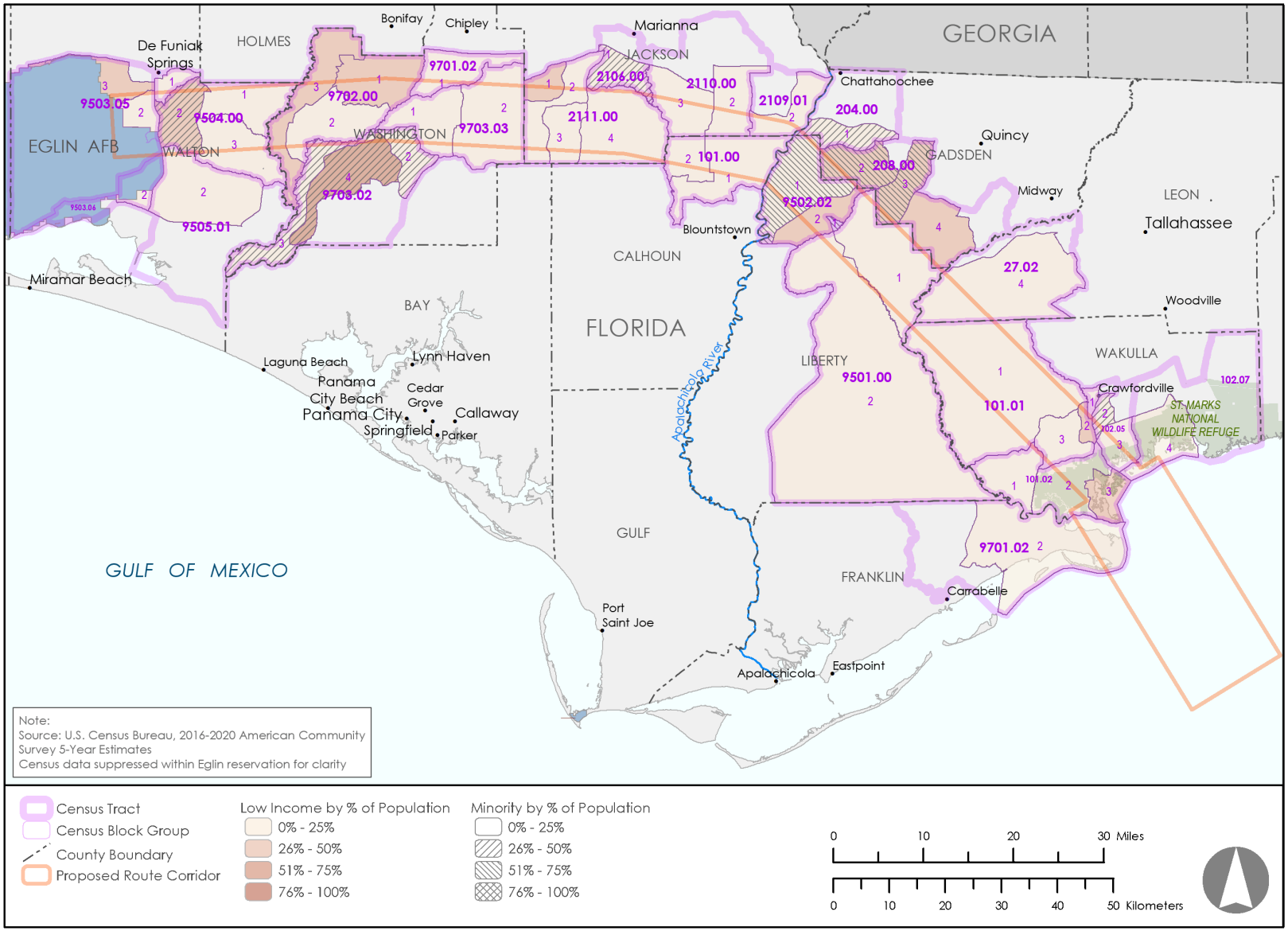


Figure 3-15. Environmental Justice Communities Under the Proposed MTR Corridor

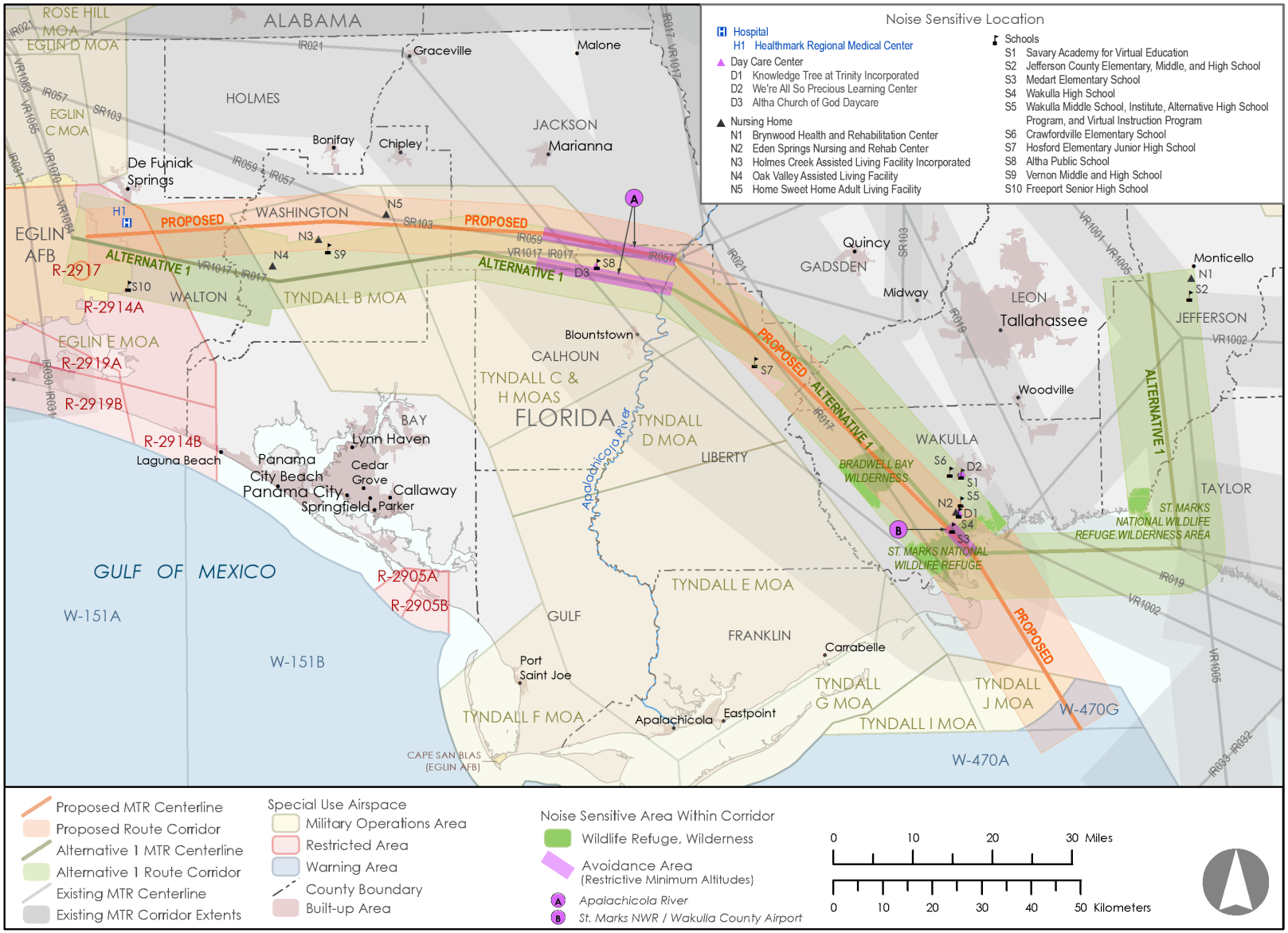


Figure 3-16. Sensitive Locations Beneath the Proposed and Alternative 1 MTR Corridors

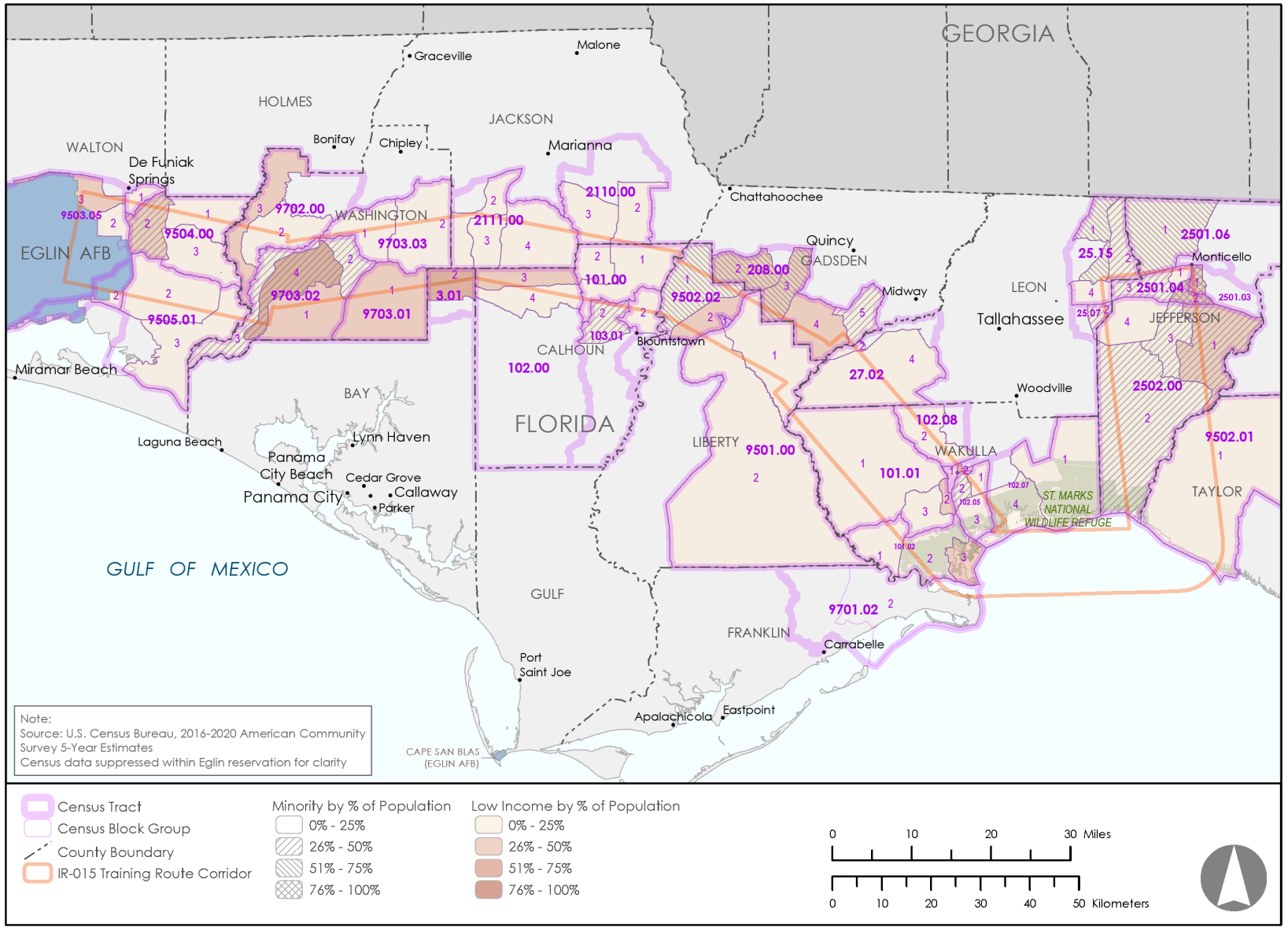


Figure 3-17. Environmental Justice Communities Under the Alternative 1 MTR Corridor

3.7.3.2 Alternative 1

Noise levels would increase in areas underlying the Alternative 1 route but would remain below 55 dBA L_{dnmr}/DNL, the level identified by USEPA as protecting human health and welfare (Section 3.4, Noise). Five of the 18 sensitive receptors under the Alternative 1 route would experience increases in noise levels.

These increases would range from 0.5 to 2.2 dBA L_{dnmr} with total dBA L_{dnmr} ranging from 47.2 to 50.2. The highest L_{dnmr} of 50.2 dBA at the Altha Church of God Daycare. Overflights may also startle individuals. However, overflights at very high engine power and at the lowest allowable altitude would be rare, and L_{max} exposure would last only a few seconds. The increase in noise levels would not be significant and would not result in adverse environmental impacts or health and safety risks to human populations. Therefore, there would be no adverse impacts to minority, low-income, or other sensitive populations associated with implementing Alternative 1.

3.7.3.3 No Action Alternative

Under the No Action Alternative, no new training route corridors would be created and noise levels from existing training routes would continue at existing levels. No environmental justice or sensitive populations would experience increases in noise levels.

3.7.3.4 Cumulative Impacts

No specific development projects or airspace changes with associated cumulative effects are known at this time. Should additional noise sensitive receptors occur in the areas under the Proposed Action or Alternative 1 corridors, then those developments would be anticipated to experience noise levels similar to those described for existing receptors. No cumulative impacts would be anticipated for minority, low-income, or other sensitive populations.

3.8 BIOLOGICAL RESOURCES

3.8.1 Definition of the Resource

Biological resources include the species and habitats within the ROI, which is defined as the air, land, and marine areas that could be affected by the Proposed Action. Since aircraft operations would not directly affect terrestrial, aquatic, or marine habitats, vegetation and designated protected areas (including critical habitat required to support listed species' recovery) are discussed primarily in the context of wildlife habitat, with a focus on areas with high species diversity, special habitat conditions for rare species, or other unique features. For wildlife, this discussion focuses on birds, mammals, and butterflies as they may be affected by aircraft strikes or noise associated with the Proposed Action. Other species groups are only briefly discussed as they are generally not considered sensitive to short-duration in-air aircraft noise.

Particular consideration is given to sensitive species and habitats (those protected by or managed according to federal or state laws). Special status species include migratory birds, bald eagles (*Haliaeetus leucocephalus)*, and threatened and endangered species. Migratory birds are defined

by the USFWS as any species or family of birds that lives, reproduces, or migrates within or across international borders at some point during the annual life cycle. Per the ESA, an endangered species is one in danger of extinction throughout all or a significant portion of its range, and a threatened species is one likely to become endangered within the foreseeable future. A proposed species is one proposed in the Federal Register for listing under the ESA. Candidate species are plants and animals the USFWS may propose as endangered or threatened at some point. Federal candidate species, and state-listed species are given consideration during project planning, but they have no protection under the ESA. Therefore, these species are included in the appropriate species grouping or categories in the analysis presented in this EA.

The regulatory framework that serves as the basis for the analysis of biological resources includes, but is not limited to, the laws, regulations, and EOs listed in Table 3-15.

Table 3-15. Applicable Laws, Regulations, and Executive Orders for Biological Resources

Law/Regulation	Summary
Endangered Species Act (16 U.S.C. Section 1531 et seq.)	Requires federal agencies, in consultation with the responsible regulatory agency (i.e., USFWS, NMFS), ensure proposed actions are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of a critical habitat. If an agency's proposed action is likely to adversely affect, or take, a listed species, then the agency must obtain an incidental take statement from the USFWS and/or NMFS.
Bald and Golden Eagle Protection Act (16 U.S.C. Sections 668–668d)	Prohibits the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, and export or import of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit.
Migratory Bird Treaty Act (16 U.S.C. Sections 703–712)	Prohibits the intentional "take" (pursuit, capture, killing, and/or possession) of any protected migratory bird, nest, egg, or parts thereof. USFWS regulations do allow for the incidental take of migratory birds during military readiness activities under the authorization of take incidental to military readiness activities (50 CFR 21.42). It is DoD policy to promote and support Partners in Flight in the protection and conservation of neotropical migratory birds and their habitat, consistent with the military mission.
EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*	Mandates federal agencies must conserve migratory birds. The assessment of a project's effect on migratory birds emphasizes "species of concern."

CFR = Code of Federal Regulations; DoD = Department of Defense; EO = Executive Order; NMFS = National Marine Fisheries Service; U.S.C. = United States Code; USFWS = United States Fish and Wildlife Service

3.8.1.1 Analysis Methodology

The impacts analysis assessed the potential for the Proposed Action to interact with habitats or species within the study area. The impact from these interactions may be direct, indirect, or if combined with other actions, cumulative. Potential impacts to biological resources were assessed by reviewing changes in the environment (i.e., noise levels) under each alternative and comparing the results with studies that present impacts associated with similar conditions.

3.8.1.2 Significance Determination

The potential impacts of the Proposed Action were evaluated to determine whether they would be adverse. An adverse impact would degrade habitat quality or diminish the health or distribution of plant or animal species. Adverse impacts were further evaluated as to their significance. NEPA-implementing regulations require context (the localized or regional relationship between an impact and existing conditions), intensity (the severity or extent of an impact), and duration be considered when making a significance determination. In this document, an adverse impact would be considered significant if it would be likely to jeopardize the continued existence of a species or result in an overall long-term decrease in species diversity or population abundance in the study area.

3.8.2 Affected Environment

The affected environment includes the species and habitats that occur or potentially occur beneath the proposed airspace. These habitats and species were identified through literature reviews, database searches, and coordination with regulatory agency representatives, resource managers, and other knowledgeable experts.

3.8.2.1 Natural Communities and Wildlife

The ROI includes portions of the Southeastern Plains ecoregion, Southern Coastal Plain ecoregion, and the Gulf of Mexico. These areas sustain various natural communities and wildlife habitats (Table 3-16). Additional detail on the vegetative communities of these ecoregions is available in state-by-state posters accessible through the following website: https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-state.

The primary species potentially affected by the Proposed Action are mammals and birds. Common mammals under the proposed airspace include deer (*Odocoileus virginianus*), coyotes (*Canis latrans*), American beaver (*Castor canadensis*), raccoons (*Procyon lotor)*, bats (various species), rabbits (various species), squirrels (various species), mice (various species), rats (various species), voles (various species), skunks (*Mephitis mephitis*), and domestic livestock (such as cattle and horses).

Table 3-16. Natural Communities Within the Region of Influence

Natural Community	Proposed Action (Acres)	Alternative 1 (Acres)
Beach, Dunes	188	114
Estuarine	14,156	15,711
Flatwoods	39,854	81,178
Ponds, Lakes	3,058	8,203
Marshes	7,412	19,563
Marine	101,944	139,130
Streams, Rivers	2,364	3,497
Uplands	119,950	136,599
Wetlands	131,795	276,060

Some of the avian species commonly found within the study area include crow (*Corvus brachyrhynchos*), northern cardinal (*Cardinalis cardinalis),* American robin (*Turdis migratorius*), mourning dove (*Zenaida macroura*), barn owl (*Tyto alba*), red-tailed hawk (*Buteo jamaicensis*),

turkey vulture (*Cathartes aura*), osprey (*Pandion haliaetus*), waterfowl (various species), and domestic fowl (such as chickens).

3.8.2.2 Special Status Species

The USFWS Information for Planning and Consultation system identified multiple federally listed species with the potential to occur within the area of interest, as well as critical habitat for various species (Table 3-17, Figure 3-18, and Figure 3-19). Additional information on special status species is available at the following websites: St. Marks NWR (https://www.fws.gov/refuge/st-marks/species), Florida Fish and Wildlife Commission Profiles (https://myfwc.com/wildlifehabitats/profiles/), and National Oceanic and Atmospheric Administration Fish Fisheries Find a Species (https://www.fisheries.noaa.gov/find-species).

Table 3-17. Special Status Species Potentially Occurring in the Study Area

Common Name	Scientific Name	Listing Status	May Occur
Amphibians			
Frosted flatwoods salamander	*Ambystoma cingulatum*	FT	PA, Alt. 1
Reticulated flatwoods salamander[1]	*Ambystoma bishopi*	FE	PA, Alt. 1
Birds			
Bald eagle	*Haliaeetus leucocephalus*	BGEPA	PA, Alt. 1
Eastern black rail	*Laterallus jamaicensis* spp. *jamaicensis*	FT	
Piping plover	*Charadrius melodus*	FT	
Red-cockaded woodpecker	*Picoides borealis*	FE	
Red knot	*Calidris canutus rufa*	FT	
Wood stork	*Mycteria americana*	FT	
Clams			
Chipola slabshell	*Elliptio chipolaensi*	FT	PA, Alt. 1
Fat threeridge[1]	*Amblema neislerii*	FE	
Gulf moccasinshell[1]	*Medionidus penicillatus*	FE	
Ochlockonee moccasinshell	*Medionidus simpsonianus*	FE	
Oval pigtoe[1]	*Pleurobema pyriforme*	FE	
Purple bankclimber[1]	*Elliptoideus sloatianus*	FT	
Shinyrayed pocketbook[1]	*Hamiota subangulata*	FE	
Southern kidneyshell[1]	*Ptychobranchus jonesi*	FE	
Tapered pigtoe[1]	*Fusconaia burkei*	FT	
Fish			
Gulf sturgeon[1]	*Acipenser oxyrinchus (=oxyrhynchus) desotoi)*	FT	PA, Alt. 1
Insects			
Monarch butterfly	*Danaus plexippus*	FC	PA, Alt. 1
Mammals			
Gray bat	*Myotis grisescens*	FE	PA, Alt. 1
Tricolored bat	*Perimyotis subflavus*	FPE	
West Indian manatee	*Trichechus manatus*	FT, MMPA	
Plants			
Apalachicola rosemary	*Conradina glabra*	FE	PA, Alt. 1
Chapman rhododendron	*Rhododendron chapmanii*	FE	
Cooley's meadowrue	*Thalictrum cooleyi*	FE	
Florida skullcap	*Scutellaria floridana*	FT	
Florida torreya	*Torreya taxifolia*	FE	
Fringed campion	*Silene polypetala*	FE	
Gentian pinkroot	*Spigelia gentianoides*	FE	

Table 3-17. Special Status Species Potentially Occurring in the Study Area

Common Name	Scientific Name	Listing Status	May Occur
Godfrey's butterwort	*Pinguicula ionantha*	FT	
Harper's beauty	*Harperocallis flava*	FE	
Papery whitlow-wort	*Paronychia chartacea*	FT	
Miccosukee gooseberry	*Ribes echinellum*	FT	Alt. 1
Telephus spurge	*Euphorbia telephioides*	FT	PA, Alt. 1
White birds-in-a-nest	*Macbridea alba*	FT	
Reptiles			
Eastern indigo snake	*Drymarchon corais couperi*	FT	PA, Alt. 1
Gopher tortoise	*Gopherus polyphemus*	ST	
Green sea turtle	*Chelonia mydas*	FT	
Kemp's ridley sea turtle	*Lepidochelys kempii*	FE	
Leatherback sea turtle	*Dermochelys coriacea*	FE	
Loggerhead sea turtle	*Caretta caretta*	FT	

Source: (USFWS, 2022a)
Alt. 1 = Alternative 1; BGEPA = Bald and Golden Eagle Protection Act; FC = federal candidate; FE = federally endangered; FPE = federal proposed endangered; FT = federally threatened; MBTA = Migratory Bird Treaty Act; MMPA = Marine Mammal Protection Act; PA = Proposed Action; ST = state threatened
Note:
1. Critical habitat is present in the Study Area.

Descriptions for noise-sensitive special status species potentially found within the study area are provided in Table 3-18.

Table 3-18. Descriptions for Noise-Sensitive Special Status Species Potentially Found Within the Study Area

Species	Description	Breeding Season
Bald eagle	Typically uses forested habitats isolated from human disturbance for nesting and expanses of fresh or saltwater for foraging. Eagles feed on a variety of prey including fish, other birds, and carrion. These birds are territorial and exhibit a strong affinity for a site once a nest has been established.	October 1 – May 15 (most successful nests are completed by mid-February in northwest Florida).
Eastern black rail	Secretive species that occurs in dense vegetative cover in a variety of salt, brackish, and freshwater marsh habitats that can be tidally or non-tidally influenced. Nests are constructed within marsh vegetation. Occurs year-round along the Gulf coast of Florida.	Nests from mid-May to mid-August.
Piping plover	Migratory shorebird that occurs in Florida during the non-breeding (migrating and wintering) season, from mid-July to mid-May. Typically uses sandy beaches and tidal flats. Feeds by gleaning invertebrates from the substrate.	Does not breed in the Study Area.
Red-cockaded woodpecker	Occurs in mature pine forest habitat, primarily longleaf pine (*Pinus palustris*), where cavities are excavated in live trees. Feeds mostly on insects found on or within the bark of pine trees. Non-migratory.	Nests from April to June.
Red knot	A migratory shorebird that occurs in Florida, particularly along Florida's central Gulf coast, during the non-breeding season (approximately September to May). Typically found along sandy beaches and tidal flats, including ephemeral tidal pools.	Does not breed in the Study Area.
Wood stork	Forages in wetlands including freshwater and estuarine marshes, and in Florida typically nests in mixed hardwood swamps and cypress domes.	February to June

Table 3-18. Descriptions for Noise-Sensitive Special Status Species Potentially Found Within the Study Area

Species	Description	Breeding Season
Migratory birds	Migratory birds use a variety of habitats in the study area, including wooded habitat, riparian areas, beaches, marshes, tidal creeks, and estuaries. Migrating birds may be concentrated near the coast and in structurally diverse areas with relatively high tree canopy (e.g., bottomland hardwood forests, coastal forests). Along the Florida Panhandle, bird concentrations are greater during fall than spring.	Various species breed from March to October.
Gray bat	In Florida, only occurs in Calhoun County. Roosts colonially, and only in cave systems. Hibernates in caves throughout the winter. Primarily forest foraging near streams and over water, feeding on flying insects.	Give birth in late May.
Tricolored bat	Roosts singly or in small groups in caves or culverts during the winter. Forms small maternity colonies during the summer in tree foliage or man-made structures. During spring, summer, and fall, roosts in trees and forage at night on small insects over waterways and forest edges, typically around treetop level.	Give birth in May or June.

3.8.2.3 Conservation Lands and Wildlife Management Areas

Approximately 160,000 acres and 400,000 acres of conservation lands and wildlife management areas occur under the Proposed Action study area and the Alternative 1 study area, respectively (Figure 3-20 and Figure 3-21). These areas provide wildlife habitat for a variety of species as well as public access for wildlife viewing, fishing, and hunting. Noise-sensitive wildlife of particular concern within these protected areas may include migratory birds, waterfowl, raptors, bats, bears, and deer, among others (Table 3-18).

Areas designated as worthy of special protection include:

- St. Marks NWR
- Bradwell Bay Wilderness
- Apalachicola NF
- Multiple Water Management Areas
- Multiple Wildlife Management Areas
- Multiple state and local parks
- Multiple private nature preserves and conservation easements

3.8.3 Environmental Consequences

Wildlife, domestic animals, and special status species that occur or potentially occur within the study area may be affected by aircraft noise and strikes. In compliance with the ESA, the DAF will complete a Section 7 consultation with the USFWS regarding potential impacts to federally listed species from the Proposed Action (Appendix B, Agency Correspondence and Consultations).

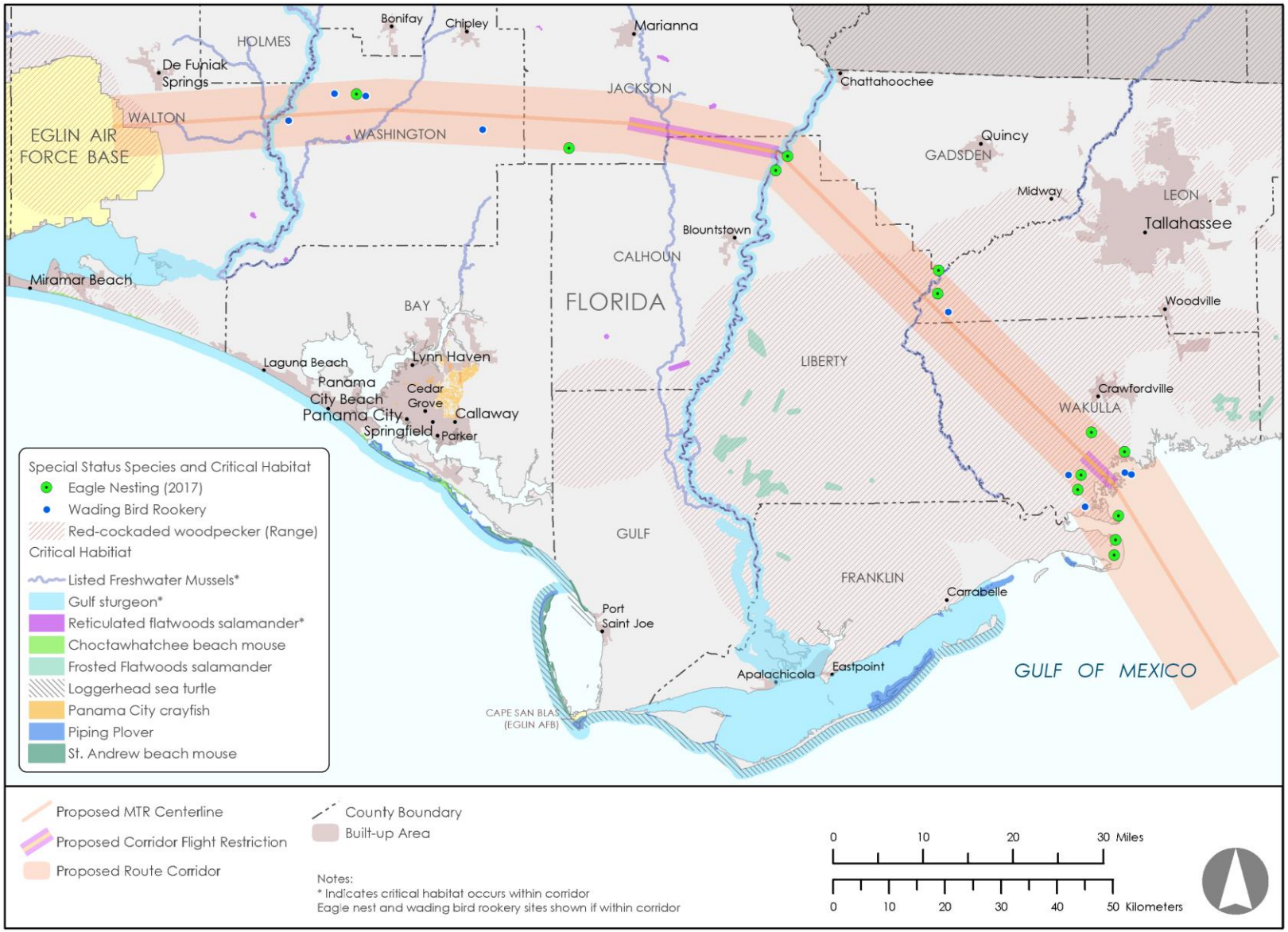


Figure 3-18. Special Status Species and Sensitive Habitats in Relation to the Proposed MTR, IR-096

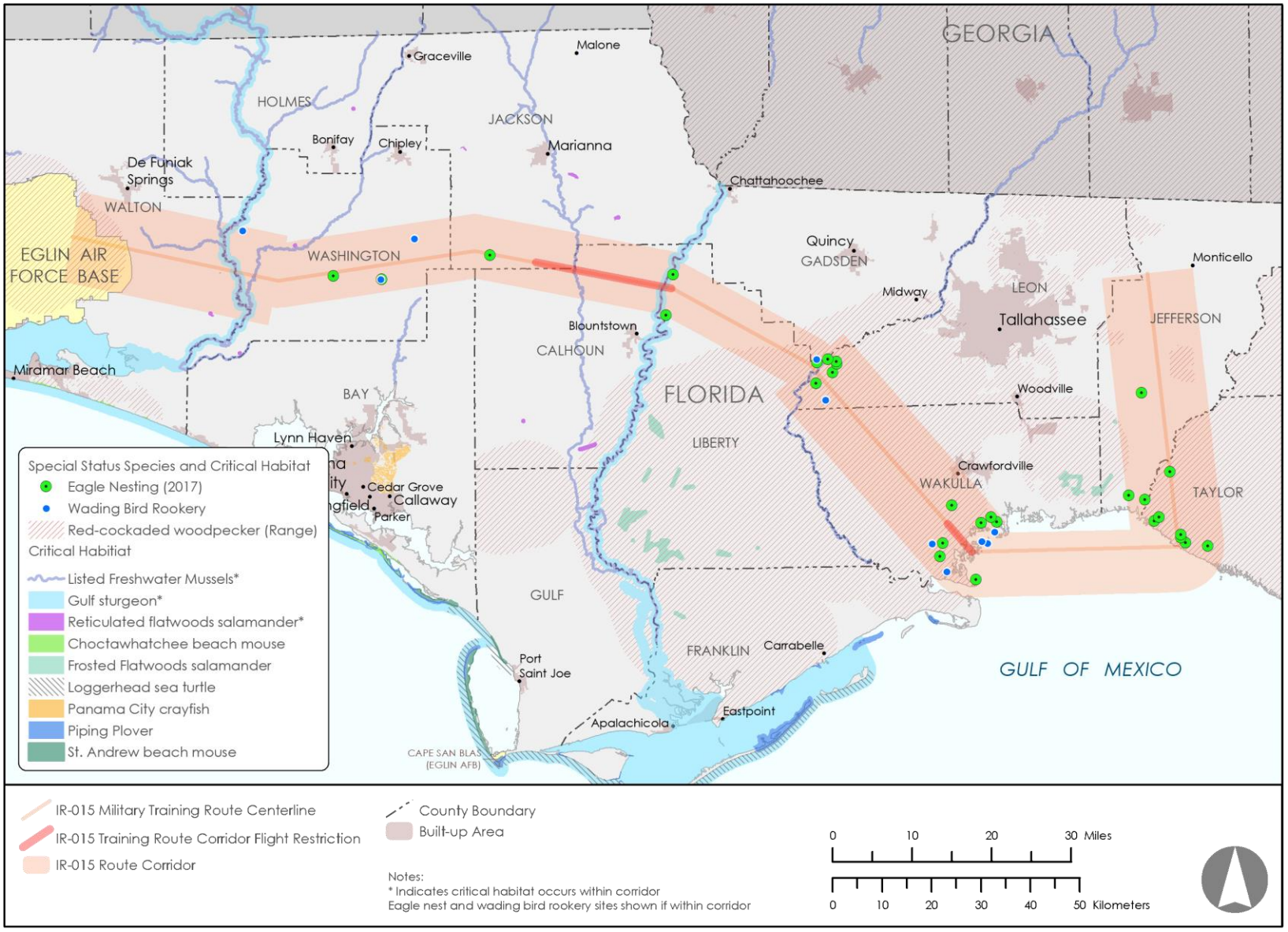


Figure 3-19. Special Status Species and Sensitive Habitats in Relation to the Alternative 1 Training Route

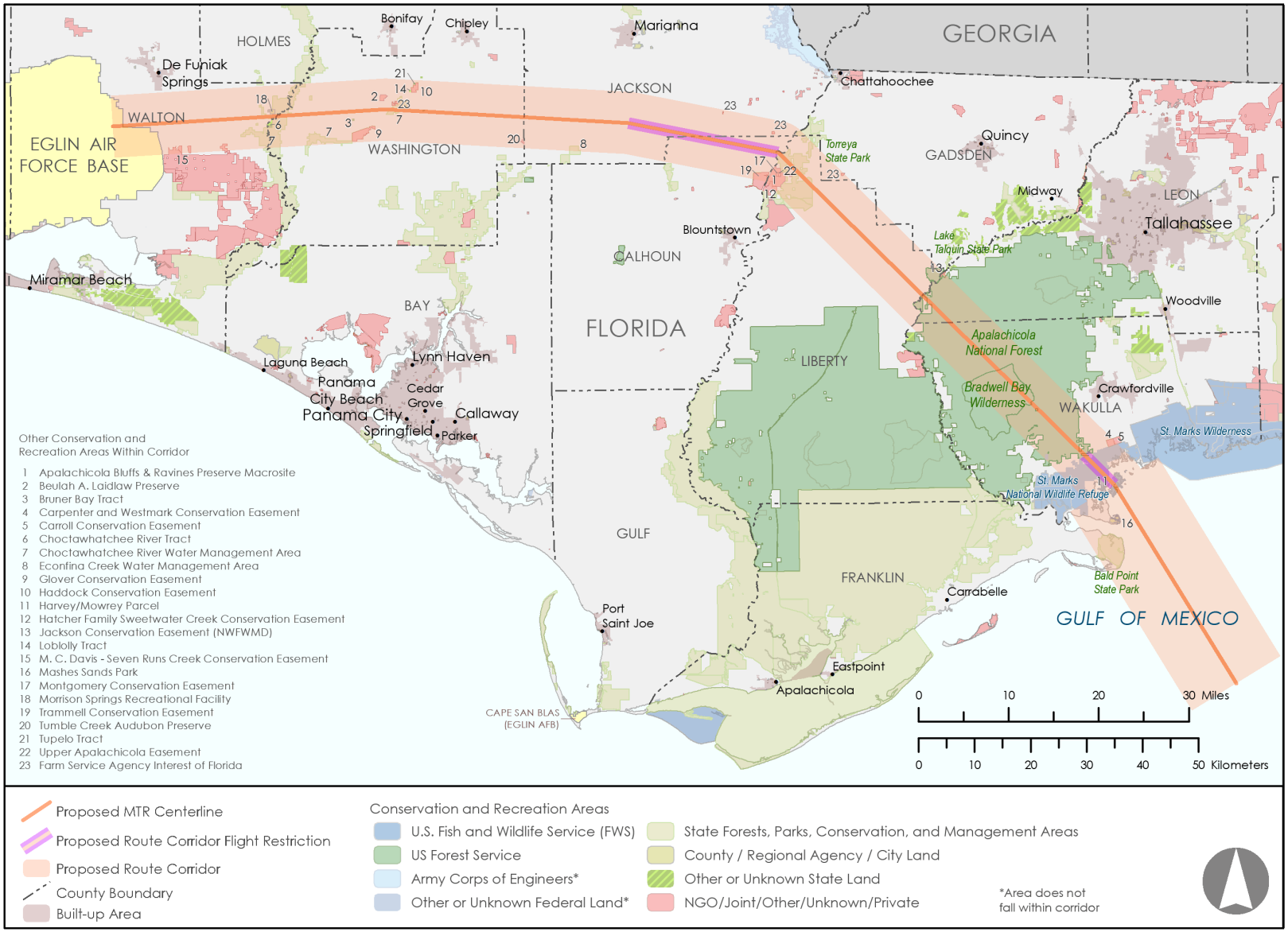


Figure 3-20. Conservation Lands in Relation to the Proposed Training Route, IR-096

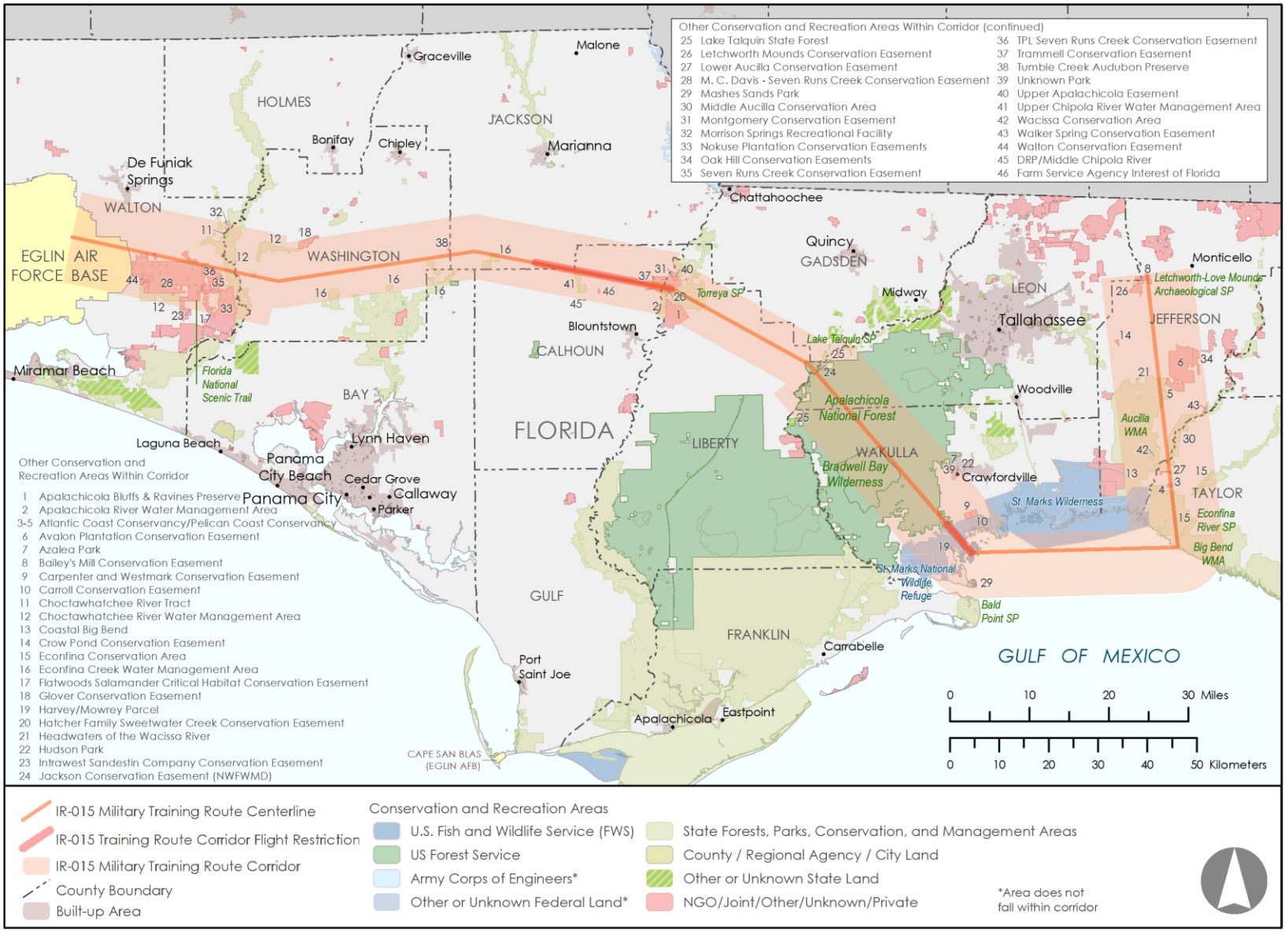


Figure 3-21. Conservation Lands in Relation to the Alternative 1 Training Route

3.8.3.1 Elements Common to All Action Alternatives

This subsection covers the species eliminated from detailed analysis, typical animal responses to aircraft, and bird-aircraft strikes. Each Alternative section provides additional analysis specific to that action alternative.

Habitats and Species Groups Eliminated from Detailed Analysis

After consideration of the potential impacts from the Proposed Action, it was determined there would be no meaningful potential for effects on plants, terrestrial habitats and aquatic/marine habitats, including critical habitat areas. The Proposed Action would represent only a minimal increase in criteria pollutants over current operations and a very-minor increase over current annual emissions in the area of interest (Section 3.2, Air Quality). The Proposed Action does not include the usage of flares or chaff, and there would be no ground disturbance associated with aircraft operations. Therefore, plants and terrestrial, aquatic, and marine habitats were eliminated from further analysis.

Reptiles, amphibians, fish, clams, and other aquatic and marine species were not carried forward for detailed analysis because there would be no physical disturbance to terrestrial, aquatic, or marine habitats, and these species do not appear to be particularly sensitive to short duration noise exposure, as would occur during overflights. For reptiles and amphibians, instances have been documented of "freezing" (brief cessation of activity) or emergence at inappropriate times of year, but most of these studies examined noise exposure over much longer periods of time than would occur for an overflight (Bowles, 1995). Per studies summarized in Manci et al. (1988), when exposed to in-air noise, aquatic and marine species typically at most show a slight startle response. Below an aircraft, sound is primarily transferred from air to water in a narrow cone, and outside of this area most sound is reflected off the water's surface, so underwater noise would be detectable in only a small area. Additionally, any sound that did enter the water would attenuate with increasing depth. Overflight noise duration would be very brief (seconds), and the probability of a reptile, amphibian, fish, clam, or other aquatic and marine species occurring directly below an aircraft operated at low altitude would be small due to the infrequent occurrence of overflights and the dispersed distribution of aquatic/marine species. Thus, reptiles, amphibians, fish, clams, and other aquatic and marine species were eliminated from detailed analysis.

The DAF has determined the Proposed Action, Alternative 1, and the No Action Alternative would have no effect on the federally listed plants, reptiles, amphibians, fish, clams, and marine mammals listed in Table 3-17 and would not result in adverse effects to critical habitat for any of these species.

Wildlife and Domestic Animal Responses to Aircraft

Animal species exhibit a wide variety of responses to aircraft noise and visual stimuli. Because some species are more sensitive than others and vary in their responses, it can be difficult to generalize or to draw conclusions across species. Most of the effects of noise are mild enough and can be mixed with so many other variables (e.g., predators, weather, changing prey base, ground-based disturbance) they may never be detectable as actual noise effects on population size or population growth (Bowles, 1995) or as an ultimate factor in limiting productivity of a certain nest, area, or region (Smith et al., 1988).

Noise effects on domestic animals (including livestock) and wildlife are classified in three ways. First, effects can be direct, such as the masking of biologically relevant sounds by jet noise or, in relatively rare cases, physiological changes to the auditory system. Temporary or long-term hearing loss are direct physiological changes to the auditory system that are generally only associated with noises of long duration (e.g., as measured in hours or days) and/or extremely high intensity (e.g., clapping or banging noises exceeding 140 dB). The risk of hearing loss also depends on the species' hearing sensitivities and the intensity of the noise at various frequencies. Nocturnal species, which are particularly dependent on hearing for survival, have been found to be particularly sensitive to noise, including noise within the range of frequencies generated by jet aircraft. A study of nocturnal Merriam's kangaroo rats (*Dipodomys merriami*) at the Barry M. Goldwater Range that were exposed to frequent jet aircraft overflights as loud as 115.5 dBA sound exposure level showed differences in hearing threshold from a control group (3 dB) that were minor enough to be potentially attributable to differences among individuals (Bowles et. al, 1995). Differences in hearing threshold of less than 5 dB are generally considered to be not significant. Most other species have been found to be less susceptible to noise-induced hearing threshold changes. For example, big brown bats (*Eptesicus fuscus*) exposed to noise at 116 dB for 1 hour did not exhibit different hearing thresholds than bats measured from control conditions (Simmons, Hom, Warnecke, & Simmons, 2016). In general, the risk of direct effects, such as significant noise-induced hearing threshold changes, resulting from noises of short duration is low. Secondary effects may include non-auditory effects such as stress and hypertension; behavioral changes; interference with mating or reproduction; and impaired ability to obtain adequate food, cover, or water. The third type of effects are the result of other effects and include population decline and habitat loss.

As many animal species use sound to communicate, detect prey, and avoid predation, increased noise levels can reduce the distance and area over which animals can perceive important acoustic signals. Such secondary effects of noise vary widely with species, environmental variables, and the types, durations, and sources of noise (Manci et al., 1988). The potential for external noise to mask these important signals is of greater concern for continuous noise sources (e.g., compressors, busy highways) than for intermittent, brief noise exposures such as jet overflights. However, overflights can mask signals for short periods of time, and they may cause certain individuals to cease communications temporarily.

A general reaction in animals from exposure to aircraft is the startle response. A startle response can include behavioral responses (e.g., running) and physiological changes (e.g., elevated heart rate). The intensity and duration of the startle response appear to depend on the species, whether it is a group or an individual, and whether there have been previous exposures. Wildlife responses are influenced by various aspects of an overflight, such as the aircraft's size, speed, proximity, color, and level of engine noise. Other factors that can affect the type and degree of responses include wind direction, speed, and local air turbulence; landscape structures (i.e., vegetative cover); and whether the animals are in the breeding or nesting phase.

The startle is a natural response that helps animals avoid predators; however, if the behavioral component of the startle is uncontrolled, this panic response can result in injury (i.e., break limbs) or mortality. Responses can range from flight, trampling, stampeding, jumping, or running to simply alerting or moving the head in the apparent direction of the noise source. Startle effects are most likely to occur when a low-flying, high-speed aircraft flies in close proximity to an animal. The literature indicates the intensity and duration of the startle response typically decreases with

the number and frequency of exposures (DAF, 1994), but individuals that do not acclimate may startle upon each exposure. Wildlife habituation to intermittent sounds can be gradual and possibly more limited than to regular exposures.

While the time a jet is visible to the animal is relatively brief, the combination of the visual and auditory effects could cause physiological responses due to fear or panic in addition to the behavioral responses. Physiological responses to noise such as increased hormonal production, increased heart rate, and reductions in mass or in milk production have been described in some studies. Increased heart rates, which are an indicator of excitement or stress, occur naturally as a response to predation. Thus, infrequent overflights may not, in and of themselves, be detrimental. However, the threshold for the frequency at which harmful effects may occur would vary by species. Although the relationship between physiological effects and species interactions with their environments has not been thoroughly studied, the limited literature suggests the degree of physiological response in domestic animal species (cows, horses, chickens) and wildlife species may lessen over time with repeated exposure to jet aircraft noise.

Isolated noise events have the potential to result in nest abandonment and reduced reproductive success for some animals, including both migratory and resident species. Some individuals may not acclimate to overflight noise and may continue to startle upon each exposure. Manci and others reported a reduction in reproductive success in some songbirds after exposure to low-altitude overflights (Manci et al., 1988). According to a recent study, some species exhibit an increase in sensitivity to overflights during harsh conditions (van der Kolk et al., 2020).

Bird–Aircraft Strikes

The potential for bird–wildlife/aircraft strikes would be influenced primarily by the altitude of aircraft operations, and secondarily by the time of year, as large numbers of migratory birds are in transit during the spring and fall. Most bird strikes occur at altitudes below 3,000 feet, and a study of bird strikes involving civil aircraft between 1990 and 2004 found 74 percent of strikes occurred at altitudes of 500 feet or less (FAA, 2022a; Dolbeer, 2006). Strikes were primarily associated with takeoff and landing operations near airports, and the number of strikes decreased substantially with increasing altitude (Dolbeer, 2006). However, strikes of some species can occur at higher altitudes, particularly during migratory periods. Aircraft operations would occur throughout the authorized airspace (500 feet AGL to 5,000 feet MSL) but would not often occur at the minimum altitude of 500 feet AGL, thus avoiding the greatest risk of strikes. Additionally, the requirement for aircraft to maintain levels at or above 2,000 feet MSL while over St. Marks NWR and 1,500 feet MSL over the Apalachicola River and floodplain areas would further reduce the potential for bird strikes.

As discussed in Section 3.6.2 (Health and Safety, Affected Environment), the DAF BASH Reduction Program provides measures to reduce bird strike potential, including awareness, bird control, bird avoidance, and use of the DAF Avian Hazard Advisory System. Existing BASH control measures detailed in the BASH Plans for Eglin AFB and Tyndall AFB would be expanded to cover the additional flight areas where BASH risk would increase. For areas of heavy bird activity, the DAF would take the necessary precautions to prevent bird strikes.

The BASH program identifies where eagle nests are located and areas where soaring birds (including raptors) and aggregations of resident and migratory birds tend to occur and tells pilots how to avoid these sites during high-risk seasons and times of day. This avoidance minimizes the

potential for collision and reduces the potential for disturbance of eagles, other raptors, and groups of birds by military aircraft overflight. Recommendations from the *National Bald Eagle Management Guidelines* (USFWS, 2007) that may be pertinent to the Proposed Action include the following:

- During the breeding season (February to June), do not operate fixed-wing aircraft within 1,000 feet of nests, and avoid activities that produce extremely loud noises within 0.5 mile of active nests, except where eagles have shown tolerance for such activity.
- Do not locate aircraft corridors within 1,000 feet vertical or horizontal distance from communal roost sites.
- Minimize disruptive activities in the direct flight path between eagle nests and their roost sites and important foraging areas.

In the event any newly identified eagle nesting territory cannot be avoided during low-altitude overflights, the DAF would coordinate with the USFWS Division of Migratory Bird Management to obtain an "eagle take" permit. While migratory bird species involved in a bird–aircraft strike during training operations would be considered an incidental take, the proposed training activities would be covered under 50 CFR 21.42, *Authorization of take incidental to military readiness activities*, and the DAF would not be required to obtain a permit from the USFWS. Refer to Section 3.6.2 (Health and Safety, Affected Environment) for additional information on BASH.

Overall, given the low number of operations (maximum of eight times monthly), the likelihood of a bird–aircraft strike is low. With the implementation of BASH control measures and the application for permits where impacts cannot be avoided, no significant impacts to birds would be anticipated from aircraft strikes.

3.8.3.2 Proposed Action

Noise Impacts to Wildlife and Domestic Animals

Under the Proposed Action, time averaged noise levels within the corridor would increase by as much as 2.9 dBA L_{dnmr} (2.8 dBA DNL) to as high as 51.8 dBA L_{dnmr} (51.7 dBA DNL). Noise levels would be greatest in locations close to the route centerline, decreasing at locations near the edge of the MTR corridor where overflights would be rare. A single direct overflight by an F-35A at 500 feet AGL in typical MTR configuration/airspeed could generate noise levels as high as 116 dBA L_{max}. Pilots crossing the noise-sensitive St. Marks NWR/Wakulla County Airport avoidance area would maintain levels at or above 2,000 feet MSL (approximately 1,900 feet AGL), with the greatest potential noise level generated being 101 dBA L_{max}. In consideration of a noise sensitive area and potential concentrations of birds, pilots would climb to 1,500 feet MSL to cross the Apalachicola River and remain at 1,500 feet MSL until past Point D; 105 dBA L_{max} would be the greatest potential noise level generated. The 96 TW, in conversations with the USFWS and the Nature Conservancy determined these altitudes would adequately minimize noise impacts over the St. Marks NWR and the Apalachicola River (Eglin AFB, 2022).

Proposed aircraft operations within IR-096 would be relatively infrequent (less than two per week), and overflight noise events would last only a few seconds. For example, an F-35A aircraft flying directly overhead at 425 knots and 500 feet AGL would remain within a distance associated with noise levels exceeding 100 dBA (1,900 feet as per Table 3-8) for approximately 6 seconds. Other

aircraft types and overflights at greater distances would be associated with less intense noise. As discussed in Section 3.8.3.1 (Elements Common to All Action Alternatives, Wildlife and Domestic Animal Responses to Aircraft Exposures), hearing damage to animals associated with brief noise exposure would be unlikely. Although most of the area beneath the IR-096 route corridor is overlain by existing MTRs and SUA (see Figure 3-2), in portions of the corridor where low-level flights do not currently occur, changes in sudden-onset average sound levels would likely initially cause increased stress to wildlife. In locations with low ambient sound levels, overflight noise is also more likely to stress wildlife. Over time, wildlife may habituate to the noise, but in the short term, animals may exhibit stress reactions such as elevated heart rates or cortisol levels (see Section 3.8.3.1, Elements Common to All Action Alternatives, Wildlife and Domestic Animal Responses to Aircraft).

Animal communication signals may be temporarily masked by aircraft noise, resulting in the potential interruption of breeding or interference with warning calls. However, noise levels associated with an overflight loud enough to interfere with communication would be brief and are not expected to last long enough or occur frequently enough to substantially impact wildlife. There may also be alterations in habitat usage and foraging patterns, mating and breeding behaviors, or other behaviors. For overflights that produce noise above 90 dB L_{max}, wildlife may startle, freeze, or flee, with more intense reactions likely for aircraft at low altitudes due to the added visual presence. The degree of reaction is likely to be more severe for animals newly exposed to low-level flights. There may be instances where an animal is injured or killed during a severe reaction but given the low frequency of low-level overflights that would elicit such a response, this is considered highly unlikely.

Although a single direct overflight by an F-35A at 500 feet AGL could generate noise levels as high as 116 dBA L_{max}, it would be rare for an animal on the ground to experience an overflight both directly overhead and at the lowest possible altitude. Overflights by aircraft at higher altitudes, larger lateral distances, or by aircraft types other than F-35A (e.g., F-15) would generate lower L_{max} events. Animals at or near a given location would be exposed to elevated noise levels for a few seconds as the aircraft noise would be perceived as the aircraft approaches the area and then would dissipate as it departs the area. Overflights may cause short periods of altered behaviors, but long-term behavioral effects are not expected, as the frequency of exposure would be low (flight events would occur once or twice per week on average), would be limited to between 6 a.m. and 5 p.m., and would be very brief due to the speed of the aircraft.

Overall, wildlife and domestic animals exposed to overflights may experience stress and behavioral modifications with the initial increase in the soundscape in portions of the corridor and may exhibit mild-to-severe startle responses from peak noise levels. However, exposure to overflight noise would be brief and infrequent, allowing animals periods of time between exposures to recover. Also, some animals would likely acclimate to the new soundscape over time. Thus, although a limited number of animals may experience negative effects, overall impacts from aircraft noise and visual disturbance associated with the Proposed Action would not reach significant levels.

Impacts to Special Status Species

Federally Listed Bird Species, Bald Eagles, and Migratory Birds

The potential for impacts from noise and aircraft strikes on federally listed bird species, bald eagles, and migratory birds would be influenced by their likelihood of occurrence in the study

area. Based on their preferred habitats, the piping plover, red knot, eastern black rail, and wood stork would occur along the Gulf of Mexico coastline in Wakulla County (Table 3-18)**.** The eastern black rail and wood stork prefer estuarine and freshwater marsh habitats for foraging, but there are no known wood stork nesting areas or documented locations of eastern black rail nesting within the study area. Overwintering piping plovers and red knots forage in beach and estuarine shoreline areas, migrating to the area in July (plovers) and September (red knots) and departing in May. The red-cockaded woodpecker (RCW) is a resident species that occurs in pine habitats. Within the study area, the RCW range includes portions of Wakulla, Leon, Liberty, Gadsden, and Walton Counties (Figure 3-18). Bald eagles prefer forested areas near waterbodies, with documented nest trees located under portions of IR-096, both along the coastline and near inland waterbodies and rivers in Washington, Jackson, Liberty, Leon, and Wakulla counties (Figure 3-18). Wading bird rookeries are also present under multiple portions of IR-096, including Washington, Leon, and Wakulla counties (Figure 3-18). While foraging, most of these species are typically below the aircraft floor of IR-096; however, eagles and wood storks may soar within the flight corridor, as would many migratory bird species. Piping plovers, red knots, and other migratory birds may occur within the flight corridor during migration.

Per the discussion of potential noise impacts and bird–aircraft strikes in Section 3.8.3.1 (Elements Common to All Action Alternatives, Wildlife and Domestic Animal Responses to Aircraft and Bird-Aircraft Strikes) and Section 3.8.3.2 (Proposed Action, Noise Impacts to Wildlife and Domestic Animals), there would be the potential for isolated noise events to result in nest abandonment, startling, masking, and reduced reproductive success, but noise exposure for any given individual would be relatively infrequent and temporary, lasting only the duration of an overflight. With the implementation of BASH procedures, the risk of a strike is very low. Additionally, the requirement for aircraft to maintain levels at or above 2,000 feet MSL while over St. Marks NWR and 1,500 feet MSL over the Apalachicola River and floodplain areas would further reduce the potential for bird strikes and noise near multiple wading bird rookeries, eagle nests, waterfowl habitat areas, and shoreline and riparian areas used by the piping plover, red knot, and other migratory birds (Figure 3-18 and Figure 3-20).

The DAF would make pilots aware of eagle nesting territories under IR-096, and, in the event any newly identified eagle nesting territory cannot be avoided during low-altitude overflights, the DAF would coordinate with the USFWS Division of Migratory Bird Management to obtain an "eagle take" permit. Any incidental take of migratory birds associated with the Proposed Action would be covered under 50 CFR 21.42, *Authorization of take incidental to military readiness activities*.

In summary, based on the brief exposure time and infrequency of aircraft flights, combined with BASH protocols and the avoidance zones over St. Marks NWR and the Apalachicola River and floodplains, the potential for noise impacts and strikes would be minimal. Therefore, overall impacts to federally listed bird species, bald eagles, and migratory birds under the Proposed Action would not reach significant levels. The DAF finds that aircraft operations in IR-096 may affect, but are not likely to adversely affect, the eastern black rail, piping plover, red knot, RCW, and wood stork.

Gray Bat and Tricolored Bat

Bat foraging occurs mainly between dusk and dawn, thus the limitation of MTR usage to between the hours of 6:00 a.m. and 5:00 p.m. would decrease the potential for noise impacts and strikes considerably. For example, a 10-year DAF Safety Center study on bat strikes reported about 82 percent of strikes occurred between 9:00 p.m. and 9:00 a.m. (Peurach et al., 2009), which is the time period when the least amount of flying would occur. Most insect-eating bat species of the Florida Panhandle generally forage from near treetop level to within a few feet of the ground surface or water surface (Mitchell, 1998; TPW, 2022a; TPW, 2022b; Discoverlife.org, 2005; USFWS, 2022b). Thus, although individuals may occasionally occur at higher altitudes while they fly between roost sites and feeding sites, the insectivorous gray bat and tricolored bat are not anticipated to occur regularly within the MTR airspace. Additionally, pilots would climb to 1,500 feet MSL over the Calhoun County portion of IR-096, which is the only county in Florida where the gray bat has been documented, thereby further reducing the potential for a strike.

Increased noise levels have the potential to affect bat behaviors, cause stress responses, and mask acoustic signals. As discussed for strike potential, bat foraging occurs mainly between dusk and dawn, when only a very small percentage of aircraft operations would occur. Most of the noise energy generated by fighter aircraft such as the F-16 and F-35 is low frequency, concentrated in the range of 0.1 to 2.5 kilohertz. The gray bat and tricolored bat detect prey by high-frequency echolocation signals, which are typically in the range of around 42 to 80 kilohertz, and 41 to 58 kilohertz, respectively (Humboldt State University, 2011). Therefore, most noise produced by aircraft operating in IR-096 would be unlikely to mask bat echolocation returns and reduce foraging efficiency, as aircraft noise frequencies with the greatest energy are outside of the species' echolocation frequency range.

The relatively small proportion of aircraft noise that does contain high-frequency energy could interfere with foraging. In addition, lower-frequency noise could interfere with activities other than echolocation, such as social communication or passively listening for prey. Loud noise over a broad range of frequencies could startle or distract individuals. However, overflights at very high engine power and at the lowest allowable altitude would be rare, and L_{max} exposure would last only a few seconds.

In summary, the potential for bat-aircraft strikes and noise impacts is very low because federally listed bats are not likely to occur above 500 feet ASL during the daily flight hours between 6 a.m. and 5 p.m.; thus, overall impacts to federally listed bats under the Proposed Action would not reach significant levels. The DAF finds that aircraft operations in IR-096 may affect, but are not likely to adversely affect, the gray bat or tricolored bat.

Monarch Butterfly

While most butterfly species spend the majority of their time near ground level, for the migratory monarch butterfly, time of day can be a factor in flight height. In the early morning when air temperatures are relatively low, monarchs may fly close to the ground to access radiant heat. As the sun warms the air, these butterflies typically increase their altitude and access thermals when they are available. Doppler radar has shown migrating monarchs occur most of the time at altitudes less than 800 to 1,200 feet, although there is a report of monarchs observed up to 11,000 feet (monarchjointventure.org, 2022). Monarchs observed in eastern North America, including Florida, leave their overwintering areas in central Mexico during early spring (February

to March), breeding as they travel northward. In the study area, potential occurrence extends from about March to November, and the number of southward-migrating individuals observed in the Florida Panhandle peaks between October and November (USFWS, 2022c; floridarambler.com, 2022). In the fall, monarch butterflies are often seen along the coastal areas of the Florida Panhandle, including St. Marks NWR, prior to their flight over the Gulf to Mexico. There would be an increased chance of aircraft strikes to monarchs within the study area during this migratory period, as they are more likely to occur within the 500 ft ASL to 5,000 ft MSL range during the daylight flight hours.

Overall, the potential for an aircraft strike of a monarch butterfly is very low, even during migration, given the limited frequency of aircraft flights (average of one to two per week). Thus, impacts to the federal candidate monarch butterfly would not reach significant levels, and the DAF finds that aircraft operations in IR-096 may affect, but are not likely to adversely affect, the monarch butterfly.

Impacts to Wildlife on Conservation Lands and Wildlife Management Areas

A total of approximately 160,000 acres of conservation land and wildlife management areas occur under the Proposed Action ROI. Flights may occur as low as 500 feet ASL over the Bradwell Bay Wilderness, Apalachicola NF, and multiple parks, preserves, conservation easements, and wildlife management areas where aircraft noise and strikes may impact animals (Figure 3-18 and Figure 3-20). Per discussions in Section 3.8.3.1 (Elements Common to All Action Alternatives, Wildlife and Domestic Animal Responses to Aircraft and Bird-Aircraft Strikes) and Section 3.8.3.2 (Proposed Action, Noise Impacts to Wildlife and Domestic Animals), noise exposure for any given individual would be relatively infrequent and temporary, lasting only the duration of an overflight, and with the implementation of BASH procedures, the risk of a strike is very low. Additionally, the requirement for aircraft to maintain levels at or above 2,000 feet MSL while over St. Marks NWR and 1,500 feet MSL over the Apalachicola River and floodplain areas would further reduce the potential for bird strikes and noise impacts to the wildlife at multiple conservation lands and wildlife management areas (Figure 3-18 and Figure 3-20).

Based on the brief exposure time and infrequency of aircraft flights, combined with BASH protocols and the avoidance zones over St. Marks NWR and the Apalachicola River area, the potential for noise impacts and strikes would be minimal. Therefore, overall impacts to wildlife at conservation lands and wildlife management areas under the Proposed Action would not reach significant levels.

3.8.3.3 Alternative 1

Under Alternative 1, the 96 TW would establish a new MTR. Most of the area beneath the route corridor is overlain by existing MTRs and SUA (see Figure 3-5), and animals in these areas experience overflight noise under baseline conditions. Noise levels at sensitive locations within the corridor would increase to as high as 50.2 dBA L_{dnmr} (50.2 dBA DNL), an increase of 0.7 dBA L_{dnmr} (0.7 dB DNL) over baseline conditions, but less than the predicted increase of as much as 2.9 dBA L_{dnmr} (2.8 dBA DNL) to as high as 51.8 dBA L_{dnmr} (51.7 dBA DNL) for the Proposed Action. Individual overflights, which could be as loud as 116 dBA L_{max} for both the Proposed Action and Alternative could be startling and/or disruptive but would be relatively infrequent and limited to daytime hours.

This route covers almost 260,000 additional acres compared to the Proposed Action, 240,000 of which are conservation land and wildlife management areas (Figure 3-21). This airspace overlays additional marine areas as well as more flatwoods, ponds, lakes, streams, marshes, and other wetland habitats compared to the Proposed Action (Table 3-16). These habitats are often attractive to waterfowl, bald eagles, and other bird species, thus could represent an increased risk for aircraft impacts (Figure 3-19).

The types of possible impacts (i.e., startling, masking) would be similar to those described in Section 3.8.3.1 (Elements Common to All Action Alternatives, Wildlife and Domestic Animal Responses to Aircraft and Bird–Aircraft Strikes) and Section 3.8.3.2 (Proposed Action, Noise Impacts to Wildlife and Domestic Animals)**,** but there would be the potential for effects to animals located within the additional 260,000 acres under the Alternative 1 route, including new portions of the St. Marks NWR and Bradwell Bay Wilderness, approximately 64,000 more acres of wildlife management areas, as well as other new conservation lands. However, exposures last only a few seconds and average fewer than two per week, and BASH protocols would be implemented so the potential for strikes and noise impacts is expected to be minimal if this route is reactivated.

The DAF would make pilots aware of eagle nesting territories under Alternative 1, and in the event any newly identified eagle nesting territory cannot be avoided during low-altitude overflights, the DAF would coordinate with the USFWS Division of Migratory Bird Management to obtain an "eagle take" permit. Any incidental take of migratory birds associated with the Proposed Action would be covered under 50 CFR 21.42, *Authorization of take incidental to military readiness activities*.

In summary, based on the brief exposure time and infrequency of aircraft flights, combined with BASH protocols, the potential for noise impacts and strikes would be minimal. Therefore, overall impacts to wildlife, domestic animals, federally listed species, bald eagles, and migratory birds under the Proposed Action would not reach significant levels. The DAF finds aircraft operations under Alternative 1 may affect, but are not likely to adversely affect, the eastern black rail, piping plover, red knot, RCW, wood stork, gray bat, tricolored bat, and monarch butterfly.

3.8.3.4 No Action Alternative

No changes to the current airspace configuration or ongoing military training operations would occur under the No Action Alternative. Therefore, biological resources would remain as described in Section 3.8.2 (Affected Environment) with no significant impacts anticipated for plants, animals, special status species, critical habitat, conservation areas, or wildlife management areas.

3.8.3.5 Cumulative Impacts

Cumulative impacts to biological resources consider past, present and reasonably foreseeable future actions. Discussion of potential impacts to biological resources in Section 3.6 (Health and Safety) includes noise from other flight activity in the study area. Figure 3-11 shows the overlapping use of the study area with other military routes, airspace, numerous private airfields, and a single-day snapshot of commercial flights. Flights along the proposed route, together with all other forms of existing aircraft activity in the study area would be expected to have slight cumulative impacts with regard to the potential for aircraft-strikes and noise impacts to wildlife and domestic animals. Reasonably foreseeable future actions include continued and expanded

use of airports and airspace, as well as land development that may reduce quality habitats for wildlife and special status species. Various conservation corridor type of efforts may exist or be planned, but these are generally beneficial for the Proposed Action as less development and preservation of open space would be instituted.

Overall, although there may be slight cumulative impacts to biological resources from aircraft operations and development within the study area, with BASH protocols and avoidance areas, significant cumulative biological resources impacts would not be expected.

3.9 CULTURAL RESOURCES

3.9.1 Definition of the Resource

Cultural resources consist of prehistoric and historic sites, structures, artifacts, and any other physical or traditional evidence of human activity considered relevant to a particular culture or community for scientific, traditional, religious, or other reasons.

As defined under 36 CFR 800.16(l)(1), "Historic Property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. The term includes artifacts, records, and remains related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and meet the National Register criteria."

Attention to cultural resources is necessary for the DAF to comply with a host of federal laws, regulations, and EOs, including, but not limited to the NHPA of 1966, as amended. Under NHPA, the DAF is required to consider the effects of its undertakings on historic properties listed or eligible for listing on the National Register of Historic Places (NRHP) and consult with interested parties regarding potential impacts per 36 CFR; AFMAN 32-7003, *Environmental Conservation*, outlines and specifies procedures for DAF cultural resource management programs.

3.9.2 Analysis Methodology

Cultural resources were analyzed by assessing each resource's state of investigation and condition and then evaluating the resource as it intersects with the Area of Potential Effects (APE) created by the Proposed Action. As defined under 36 CFR 800.16(d), "the Area of Potential Effects is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist."

The APE is influenced by the scale and nature of the Proposed Action and may differ according to the kinds of effects caused by the action. The APE for this project is assumed not to extend beyond the footprint of the MTR activity boundaries, as depicted in Chapter 2 (Description of Proposed Action and Alternatives).

3.9.2.1 Significance Determination

Cultural resources identified in the APE by the DAF are evaluated according to the NRHP criteria, in consultation with the SHPO and other parties. Typically, if the SHPO and other parties and the

DAF agree in writing a historic property is eligible or not eligible for the NRHP, judgment is sufficient for purposes of Section 106 (36 CFR 800.4[c][2]). Relevant procedures and criteria can be found in 36 CFR Part 63, *Determinations of Eligibility for Inclusion in the National Register of Historic Places*.

The cultural resources sections in this EA describe known historic properties within the affected areas eligible for the NRHP and evaluate whether elements of the Proposed Action would potentially affect these resources. These properties include any archaeological resources considered eligible, unevaluated, or currently listed on the NRHP. Resources may include historic structures, historic districts, any known historic cemeteries, traditional cultural properties (TCPs), or sacred sites. In addition, areas where adequate efforts to identify cultural resources have not occurred are discussed as well.

The potential effects of the Proposed Action are limited to visual, audible, and vibratory effects that would be perceived from a given cultural resource during active training or testing as a result of implementation of the Proposed Action.

3.9.3 Affected Environment

Due to the large area covered by the MTRs, a desktop study of cultural resources was performed by Eglin AFB (Search, Inc., 2022). The purpose of this desktop study was to identify potential impacts to cultural resources within the APE of the EA. The types of cultural resources included in this analysis are archaeological sites, structures, districts, landscapes, cemeteries, and shipwrecks collected from the Florida Master Site File (FMSF) database, shipwreck databases, and historic maps.

The APE encompasses 1,573 previously recorded cultural resources. These resources include a total of 3 resources listed in the NRHP, 30 evaluated as eligible for listing in the NRHP, 571 evaluated as ineligible, and 929 unevaluated or for which the NRHP eligibility is unknown. Furthermore, much of the study area has not been systematically surveyed for cultural resources, and it is likely there are additional unrecorded and unevaluated resources in the study area (Search, Inc., 2022).

A total of 1,030 previously recorded archaeological sites are located within the study area. Of those recorded sites, 310 are not eligible for listing. The 720 sites that are listed, eligible for listing, or which have not been evaluated for NRHP eligibility were reviewed.

According to the desktop study, 25 archaeological sites NRHP listed, eligible for listing, or evaluated also feature aboveground components subject to the effects of the proposed project. Of these 25 sites, 11 are precontact Native American mounds, 1 is a historic-period earthwork, and the remaining 13 are the aboveground remains of houses, mills, or other structures. The precontact Native American Yent Mound (8FR00005) is listed on the NRHP, and the 20th century Bradwell Game Farm Historic Site (8LI00414) has been evaluated as eligible for listing in the NRHP. The remaining 23 aboveground archaeological sites have not been evaluated for NRHP eligibility (Search, Inc., 2022).

The desktop study identified 476 previously recorded buildings within the study area. Two buildings are listed in the NRHP, 18 have been evaluated as eligible for listing, 252 are not eligible for listing, and 204 have not been evaluated for eligibility. Comparison to historic topographic maps indicates many of the buildings are clustered around the historic small towns of Vernon,

Wausau, Altha, Spring Creek, and Panacea. A detailed description of the dates of construction, context and architectural style may be found in the study (Search, Inc., 2022), located in Appendix G (Cultural Resources Desktop Study) of this document.

The FMSF database includes 29 cemeteries within the study area. None of the cemeteries are eligible for listing in the NRHP, and four have been evaluated as ineligible. Of these, most are private or individual cemeteries, but Oak Park (8WA01125) is federally owned, the Torreya State Park Slave Cemetery (8LI00530) is state owned, and the Vernon Cemetery (8WS00464) is city owned. Many of the cemeteries correspond with small rural towns. It is likely additional unrecorded cemeteries are present near these small historic communities (Search, Inc., 2022).

The desktop study identified eight bridges within the study area. One has been evaluated as eligible for listing in the NRHP, five as ineligible, and two have not been evaluated. The eligible bridge, 8LI00338, is constructed of stone and concrete and was originally built by the Civilian Conservation Corps (CCC) in Torreya State Park (Search, Inc., 2022).

Three NRHP-eligible districts and one NRHP-eligible rural landscape were identified in the desktop study (Search, Inc., 2022). These include NRHP-eligible Camp Gordan Johnston (8FR00900); New Home District (8WL000387); Lewis Atkins Historic District (8CA00191) and the Gilberts Mill Community Rural Historic Landscape (8WS01248), the latter two areas associated with twentieth-century agriculture and rural industry.

The desktop study identified eight linear resources within the study area, seven of which are ineligible for NRHP listing. The remaining linear resource is 8LI00565 (CCC Road), which has not been evaluated for NRHP eligibility but is within Torreya State Park and connects to the NRHP-eligible CCC-constructed bridge (8LI00338) (Search, Inc., 2022).

Four shipwreck databases were reviewed as part of the desktop study that identified 19 shipwrecks within the APE. In most cases, these databases provide very limited information regarding these wrecks. (Search, Inc., 2022).

Alternative 1 Affected Environment

The APE for Alternative 1 also encompasses thousands of previously recorded cultural resources. These include a total of 20 resources listed in the NRHP. A total of 2,375 previously recorded archaeological sites are located within the study area for Alternative 1. One archaeological site is listed in the NRHP, 43 have been evaluated as eligible for listing, 549 are not eligible for listing, and 1,782 have not been evaluated for eligibility. There are 926 previously recorded buildings within the APE. Twelve buildings are potentially eligible for listing on the NRHP, 42 have been evaluated as eligible for listing, 424 are not eligible for listing, and 448 have not been evaluated for eligibility (Division of Historical Resources, 2023).

The FMSF database includes 79 cemeteries within the study area. One of the cemeteries is potentially eligible for listing in the NRHP, and seven have been evaluated as ineligible. Of these, most are private or individual cemeteries. Sixteen bridges have been identified within the study area; 12 have been evaluated as in eligible for listing in the NRHP, and 4 have not been evaluated. Twenty-two linear resources have been identified within the Alternative 1 study area, five of which are eligible for NRHP listing. Six NRHP-eligible districts, three historic landscapes, and one NRHP-eligible rural landscape are in the Alternative 1 APE (Division of Historical Resources, 2023).

3.9.4 Environmental Consequences

3.9.4.1 Proposed Action

It is not anticipated that historic properties within the APE would be directly or indirectly affected by the Proposed Action. As no ground-disturbing activity is part of the Proposed Action, it would not affect the physical integrity or research value of most historic properties. No TCPs or sacred sites have been identified by Eglin AFB (DAF, 2019).

Aircraft operations would have minimal to no direct impact on historic properties within the boundaries of the MTR. The potential for aircraft mishaps to directly impact cultural resources exists but is highly unlikely(DAF, 2018).

Visual intrusions can include aircraft overflights that enter the viewshed of a historic property. Effects from such overflights tend to be temporary and sporadic, as would be in the case of the Proposed Action, with the limited number of overflights per week. The potential for impacts depends on the speed of the aircraft and the specific location of the cultural properties in relation to the flight activities. At lower altitudes, the aircraft's visual presence is amplified and could adversely affect the character and feeling associated with a historic property (DAF, 2014).

Individuals attending ceremonies or visiting sacred spaces or TCPs can experience auditory effects as well. Interference from sources such as jet aircraft can contribute to individuals becoming annoyed. Annoyance of 12 percent of the population occurs at approximately 64 dB and below, while the percentage of people annoyed increases to 12 to 21 percent at 65 to 70 dB (DAF, 2018).

Several studies of the effects of noise on historic buildings located in high aircraft-noise zones have found that vibrations resulting from the activities of tour groups, and even vacuuming, generated more structural vibration than aircraft noise (NRC/NAS, 1977; NASA, 1976; NASA, 1978). Subsonic sound of less than 130 dB is highly unlikely to damage structural elements (Sutherland, 1990). Despite this, vibrations from flight operations may lead to increased rattling of structural elements, adding to annoyance factors for occupants. Sutherland (1990) documented that the probability of damage to a wood frame building is less than 0.3 percent, even when the building is directly under a large, high-speed aircraft flying only a few hundred feet AGL (DAF, 2018).

A study conducted by Battis (1988) considered vibrational effects on structural elements of archeological sites from jet aircraft overflights at altitudes ranging from 60 to over 300 meters AGL. It was concluded that these tested aircraft overflights had no significant vibration effect on structural elements. Given this, the potential for impacts to archeological features would be considered highly unlikely. The proposed project would not impact the physical integrity of any of these recorded structures, nor would it remove their significant historical associations.

Camp Gordan Johnston (8FR00900) and the New Home District (8WL000387) are associated with military activity or are currently located within military properties, so they would likely not be impacted by the Proposed Action given they are already exposed to similar types of noise. The two remaining resources, the Lewis Atkins Historic District (8CA00191) and the Gilberts Mill Community Rural Historic Landscape (8WS01248), are also within the APE (Search, Inc., 2022).

The eight linear resources and bridges within the study area would not be directly, indirectly, or cumulatively impacted by the proposed project, as there would be no alterations to their role in local and regional transportation networks. Potential effects to the CCC bridge (8LI00338) may be

considered in the context of Torreya State Park, which contains several other NRHP-listed, eligible, or unevaluated cultural resources that could potentially be linked as a historic district or landscape (Search, Inc., 2022).

Most cemeteries are not considered eligible for listing in the NRHP. Regardless of NRHP eligibility, cemeteries likely have importance to the families, descendants, and communities of the interred. The proposed project may have direct visual, audible, or vibratory effects on cemeteries in ways that might be detrimental to their cultural importance. Such effects would be expected to be temporary and relatively infrequent.

None of the 19 shipwrecks identified are located along the coast; it can be presumed that they are submerged and would not be adversely affected by the project.

3.9.4.2 Alternative 1

No adverse effects would occur to cultural resources under Alternative 1. As with the Proposed Action, consultation with the SHPO and completion of the Section 106 process would be required. There is a low probability that any new cultural resources would be identified, and the potential for impacts would be similar to those already identified.

3.9.4.3 No Action Alternative

No adverse effects would occur to cultural resources under the No Action Alternative. There would be no change in current airspace under the No Action Alternative. The 96 TW and F-35 tenant unit aircrew at Eglin AFB would not conduct required testing and training. Visual, auditory, and vibratory effects would not exceed current visual or noise within the study area

3.9.4.4 Cumulative Impacts

Damage to the nature, integrity, and spatial context of cultural resources can have a cumulative impact if the initial act is compounded by other similar losses or impacts. Direct or indirect auditory or visual impacts may incrementally impact the cultural and historic setting of the study area. Cumulative effects arising from these direct and indirect effects might include the eventual loss of historical integrity through abandonment and deterioration.

Currently, ongoing and future projects are subject to NEPA compliance and NHPA Section 106 consultation prior to project start. These projects would require separate analyses to assess their direct and indirect impacts. Additionally, the resolution of adverse effects would be required under the NHPA's Section 106 (36 CFR 800.7) prior to project execution, thereby eliminating or minimizing potential cumulative impacts. Lead agencies would be required to consider cumulative impacts and consult with tribes to determine any potential adverse effects, which would serve to minimize cumulative impacts further.

The Proposed Action would not include any ground-disturbing activity that could adversely impact historic structures or archaeological sites. Military aircraft overflights have previously occurred in the areas under consideration for the Proposed Action. The inclusion of additional training activities, if unrestrained, could cumulatively impact various resources such as sacred sites or historic landscapes.

4. MANAGEMENT ACTIONS

4.1 AIR QUALITY

No special operating procedures or mitigations have been identified for air quality.

4.2 AIRSPACE MANAGEMENT

Aircraft would follow all utilization notes in Table 2-1 to coordinate with all relevant ATC, deconflict with other MTRs, and avoid noise-sensitive areas and obstructions. Incorporating these operating procedures would ensure that there would be no additional special operating procedures or mitigations required regarding airspace operation and management.

4.3 NOISE

Under the Proposed Action and Alternative 1, the DAF would establish avoidance areas at St. Marks NWR/Wakulla County Airport and the Apalachicola River. As discussed in Section 3.4 (Noise), noise levels generated by aircraft operating at these altitudes would be less loud than aircraft operating at the floor altitude of other portions of the MTR.

4.4 HEALTH AND SAFETY

As part of the Proposed Action and Alternative 1, the DAF would implement or continue to observe the following safety measures:

- Exercise caution where other routes intersect.
- Aircraft would avoid Wakulla County Airport by 3 NM or 1,500 feet MSL.
- Aircraft would avoid the tower obstructions identified on aeronautical charts.
- Pilots would report over Point C to Tallahassee Approach Control.
- Pilots would climb to 1,500 feet MSL to cross the Apalachicola River and remain at 1,500 feet MSL until past Point D, in consideration of a noise sensitive area and potential concentrations of birds.
- Pilots would report over Point D to Tyndall Approach Control.
- Pilots would deconflict with IR-017, would cross, overlap or run parallel with the proposed route between Points D and G.
- Pilots would deconflict with IR-059 which would run the opposite direction of the proposed route between Points D and G.
- Pilots would contact the 16 OSS at Hurlburt Field to deconflict IR-057, which would run parallel between D and G.

4.5 BIOLOGICAL RESOURCES

As part of the Proposed Action and Alternative 1, the DAF would implement the following measures:

- Pilots crossing the noise-sensitive St. Marks NWR/Wakulla County Airport avoidance area would maintain levels at or above 2,000 feet MSL (approximately 1,900 feet AGL).
- In consideration of a noise sensitive area and potential concentrations of birds, pilots would climb to 1,500 feet MSL to cross the Apalachicola River and remain at 1,500 feet MSL until past Point D.
- BASH reduction protocols would be implemented.
- The DAF would make pilots aware of eagle nesting territories under the Proposed or Alternative 1 route.
- In the event that any newly identified eagle nesting territory cannot be avoided during low-altitude overflights, the DAF would coordinate with the USFWS Division of Migratory Bird Management to obtain an “eagle take” permit.

5. PERSONS/AGENCIES CONTACTED

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APPENDIX A

AIR QUALITY CALCULATIONS

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AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

This section presents an export of results directly from the air quality modeling software, retaining the organizational headings and table formatting produced by the software.

PROPOSED ACTION – IR-096 ESTABLISHMENT

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: EGLIN AFB
State: Florida
County(s): Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Military Training Route IR-096 Environmental Assessment

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2023

e. Action Description:

The Proposed Action is for the 96 TW to create a new low-altitude IR in the southeast United States similar to a previous route, IR-015, but with some changes to the configuration to meet current needs including terrain masking/maneuvering. Terrain masking is flying at lower altitudes than whatever detection system is being evaded, whether hugging the ground or using mountainous terrain to achieve that purpose. The route would establish and maintain an all-weather capability for pilots to train on long-range low-altitude strike training missions. Due to the curvature of the Earth over the distance of the route, the location of the Range Instrumentation Radar-980 (an auto-tracking radar) or the digital airport surveillance radar (DASR) on the western side of the range, and the termination point of the route, terrain masking can be accomplished along this route as part of the LASDT mission.

Under Alternative 1, the 96 TW would establish IR-096 in a different configuration (Figure 2-2). IR-096 would originate overland east of Tallahassee, FL, flow south then west/northwest into the Eglin Test and Training Range's Restricted Airspace (R-2914A). Route altitudes would be principally 500 feet AGL to 5,000 feet MSL, with a corridor of 5 NM on either side of the route centerline.

f. Point of Contact:

Name: Brad Boykin
Title: CTR
Organization: Leidos
Phone Number: 571-521-8765

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yrs. for lead and 100 ton/yd for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.028	250	
NOx	6.502	250	
CO	0.100	250	
SOx	0.285	250	
PM 10	0.288	250	
PM 2.5	0.259	250	
Pb	0.000	25	No
NH3	0.000	250	
CO2e	860.4		

2024 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.028	250	
NOx	6.502	250	
CO	0.100	250	
SOx	0.285	250	
PM 10	0.288	250	
PM 2.5	0.259	250	
Pb	0.000	25	No
NH3	0.000	250	
CO2e	860.4		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

Brad Boykin, CTR — 19 DEC 2022 DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

PROPOSED ACTION – IR-096 ESTABLISHMENT

1. General Information

- Action Location

Base: EGLIN AFB
State: Florida
County(s): Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Military Training Route IR-096 Environmental Assessment

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2023

- Action Purpose and Need:

The purpose of the Proposed Action is for the 96 TW at Eglin AFB to establish and maintain an all-weather long-range low-altitude airspace capability to test new weapon systems and their components, and to train Eglin AFB 33rd Fighter Wing (FW) F 35 student pilots on strike missions in accordance with their training syllabus.

The Proposed Action is needed because new or fifth-generation weapons systems fly further and at lower altitudes than older weapons systems, and therefore require testing over low altitudes (2,000 to 5,000 feet above ground level [AGL]) and long ranges (over 100 miles), with the ability to terminate in a land impact area such as one of the Eglin land test ranges.

- Action Description:

The Proposed Action is for the 96 TW to create a new low-altitude IR in the southeast United States similar to a previous route, IR-015, but with some changes to the configuration to meet current needs including terrain masking/maneuvering. Terrain masking is flying at lower altitudes than whatever detection system is being evaded, whether hugging the ground or using mountainous terrain to achieve that purpose. The route would establish and maintain an all-weather capability for pilots to train on long-range low-altitude strike training missions. Due to the curvature of the Earth over the distance of the route, the location of the Range Instrumentation Radar-980 (an auto-tracking radar) or the digital airport surveillance radar (DASR) on the western side of the range, and the termination point of the route, terrain masking can be accomplished along this route as part of the LASDT mission.

Under Alternative 1, the 96 TW would establish IR-096 in a different configuration (Figure 2-2). IR-096 would originate overland east of Tallahassee, FL, flow south then west/northwest into the Eglin Test and Training Range's Restricted Airspace (R-2914A). Route altitudes would be principally 500 feet AGL to 5,000 feet MSL, with a corridor of 5 NM on either side of the route centerline.

- Point of Contact

Name: Brad Boykin
Title: CTR
Organization: Leidos
Phone Number: 571-521-8765

- Activity List:

Activity Type		Activity Title
2.	Aircraft	F-35 Flight Operations

3.	Aircraft	F-15E Flight Operations

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: F-35 Flight Operations

- Activity Description:
65 operations annually

- Activity Start Date
Start Month: 1
Start Year: 2023

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.189498
NO_x	3.896225
CO	0.070840
PM 10	0.207208

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.185956
Pb	0.000000
NH_3	0.000000
CO_2e	572.7

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-35A

Engine Model: F135-PW-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)
Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:		24
Flight Operation Cycle Type:	LFP (Low Flight Pattern)	
Number of Annual Flight Operation Cycles for all Aircraft:		65
Number of Annual Trim Test(s) per Aircraft:		0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi [Idle] (mins):	0
Approach [Approach] (mins):	0
Climb Out [Intermediate] (mins):	0
Takeoff [Military] (mins):	17.20549
Takeoff [After Burn] (mins):	0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for Flight Operation Cycles per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
FOC: Number of Flight Operation Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Flight Operation Cycles per Year

$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{FOC}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: F-15E Flight Operations

- Activity Description:

27 operations annually

- Activity Start Date
Start Month: 1
Start Year: 2023

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.027578
SO_x	0.095188
NO_x	2.605667
CO	0.029357
PM 10	0.080954

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.072948
Pb	0.000000
NH_3	0.000000
CO_2e	287.7

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-15E
Engine Model: F100-PW-229
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1087.00	0.45	1.07	3.80	10.17	0.67	0.60	3234
Approach	3098.00	0.24	1.07	15.08	1.17	0.70	0.63	3234
Intermediate	5838.00	0.35	1.07	17.54	0.15	0.70	0.63	3234
Military	11490.00	0.31	1.07	29.29	0.33	0.91	0.82	3234
After Burn	20793.00	5.26	1.07	14.30	21.51	0.38	0.35	3234

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:		24
Flight Operation Cycle Type:	LFP (Low Flight Pattern)	
Number of Annual Flight Operation Cycles for all Aircraft:		27
Number of Annual Trim Test(s) per Aircraft:		0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi [Idle] (mins):	0
Approach [Approach] (mins):	0
Climb Out [Intermediate] (mins):	0
Takeoff [Military] (mins):	17.20549
Takeoff [After Burn] (mins):	0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for Flight Operation Cycles per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
FOC: Number of Flight Operation Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Flight Operation Cycles per Year

$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{FOC}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

PROPOSED ACTION – IR-096 ESTABLISHMENT (FOR GHG PURPOSES ONLY)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: EGLIN AFB
State: Florida
County(s): Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Military Training Route IR-096 Environmental Assessment

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2023

e. Action Description:

The Proposed Action is for the 96 TW to create a new low-altitude IR in the southeast United States similar to a previous route, IR-015, but with some changes to the configuration to meet current needs including terrain masking/maneuvering. Terrain masking is flying at lower altitudes than whatever detection system is being evaded, whether hugging the ground or using mountainous terrain to achieve that purpose. The route would establish and maintain an all-weather capability for pilots to train on long-range low-altitude strike training missions. Due to the curvature of the Earth over the distance of the route, the location of the Range Instrumentation Radar-980 (an auto-tracking radar) or the digital airport surveillance radar (DASR) on the western side of the range, and the termination point of the route, terrain masking can be accomplished along this route as part of the LASDT mission.

Under Alternative 1, the 96 TW would establish IR-096 in a different configuration (Figure 2-2). IR-096 would originate overland east of Tallahassee, FL, flow south then west/northwest into the Eglin Test and Training Range's Restricted Airspace (R-2914A). Route altitudes would be principally 500 feet AGL to 5,000 feet MSL, with a corridor of 5 NM on either side of the route centerline.

f. Point of Contact:

Name: Brad Boykin
Title: CTR
Organization: Leidos
Phone Number: 571-521-8765

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.030	250	
NOx	7.172	250	
CO	0.111	250	
SOx	0.314	250	
PM 10	0.318	250	
PM 2.5	0.286	250	
Pb	0.000	25	No
NH3	0.000	250	
CO2e	949.1		

2024 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.030	250	
NOx	7.172	250	
CO	0.111	250	
SOx	0.314	250	
PM 10	0.318	250	
PM 2.5	0.286	250	
Pb	0.000	25	No
NH3	0.000	250	
CO2e	949.1		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

Brad Boykin, CTR

19 DEC 2022
DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

PROPOSED ACTION – IR-096 ESTABLISHMENT (FOR GHG PURPOSES ONLY)

1. General Information

- Action Location

Base: EGLIN AFB
State: Florida
County(s): Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Military Training Route IR-096 Environmental Assessment

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2023

- Action Purpose and Need:

The purpose of the Proposed Action is for the 96 TW at Eglin AFB to establish and maintain an all-weather long-range low-altitude airspace capability to test new weapon systems and their components, and to train Eglin AFB 33rd Fighter Wing (FW) F 35 student pilots on strike missions in accordance with their training syllabus.

The Proposed Action is needed because new or fifth-generation weapons systems fly further and at lower altitudes than older weapons systems, and therefore require testing over low altitudes (2,000 to 5,000 feet above ground level [AGL]) and long ranges (over 100 miles), with the ability to terminate in a land impact area such as one of the Eglin land test ranges.

- Action Description:

The Proposed Action is for the 96 TW to create a new low-altitude IR in the southeast United States similar to a previous route, IR-015, but with some changes to the configuration to meet current needs including terrain masking/maneuvering. Terrain masking is flying at lower altitudes than whatever detection system is being evaded, whether hugging the ground or using mountainous terrain to achieve that purpose. The route would establish and maintain an all-weather capability for pilots to train on long-range low-altitude strike training missions. Due to the curvature of the Earth over the distance of the route, the location of the Range Instrumentation Radar-980 (an auto-tracking radar) or the digital airport surveillance radar (DASR) on the western side of the range, and the termination point of the route, terrain masking can be accomplished along this route as part of the LASDT mission.

Under Alternative 1, the 96 TW would establish IR-096 in a different configuration (Figure 2-2). IR-096 would originate overland east of Tallahassee, FL, flow south then west/northwest into the Eglin Test and Training Range's Restricted Airspace (R-2914A). Route altitudes would be principally 500 feet AGL to 5,000 feet MSL, with a corridor of 5 NM on either side of the route centerline.

- Point of Contact

Name: Brad Boykin
Title: CTR
Organization: Leidos
Phone Number: 571-521-8765

- Activity List:

Activity Type		Activity Title
2.	Aircraft	F-35 Flight Operations

3.	Aircraft	F-15E Flight Operations

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: F-35 Flight Operations

- Activity Description:
65 operations annually

- Activity Start Date
Start Month: 1
Start Year: 2023

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.209014
NO_x	4.297487
CO	0.078136
PM 10	0.228548

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.205107
Pb	0.000000
NH_3	0.000000
CO_2e	631.7

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-35A

Engine Model: F135-PW-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)
Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:		24
Flight Operation Cycle Type:	LFP (Low Flight Pattern)	
Number of Annual Flight Operation Cycles for all Aircraft:		65
Number of Annual Trim Test(s) per Aircraft:		0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi [Idle] (mins):	0
Approach [Approach] (mins):	0
Climb Out [Intermediate] (mins):	0
Takeoff [Military] (mins):	18.97744
Takeoff [After Burn] (mins):	0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for Flight Operation Cycles per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
FOC: Number of Flight Operation Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Flight Operation Cycles per Year

$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{FOC}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: F-15E Flight Operations

- Activity Description:

27 operations annually

- Activity Start Date
Start Month: 1
Start Year: 2023

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.030418
SO_x	0.104991
NO_x	2.874018
CO	0.032381
PM 10	0.089292

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.080461
Pb	0.000000
NH_3	0.000000
CO_2e	317.3

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-15E
Engine Model: F100-PW-229
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1087.00	0.45	1.07	3.80	10.17	0.67	0.60	3234
Approach	3098.00	0.24	1.07	15.08	1.17	0.70	0.63	3234
Intermediate	5838.00	0.35	1.07	17.54	0.15	0.70	0.63	3234
Military	11490.00	0.31	1.07	29.29	0.33	0.91	0.82	3234
After Burn	20793.00	5.26	1.07	14.30	21.51	0.38	0.35	3234

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:		24
Flight Operation Cycle Type:	LFP (Low Flight Pattern)	
Number of Annual Flight Operation Cycles for all Aircraft:		27
Number of Annual Trim Test(s) per Aircraft:		0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi [Idle] (mins):	0
Approach [Approach] (mins):	0
Climb Out [Intermediate] (mins):	0
Takeoff [Military] (mins):	18.97744
Takeoff [After Burn] (mins):	0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for Flight Operation Cycles per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
FOC: Number of Flight Operation Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Flight Operation Cycles per Year

$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{FOC}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

ALTERNATIVE 1 – IR-096

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: EGLIN AFB
State: Florida
County(s): Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Military Training Route IR-096 Environmental Assessment

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2023

e. Action Description:

The Proposed Action is for the 96 TW to create a new low-altitude IR in the southeast United States similar to a previous route, IR-015, but with some changes to the configuration to meet current needs including terrain masking/maneuvering. Terrain masking is flying at lower altitudes than whatever detection system is being evaded, whether hugging the ground or using mountainous terrain to achieve that purpose. The route would establish and maintain an all-weather capability for pilots to train on long-range low-altitude strike training missions. Due to the curvature of the Earth over the distance of the route, the location of the Range Instrumentation Radar-980 (an auto-tracking radar) or the digital airport surveillance radar (DASR) on the western side of the range, and the termination point of the route, terrain masking can be accomplished along this route as part of the LASDT mission.

Under Alternative 1, the 96 TW would establish IR-096 in a different configuration (Figure 2-2). IR-096 would originate overland east of Tallahassee, FL, flow south then west/northwest into the Eglin Test and Training Range's Restricted Airspace (R-2914A). Route altitudes would be principally 500 feet AGL to 5,000 feet MSL, with a corridor of 5 NM on either side of the route centerline.

f. Point of Contact:

Name: Brad Boykin
Title: CTR
Organization: Leidos
Phone Number: 571-521-8765

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.034	250	
NOx	8.058	250	
CO	0.124	250	
SOx	0.353	250	
PM 10	0.357	250	
PM 2.5	0.321	250	
Pb	0.000	25	No
NH3	0.000	250	
CO2e	1066.3		

2024 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.034	250	
NOx	8.058	250	
CO	0.124	250	
SOx	0.353	250	
PM 10	0.357	250	
PM 2.5	0.321	250	
Pb	0.000	25	No
NH3	0.000	250	
CO2e	1066.3		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

Brad Boykin, CTR

19 DEC 2023
DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

ALTERNATIVE 1 – IR-096

1. General Information

- Action Location

Base: EGLIN AFB
State: Florida
County(s): Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Military Training Route IR-096 Environmental Assessment

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2023

- Action Purpose and Need:

The purpose of the Proposed Action is for the 96 TW at Eglin AFB to establish and maintain an all-weather long-range low-altitude airspace capability to test new weapon systems and their components, and to train Eglin AFB 33rd Fighter Wing (FW) F 35 student pilots on strike missions in accordance with their training syllabus.

The Proposed Action is needed because new or fifth-generation weapons systems fly further and at lower altitudes than older weapons systems, and therefore require testing over low altitudes (2,000 to 5,000 feet above ground level [AGL]) and long ranges (over 100 miles), with the ability to terminate in a land impact area such as one of the Eglin land test ranges.

- Action Description:

The Proposed Action is for the 96 TW to create a new low-altitude IR in the southeast United States similar to a previous route, IR-015, but with some changes to the configuration to meet current needs including terrain masking/maneuvering. Terrain masking is flying at lower altitudes than whatever detection system is being evaded, whether hugging the ground or using mountainous terrain to achieve that purpose. The route would establish and maintain an all-weather capability for pilots to train on long-range low-altitude strike training missions. Due to the curvature of the Earth over the distance of the route, the location of the Range Instrumentation Radar-980 (an auto-tracking radar) or the digital airport surveillance radar (DASR) on the western side of the range, and the termination point of the route, terrain masking can be accomplished along this route as part of the LASDT mission.

Under Alternative 1, the 96 TW would establish IR-096 in a different configuration (Figure 2-2). IR-096 would originate overland east of Tallahassee, FL, flow south then west/northwest into the Eglin Test and Training Range's Restricted Airspace (R-2914A). Route altitudes would be principally 500 feet AGL to 5,000 feet MSL, with a corridor of 5 NM on either side of the route centerline.

- Point of Contact

Name: Brad Boykin
Title: CTR
Organization: Leidos
Phone Number: 571-521-8765

- Activity List:

	Activity Type	Activity Title
2.	Aircraft	F-35 Flight Operations
3.	Aircraft	F-15E Flight Operations

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: F-35 Flight Operations

- Activity Description:

65 operations annually

- Activity Start Date

Start Month: 1

Start Year: 2023

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.234837
NO_x	4.828418
CO	0.087789
PM 10	0.256784

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.230447
Pb	0.000000
NH_3	0.000000
CO_2e	709.8

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A
Engine Model: F135-PW-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 24
Flight Operation Cycle Type: LFP (Low Flight Pattern)
Number of Annual Flight Operation Cycles for all Aircraft: 65
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi [Idle] (mins): 0
Approach [Approach] (mins): 0
Climb Out [Intermediate] (mins): 0
Takeoff [Military] (mins): 21.322
Takeoff [After Burn] (mins): 0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0
AfterBurn (mins): 0

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for Flight Operation Cycles per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
FOC: Number of Flight Operation Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Flight Operation Cycles per Year

$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{FOC}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: F-15E Flight Operations

- Activity Description:
27 operations annually

- Activity Start Date
Start Month: 1
Start Year: 2023

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.034176
SO_x	0.117963
NO_x	3.229088
CO	0.036381
PM 10	0.100323

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.090401
Pb	0.000000
NH_3	0.000000
CO_2e	356.5

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-15E
Engine Model: F100-PW-229
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1087.00	0.45	1.07	3.80	10.17	0.67	0.60	3234
Approach	3098.00	0.24	1.07	15.08	1.17	0.70	0.63	3234
Intermediate	5838.00	0.35	1.07	17.54	0.15	0.70	0.63	3234
Military	11490.00	0.31	1.07	29.29	0.33	0.91	0.82	3234
After Burn	20793.00	5.26	1.07	14.30	21.51	0.38	0.35	3234

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:		24
Flight Operation Cycle Type:	LFP (Low Flight Pattern)	
Number of Annual Flight Operation Cycles for all Aircraft:		27
Number of Annual Trim Test(s) per Aircraft:		0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi [Idle] (mins):	0
Approach [Approach] (mins):	0
Climb Out [Intermediate] (mins):	0
Takeoff [Military] (mins):	21.322
Takeoff [After Burn] (mins):	0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for Flight Operation Cycles per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
FOC: Number of Flight Operation Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Flight Operation Cycles per Year

$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{FOC}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

ALTERNATIVE 1 – IR-096 (FOR GHG PURPOSES ONLY)

1. General Information

- Action Location

Base: EGLIN AFB
State: Florida
County(s): Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Military Training Route IR-096 Environmental Assessment

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2023

- Action Purpose and Need:

The purpose of the Proposed Action is for the 96 TW at Eglin AFB to establish and maintain an all-weather long-range low-altitude airspace capability to test new weapon systems and their components, and to train Eglin AFB 33rd Fighter Wing (FW) F 35 student pilots on strike missions in accordance with their training syllabus.

The Proposed Action is needed because new or fifth-generation weapons systems fly further and at lower altitudes than older weapons systems, and therefore require testing over low altitudes (2,000 to 5,000 feet above ground level [AGL]) and long ranges (over 100 miles), with the ability to terminate in a land impact area such as one of the Eglin land test ranges.

- Action Description:

The Proposed Action is for the 96 TW to create a new low-altitude IR in the southeast United States similar to a previous route, IR-015, but with some changes to the configuration to meet current needs including terrain masking/maneuvering. Terrain masking is flying at lower altitudes than whatever detection system is being evaded, whether hugging the ground or using mountainous terrain to achieve that purpose. The route would establish and maintain an all-weather capability for pilots to train on long-range low-altitude strike training missions. Due to the curvature of the Earth over the distance of the route, the location of the Range Instrumentation Radar-980 (an auto-tracking radar) or the digital airport surveillance radar (DASR) on the western side of the range, and the termination point of the route, terrain masking can be accomplished along this route as part of the LASDT mission.

Under Alternative 1, the 96 TW would establish IR-096 in a different configuration (Figure 2-2). IR-096 would originate overland east of Tallahassee, FL, flow south then west/northwest into the Eglin Test and Training Range's Restricted Airspace (R-2914A). Route altitudes would be principally 500 feet AGL to 5,000 feet MSL, with a corridor of 5 NM on either side of the route centerline.

- Point of Contact

Name: Brad Boykin
Title: CTR
Organization: Leidos
Phone Number: 571-521-8765

- Activity List:

	Activity Type	Activity Title
2.	Aircraft	F-35 Flight Operations
3.	Aircraft	F-15E Flight Operations

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Aircraft

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: F-35 Flight Operations

- Activity Description:

65 operations annually

- Activity Start Date

Start Month: 1

Start Year: 2023

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.257262
NO_x	5.289491
CO	0.096173
PM 10	0.281305

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.252453
Pb	0.000000
NH_3	0.000000
CO_2e	777.6

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

2.2 Aircraft & Engines

2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: F-35A
Engine Model: F135-PW-100
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 1

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors.

2.3 Flight Operations

2.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 24
Flight Operation Cycle Type: LFP (Low Flight Pattern)
Number of Annual Flight Operation Cycles for all Aircraft: 65
Number of Annual Trim Test(s) per Aircraft: 0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi [Idle] (mins): 0
Approach [Approach] (mins): 0
Climb Out [Intermediate] (mins): 0
Takeoff [Military] (mins): 23.35807
Takeoff [After Burn] (mins): 0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins): 0
Approach (mins): 0
Intermediate (mins): 0
Military (mins): 0
AfterBurn (mins): 0

2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for Flight Operation Cycles per Year

AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
FOC: Number of Flight Operation Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Flight Operation Cycles per Year

$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{FOC}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

3. Aircraft

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: F-15E Flight Operations

- Activity Description:
27 operations annually

- Activity Start Date
Start Month: 1
Start Year: 2023

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.037440
SO_x	0.129227
NO_x	3.537438
CO	0.039855
PM 10	0.109903

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.099034
Pb	0.000000
NH_3	0.000000
CO_2e	390.6

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.000000
SO_x	0.000000
NO_x	0.000000
CO	0.000000
PM 10	0.000000

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000000
Pb	0.000000
NH_3	0.000000
CO_2e	0.0

3.2 Aircraft & Engines

3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F-15E
Engine Model: F100-PW-229
Primary Function: Combat
Aircraft has After burn: Yes
Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	1087.00	0.45	1.07	3.80	10.17	0.67	0.60	3234
Approach	3098.00	0.24	1.07	15.08	1.17	0.70	0.63	3234
Intermediate	5838.00	0.35	1.07	17.54	0.15	0.70	0.63	3234
Military	11490.00	0.31	1.07	29.29	0.33	0.91	0.82	3234
After Burn	20793.00	5.26	1.07	14.30	21.51	0.38	0.35	3234

3.3 Flight Operations

3.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:		24
Flight Operation Cycle Type:	LFP (Low Flight Pattern)	
Number of Annual Flight Operation Cycles for all Aircraft:		27
Number of Annual Trim Test(s) per Aircraft:		0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi [Idle] (mins):	0
Approach [Approach] (mins):	0
Climb Out [Intermediate] (mins):	0
Takeoff [Military] (mins):	23.35807
Takeoff [After Burn] (mins):	0

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	0
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for Flight Operation Cycles per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * FOC / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
FOC: Number of Flight Operation Cycles (for all aircraft)
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Flight Operation Cycles per Year

$AE_{FOC} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{FOC}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

ALTERNATIVE 1 – IR-096 (FOR GHG PURPOSES ONLY)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: EGLIN AFB
State: Florida
County(s): Bay; Calhoun; Franklin; Gadsden; Jackson; Jefferson; Leon; Liberty; Taylor; Wakulla; Walton; Washington
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Military Training Route IR-096 Environmental Assessment

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2023

e. Action Description:

The Proposed Action is for the 96 TW to create a new low-altitude IR in the southeast United States similar to a previous route, IR-015, but with some changes to the configuration to meet current needs including terrain masking/maneuvering. Terrain masking is flying at lower altitudes than whatever detection system is being evaded, whether hugging the ground or using mountainous terrain to achieve that purpose. The route would establish and maintain an all-weather capability for pilots to train on long-range low-altitude strike training missions. Due to the curvature of the Earth over the distance of the route, the location of the Range Instrumentation Radar-980 (an auto-tracking radar) or the digital airport surveillance radar (DASR) on the western side of the range, and the termination point of the route, terrain masking can be accomplished along this route as part of the LASDT mission.

Under Alternative 1, the 96 TW would establish IR-096 in a different configuration (Figure 2-2). IR-096 would originate overland east of Tallahassee, FL, flow south then west/northwest into the Eglin Test and Training Range's Restricted Airspace (R-2914A). Route altitudes would be principally 500 feet AGL to 5,000 feet MSL, with a corridor of 5 NM on either side of the route centerline.

f. Point of Contact:

Name: Brad Boykin
Title: CTR
Organization: Leidos
Phone Number: 571-521-8765

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

2023

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.037	250	
NOx	8.827	250	
CO	0.136	250	
SOx	0.386	250	
PM 10	0.391	250	
PM 2.5	0.351	250	
Pb	0.000	25	No
NH3	0.000	250	
CO2e	1168.1		

2024 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.037	250	
NOx	8.827	250	
CO	0.136	250	
SOx	0.386	250	
PM 10	0.391	250	
PM 2.5	0.351	250	
Pb	0.000	25	No
NH3	0.000	250	
CO2e	1168.1		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

Brad Boykin, CTR

19 DEC 2022
DATE

APPENDIX B

AGENCY CORRESPONDENCE AND CONSULTATIONS

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U.S. Department
of Transportation
Federal Aviation
Administration

March 17, 2023

Mr. Ronald J. Onderko, P.E., NH-04
Chief, Civil Engineering Division
Department of the Air Force
Headquarters Air Force Materiel Command
Wright-Patterson Air Force Base, Ohio

Dear Mr. Onderko,

Thank you for your letter of March 2022 requesting that Federal Aviation Administration (FAA) participate as a cooperating agency in the Air Force's Environmental Assessment (EA) for the re-establishment of Military Training Route (MTR) IR-015 at Eglin Air Force Base (AFB) to meet Air Force's current testing and training criteria. The Air Force's environmental impact analysis of its proposed use of MTR IR-015 will be addressed in the Air Force's EA and includes analysis of the FAA's re-establishment of the proposed MTR.

FAA appreciates the Air Force's recognition of our role as a cooperating agency in the evaluation of Special Use Airspace (SUA) and Special Activity Airspace (SAA) and the analysis of potential impacts to airspace associated with this Air Force project as required by the National Environmental Policy Act (NEPA) and its implementing regulations at 40 CFR Part 1500.

Since this Air Force proposal involves the proposed establishment, expansion, or use of SUA and SAA, FAA accepts the Air Force's request to act as a cooperating agency. FAA performs its role as a cooperating agency in accordance with the guidelines set forth in the Memorandum of Understanding (MOU) between FAA and Department of Defense (DoD) "Concerning Environmental Review of Special Use Airspace Actions", and in accordance with the NEPA regulations at 40 CFR Section 1501.8 regarding cooperating agencies, and FAA Order 7400.2N, Chapter 32, Appendix 8 – *FAA Special Use Airspace Environmental Processing Procedures* which outlines the process by which FAA works with DoD as a cooperating agency on projects involving SUA and SAA.

FAA understands that the Air Force's EA will evaluate the potential environmental impacts of the Air Force's use of the re-established MTR IR-015. Initially, MTR IR 015 originated east of Tallahassee, FL, flowed south then west/northwest into the Eglin Range and Restricted Areas; 500 feet above ground level (AGL) to 5,000 feet mean sea level (MSL). The corridor was five nautical miles (NM) on either side of the route centerline. The 23rd Fighter Wing (FW) at Moody AFB, GA managed this route beginning December 1980. On January 2020, this MTR was deactivated and returned to public use. The 96th Test Wing (TW) at Eglin AFB proposes to reactivate and manage IR-015 MTR to support test and training missions below 10,000 feet MSL in excess of 250 knots indicated airspeed with a littoral transition into the Eglin Range and Restricted Areas. Under the proposed action, this MTR would originate overwater on the boundary of W-470, flowing north for 22 NM, and then intercept the original IR-015 MTR. The Air Force estimates Eglin's missions would be approximately 55 operations per year of fighter aircraft.

FAA's participation in the development of the Air Force's EA and related NEPA documentation for this proposed action resides under the jurisdiction of FAA's Eastern Service Center, Operations Support Group (OSG) in Atlanta, Georgia. Lisa Favors is the OSG's Environmental Team Manager and Michael Riegert is the designated Environmental Protection Specialist who will coordinate with the Air Force on NEPA document developments and reviews. The Eastern Service Center's environmental specialists will be the focal points for matters related to the development and review of the Air Force's NEPA documentation for this project, including related airspace issues that will be tracked and coordinated by FAA Headquarters Airspace Regulations and Policy Group (AJV-P23).

While Appendix 8 of FAA Order 7400.2N indicates that the airspace review and environmental impacts review should be conducted in tandem as much as possible, they are still separate processes. Approval of either the aeronautical portion or the environmental impact analysis portion of the NEPA document does not automatically indicate approval of the entire proposal. Attached are Appendices 7 and 8 from FAA Order 7400.2N for additional details on coordination of NEPA documentation for projects involving the use of SUA between FAA and DoD.

A copy of the Air Force's request for FAA's cooperating agency status and this reply are being forwarded to the Environmental Team Manager, Ms. Lisa Favors of the Eastern Service Center's Operations Support Group. Ms. Favors can be contacted at [redacted] for further review of the NEPA document(s). For questions regarding NEPA document processing and coordination with the Service Center or FAA headquarters, please contact Paula Miller in the Airspace Regulations and Policy Group (AJV-P23-Environmental Policy Team), [redacted]

Sincerely,

BRIAN KONIE

Digitally signed by BRIAN KONIE
Date: 2023.03.17 17:16:06 -04'00'

For Eric S Jennings, Manager (A)
Airspace Regulations and Policy Group
Mission Support Services
Air Traffic Organization
Federal Aviation Administration

cc:
Shari Fort, AFIMSC Det 6, [redacted]
Lisa Favors, FAA, Eastern Service Center, [redacted]
Michael Riegert, FAA, Eastern Service Center, [redacted]
Paula Miller, FAA Headquarters, ATO, MSS, [redacted]

Attachments

BIOLOGICAL ASSESSMENT
FOR THE
ESTABLISHMENT OF MILITARY TRAINING ROUTE – INSTRUMENT ROUTE (IR)-096

EGLIN AIR FORCE BASE, FLORIDA

Submitted to:

U.S. Fish and Wildlife Service

1601 Balboa Avenue

Panama City, FL 32405

Submitted By:

Department of the Air Force
96 CEG/CEIEA
Natural Resources Office
501 DeLeon Street, Suite 101
Eglin AFB, FL 32542-5133

SEPTEMBER 2023

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Table of Contents

LIST OF TABLES

LIST OF FIGURES

ACRONYMS, ABBREVIATIONS, AND SYMBOLS

14 FTW	14th Flying Training Wing
325 FW	325th Fighter Wing
33 FW	33rd Fighter Wing
43 FS	43rd Fighter Squadron
96 TW	96th Test Wing
AFB	Air Force Base
AGL	above ground level
BA	Biological Assessment
BASH	Bird/Wildlife Aircraft Strike Hazard
C	candidate species
DAF	Department of the Air Force
dBA	A-weighted decibels
DNL	day-night average sound level
DoD	Department of Defense
DPS	distinct population segment
DT	developmental testing
E	endangered species
ESA	Endangered Species Act
ETTC	Eglin Test and Training Complex
IR	Instrument Route
LASDT	Low-Altitude Step Down Training
L_{dnmr}	onset rate-adjusted monthly day-night average sound level
L_{max}	maximum noise level
MSL	mean sea level
MTR	military training route
NE	no effect
NLAA	not likely to adversely affect
NM	nautical miles
NW	northwest
NWR	National Wildlife Refuge
OT	operational testing
PE	proposed endangered species
RCW	red-cockaded woodpecker
SE	southeast
T	threatened species
T&E	test and evaluation
U.S.	United States
USFWS	U.S. Fish and Wildlife Service

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1. INTRODUCTION

This Biological Assessment (BA) addresses potential impacts resulting from the Proposed Action identified in the *Environmental Assessment for the Establishment of Military Training Route – Instrument Route (IR)-096 for Eglin Air Force Base* to federally protected species and habitats. This BA is being submitted to fulfill requirements under section 7 of the Endangered Species Act (ESA). It addresses impacts potentially resulting from re-establishing and modifying a previously existing low-level military training route (MTR) in northwest Florida. The objectives of this BA are as follows:

- Document all federally listed threatened and endangered species and associated habitat that occur or may potentially occur in the affected areas.
- Identify the actions, as described in the associated Environmental Assessment, that have the potential to impact, either beneficially or adversely, those documented species and designated critical habitat.
- Determine what effects these activities would likely have on federally listed species and designated critical habitat.

Detailed information regarding the Proposed Action is provided in Section 2 (Description of the Proposed Action).

1.1 LOCATION

Eglin Air Force Base (AFB) is primarily situated among three counties: Santa Rosa County, Okaloosa County, and Walton County (Figure 1-1). In addition, Cape San Blas, part of a peninsula in Gulf County, is part of Eglin AFB. The region of influence (ROI) for this BA is the route airspace and water and land area beneath the proposed route, which spans from a point in the northern Gulf, crossing several Florida counties until reaching Eglin AFB. Figure 1-2 shows the setting of the proposed route, IR-096.

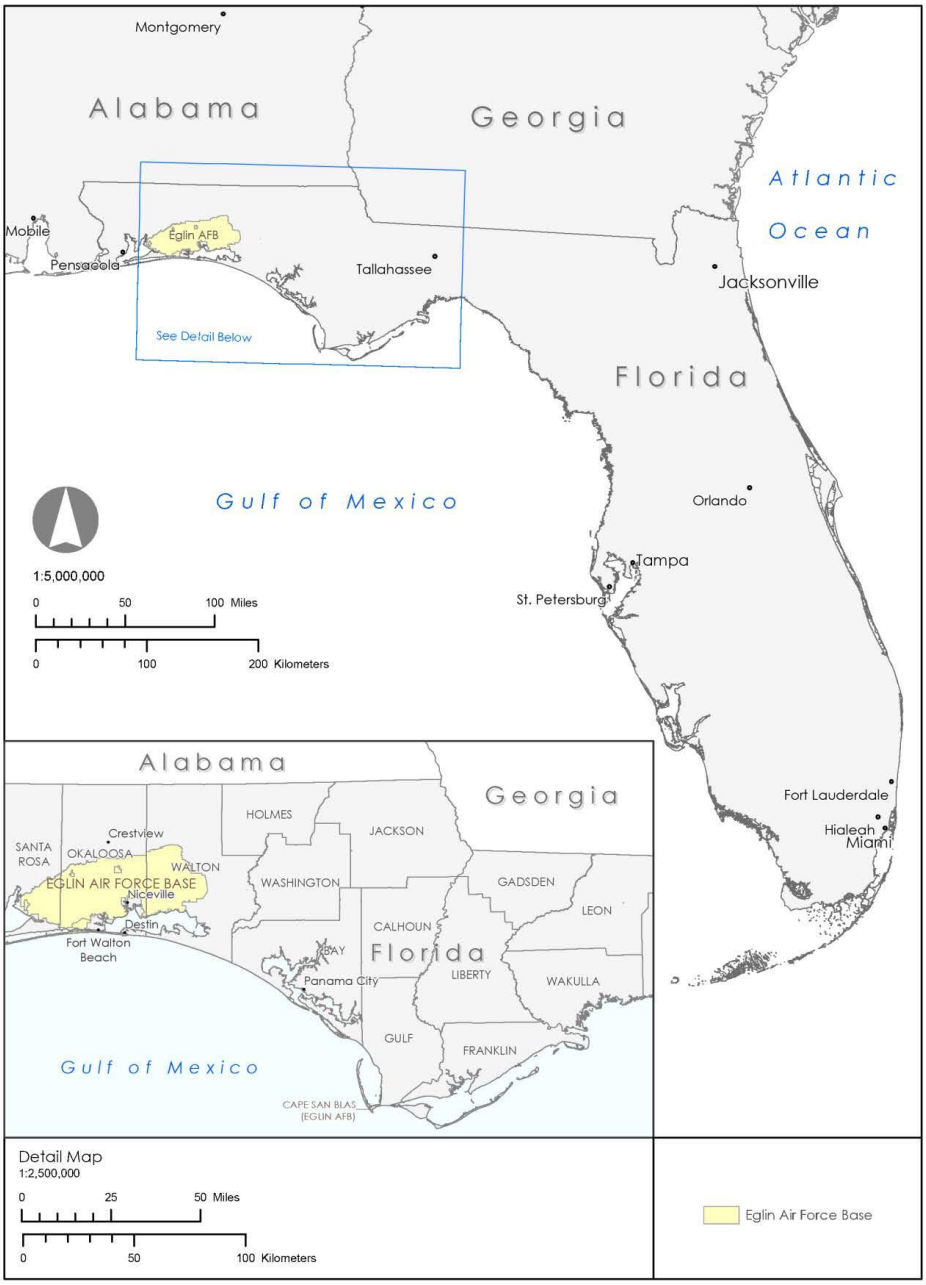

Figure 1-1. Regional Overview

Figure 1-2. Proposed Action Setting

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2. DESCRIPTION OF THE PROPOSED ACTION

2.1 PURPOSE AND NEED FOR THE ACTION

2.1.1 Background

Eglin AFB's primary function is to support research, development, and test and evaluation (T&E) of conventional weapons and electronic systems. Eglin AFB is the T&E center for Department of the Air Force (DAF) air-delivered weapons, navigation and guidance systems, and command and control systems and provides developmental T&E across the complete system life cycle for a wide variety of weapons programs. Eglin AFB also provides support for individual and joint training of operational units and hosts major single-service and joint exercises. The Eglin Test and Training Complex (ETTC) consists of four components, not including the cantonment or main base areas: (1) training or test areas/sites, (2) interstitial areas (areas beyond and between the defined boundaries of test areas), (3) water ranges (the Eglin Gulf Test and Training Range [EGTTR] and estuarine and riverine areas), and (4) airspace (over land and water). The 96th Test Wing (96 TW) is the Range Operating Authority for the ETTC.

The 96 TW authorizes, schedules, manages, and monitors activities conducted on the ETTC. The 96 TW provides complete system life cycle development testing and evaluation for a variety of customers including Air Force Systems Program Offices, the Air Force Research Laboratory, logistics and product centers, Major Commands, other Department of Defense (DoD) services, United States (U.S.) government agencies (e.g., Department of Transportation, National Aeronautics and Space Administration), foreign military sales, and private industry. Eglin AFB is not only home to the 96 TW but also to the 325th Fighter Wing's (325 FW's) 43rd Fighter Squadron (43 FS), 33rd Fighter Wing (33 FW), 350 Spectrum Warfare Wing, and 53rd Wing and hosts a number of other tenant and visiting units. Eglin AFB hosts different missions including developmental testing (DT) and operational testing (OT) and the training of F-35 pilots in conventional warfare tactics.

The 96 TW is responsible for DT of airborne munitions and operates F-15s, F-16s, A-10s, and soon-to-arrive DT F-35s in the 96 TW. The 53rd Wing operates the same type of aircraft as the 96 TW but is responsible for OT of aircraft and weapon systems. The 325 FW's 43 FS operates F-22s and T-38s and may transition to F-35s in the near future. The 33 FW has two squadrons of F-35As. In summary, the aircraft operating out of Eglin AFB include the F-35, F-22, F-15s (C, E, and EX), F-16, T-38, C-130, and others, depending on the missions, which change day to day.

The F-35 aircraft is a fifth-generation aircraft that has the most advanced sensor suite of any fighter in history, including an Active Electronically Scanned Array radar, Distributed Aperture System, Electro Optical Targeting System, and advanced electronic warfare capabilities to locate/track enemy forces, jam radars, and disrupt attacks. These complicated systems and emerging systems of fifth-generation weapons require extensive DT/OT. The 96 TW and 53rd Wing will use the F-35 for the DT/OT of fifth-generation weapons.

The DT/OT fourth-generation aircraft at Eglin AFB routinely test fifth-generation weapons/equipment that either fifth-generation aircraft or their own platforms employ in wartime scenarios. Many of the most expensive and highest visibility DoD acquisition programs require environments that offer medium-to-long-range (more than 100 miles) terrain masking and termination in a land impact area. Programs that could use the proposed route include the AGM-158 Joint Air-to-Surface Standoff Missile Extended Range and the Low-Cost Cruise Missile, which are both part of fifth-generation weapons development and testing. These medium-to-long-range weapons require low-altitude testing (2,000 to 5,000 feet above ground level [AGL]) and routes originating at a launch point within warning airspace and terminating on an air-to-ground range at speeds in excess of 250 knots in air speed.

Eglin AFB hosts Air Education and Training Command's 33 FW, which contains two squadrons of F-35s used for certain types of course training. The F-35 is an all-weather stealth multi-role combat aircraft intended to provide air superiority and carry out strike missions. Low-Altitude Step Down Training (LASDT) is a required certification for F-35 student pilots per the Air Education and Training Command's F-35A Combined Wingman Syllabus. LASDT consists of low-level tactical navigation, terrain masking/maneuvering, altitude awareness/control, and low-altitude tactical formation.

Tyndall AFB F-35 pilots need to train when their primary training airspace is congested or unavailable due to weather. In September 2023, the 325 FW at Tyndall AFB will be receiving three squadrons of F-35s (72 aircraft with approximately 100 pilots) that have proficiency training requirements. Strike Coordination and Reconnaissance, Offensive Counter-Air Attack Operations, Suppression of Enemy Aircraft Defenses, and Escort are secondary mission events required for the purpose of detecting targets and coordinating or performing attack or reconnaissance on those targets per the F-35A Ready Aircrew Program Tasking Memorandum, Aviation Schedule 2022, in conjunction with Air Force Manual 11-2F-35A, Volume 1.

Demand for an MTR is immediate and expected to increase in the future with the beddown of DT F-35s in the 96 TW at Eglin AFB; DT/OT on future long-range weapon systems requiring an MTR with a water-to-land transition, overflight of land, and termination in restricted airspace at an air-to-ground range; and the incoming of three F-35A squadrons at Tyndall AFB.

These needs only recently emerged with evolving changes in tactics and procedures for F-35s. Eglin and Tyndall AFBs had adequate airspace to accommodate these beddowns when those decisions were made; this MTR meets recently emerging needs and merely provides an enhancement to training and, therefore, has independent utility from prior proposed actions. The permissive environment the DAF has operated within in the past is no longer reality. The 2022 National Defense Strategy places a primary focus on the requirement to sustain and strengthen our forces against emerging weapon technologies developed by potential peer and near-peer adversaries. Just as the defensive capabilities of identified adversaries evolve, so should our offensive tactics, techniques, and procedures. Although fifth-generation aircraft do benefit from advanced technologies and low radar visibility, emerging threats drive changes to training requirements. Low-level training is a tactic designed to increase aircrew survivability by using terrain masking as a form of camouflage and must be incorporated. Demand for an MTR is immediate and expected to increase in the future, requiring an MTR with a water-to-land transition, overflight of land, and termination in restricted airspace at an air-to-ground range.

2.1.2 Purpose

The purpose of the Proposed Action is for the 96 TW at Eglin AFB to test new weapon systems and their components in an all-weather, long-range, low-altitude setting with a water-to-land transition that terminates in a land range underlying restricted airspace. In addition, the purpose is to train Eglin AFB 33 FW F-35 student pilots on strike missions in accordance with their training syllabus.

2.1.3 Need

The Proposed Action is needed because new or fifth-generation weapons systems require testing over low altitudes, with the ability to terminate in a land impact area such as one of the Eglin land test ranges. Deactivation of IR-015 in January 2021 has resulted in no airspace being available that meets this need.

Currently, 96 TW and tenant unit aircrew at Eglin AFB have no ability to conduct low-level instrument meteorological conditions (i.e., all-weather) training with a littoral (over-the-shore) transition. A new low-level long-range route that crosses from water to land would support the President's Indo-Pacific Strategy 2022 of advancing an integrated deterrence toward aggression and coercion against peer adversaries by mimicking the environment of the Indo-Pacific region. The DoD's acting Director of Operational Test and Evaluation has stressed that real-world mission success and national security reflect the OT performed.

2.2 PROPOSED ACTION – ESTABLISH IR-096

The Proposed Action is for the 96 TW to request the Federal Aviation Administration to create a new low-altitude IR, named IR-096, in the southeast United States similar to the original IR-015 but with some changes to the configuration to meet current OT and DT and training needs, such as a long-range transition from water to land. The route would support low-level flight for terrain masking/maneuvering. Terrain masking is flying at lower altitudes than whatever detection system is being evaded, whether hugging the ground or using mountainous terrain to achieve that purpose. The curvature of Earth over the distance of the route, and the locations of radars on the western Eglin range, allow for terrain masking along this route as part of the LASDT training. Unlike the original IR-015, the point of origin would be over water on the boundary of Warning Area W-470 (Figure 2-1). From W-470, the proposed route would flow north for 22 nautical miles to intercept the original IR-015, continuing to flow west/northwest into the DAF restricted airspace block, R-2914A. The floor of the proposed route would be 500 feet AGL, and the ceiling would be 5,000 feet mean sea level (MSL).

Use of the proposed MTR would be Monday through Friday between the hours of 6:00 a.m. and 5:00 p.m. The frequency of use based on the number of test requirements, student pilots in training, and pilots on proficiency flights would be approximately four to eight times monthly (one to two times per week). In addition, these missions would not use flares, chaff, or any expenditures along the route. A typical mission could look like an F-35 flying at high speed and low level, attempting to determine which emitter located on the Eglin Range is an actual threat, or captive carrying a new weapon system and testing its guidance system. With captive carry, a weapon system is attached to the aircraft but is not released.

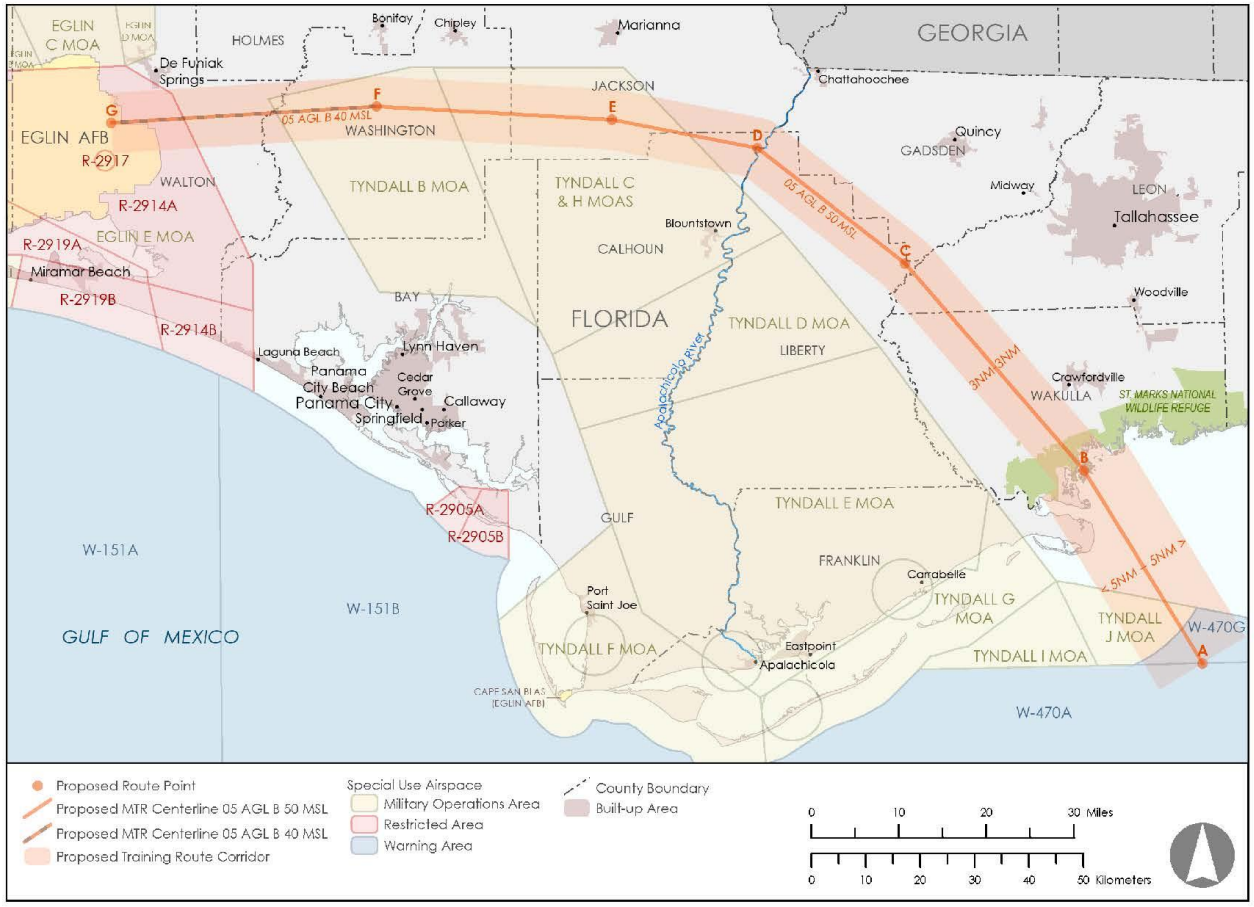

Figure 2-1. Proposed Route, IR-096

Proposed aircraft operations would slightly increase time-averaged noise levels beneath the IR-096 corridor. Noise metrics relevant to analysis of the Proposed Action include decibels (dB), maximum noise level (L_{max}), day-night average sound level (DNL), and onset rate-adjusted monthly day-night average sound level (L_{dnmr}). The basic unit of sound level is the dB, which is a logarithmic measure of a sound's intensity. A-weighted dB, or dBA, refers to sound intensity measurement adjusted to the frequency range of best human hearing. L_{max} is the highest sound level reached for a fraction of a second during an overflight. DNL is calculated by summing individual noise events and averaging the acoustic energy over a 24-hour period. L_{dnmr} is similar to DNL but would account for the effects of operational noise in training airspace, adding up to 11 dB for overflights at low altitude and high airspeed to account for the potential "surprise factor" associated with sudden onset noise. Noise levels directly beneath an individual low-level overflight would be substantially greater, but such events typically last only a few seconds. Under the Proposed Action, there would be approximately 1.8 operations per average week. Of these, approximately 80 percent (1.44 operations per average week) would occur between 500 and 1,000 feet AGL.

The Proposed Action is to establish IR-096 to meet the purpose and need of conducting DT/OT with the F-35 and fifth-generation weapons, providing pilots and developing weapon systems with a realistic instrumental meteorological conditions flight in a transition from a water environment across the shore to low-level flight over land. The route would establish and maintain an all-weather capability for pilots to train on long-range low-altitude strike training missions.

2.2.1 Description of Proposed Action, Establishment of IR-096

The proposed route is depicted as points at directional changes, which join to form route segments, the details of which are provided in Table 2-1 and shown in Figure 2-1.

Table 2-1. Proposed Route Description

Segments	Parameters	Utilization Notes
A-B	500 feet AGL to 5,000 feet MSL; 5 NM left and 5 NM right	Route would originate over water and enter the littoral area over St. Marks National Wildlife Refuge.
B-C	500 feet AGL to 5,000 feet MSL, 3 NM out to the left and 3 NM out to the right	• Aircraft would climb and maintain 2,000 feet MSL until passing Highway 319 and a noise-sensitive area. • Aircraft would exercise caution as IR-019 crosses from NW to SE between Points B to C. • IR-021 runs parallel. • Aircraft would avoid Wakulla County Airport by 3 NM or 1,500 feet MSL. • Aircraft would avoid the tower obstruction 775 feet in height, located 1.9 NM right of course. • Aircraft would avoid the tower obstruction 824 feet in height, located 2 NM right of course. • Aircraft would avoid the tower obstruction 421 feet in height, located 1.3 NM right of course.
C-D	500 feet AGL to 5,000 feet MSL, 3 NM left and 3 NM right	• Pilots would report over Point C to Tallahassee Approach Control. • Pilots would climb to 1,500 feet MSL to cross the Apalachicola River and remain at 1,500 feet MSL until past Point D, in consideration of a noise-sensitive area and potential concentrations of birds.

Table 2-1. Proposed Route Description

Segments	Parameters	Utilization Notes
D-E	500 feet AGL to 5,000 feet MSL, 3 NM left and 3 NM right	• Pilots would report over Point D to Tyndall Approach Control. • Pilots would contact the 14 FTW, Columbus AFB, to deconflict with IR-017, which would cross, overlap, or run parallel with the proposed route between Points D and G. • Pilots would make all attempts to cross Point D on the centerline or the northern portion of the route.
E-F	500 feet AGL to 5,000 feet MSL, 3 NM left and 3 NM right	There are no notes for this segment.
F-G	500 feet AGL to 4,000 feet MSL, 3 NM left and 3 NM right	Pilots would contact the 1st Special Operations Air Operations Squadron at Hurlburt Field to deconflict with IR-059 and IR-057, which overlap the proposed route between Points D and F.

Source: (Eglin AFB, 2022)
14 FTW = 14th Flying Training Wing; AFB = Air Force Base; AGL = above ground level; IR = Instrument Route; MSL = mean sea level; NM = nautical miles; NW = northwest; SE = southeast

2.3 CONSERVATION MEASURES

The conservation measures within this BA are commitments made by Eglin AFB as part of the Proposed Action. Proponents are responsible for ensuring these conservation measures are implemented. If Eglin AFB (1) fails to assume and assure implementation of the conservation measures or (2) fails to require the participants in the activities to adhere to the conservation measures through enforceable terms, the protective coverage of section 7(a)(2) of the ESA may lapse and may result in penalties, fines, and immediate operational shutdown of the activity.

As part of the Proposed Action, the DAF would implement the following measures:

- Pilots crossing the noise-sensitive St. Marks National Wildlife Refuge (NWR) / Wakulla County Airport avoidance area would maintain levels at or above 2,000 feet MSL (approximately 1,900 feet AGL).
- In consideration of a noise-sensitive area and potential concentrations of birds, pilots would climb to 1,500 feet MSL to cross the Apalachicola River and remain at 1,500 feet MSL until past Point D.
- Bird/Wildlife Aircraft Strike Hazard (BASH) reduction protocols would be implemented.

3. BIOLOGICAL INFORMATION

Forty-two species protected by the ESA (listed as either threatened, endangered, or candidate species) have the potential to occur within the study area, and critical habitat for 13 federally listed species occurs under IR-096 (Table 3-1). Some of these species and critical habitats were eliminated from detailed analysis based on the extremely low potential for impacts (see Section 3.1, Species and Critical Habitats Eliminated from Detailed Analysis).

Table 3-1. Federally Listed Species Potentially Occurring Within the Study Area

Common Name	Scientific Name	Listing Status
Amphibians		
Reticulated flatwoods salamander[1]	*Ambystoma bishopi*	E
Frosted flatwoods salamander	*Ambystoma cingulatum*	T
Birds		
Eastern black rail	*Laterallus jamaicensis* ssp. *jamaicensis*	T
Piping plover	*Charadrius melodus*	T
Red-cockaded woodpecker	*Picoides borealis*	E
Red knot	*Calidris canutus rufa*	T
Wood stork	*Mycteria americana*	T
Clams		
Chipola slabshell[1]	*Elliptio chipolaensis*	T
Choctaw bean[1]	*Obovaria choctawensis*	E
Fat threeridge[1]	*Amblema neislerii*	E
Fuzzy pigtoe[1]	*Pleurobema strodeanum*	T
Gulf moccasinshell[1]	*Medionidus penicillatus*	E
Ochlockonee moccasinshell	*Medionidus simpsonianus*	E
Oval pigtoe[1]	*Pleurobema pyriforme*	E
Purple bankclimber[1]	*Elliptoideus sloatianus*	T
Shinyrayed pocketbook[1]	*Hamiota subangulata*	E
Southern kidneyshell[1]	*Ptychobranchus jonesi*	E
Southern sandshell[1]	*Hamiota australis*	T
Tapered pigtoe[1]	*Fusconaia burkei*	T
Fish		
Gulf sturgeon[1]	*Acipenser oxyrinchus (=oxyrhynchus) desotoi*	T
Mammals		
Gray bat	*Myotis grisescens*	E
Tricolored bat	*Perimyotis subflavus*	PE
West Indian manatee	*Trichechus manatus*	T
Plants		
Apalachicola rosemary	*Conradina glabra*	E

Table 3-1. Federally Listed Species Potentially Occurring Within the Study Area

Common Name	Scientific Name	Listing Status
Chapman's rhododendron	*Rhododendron chapmanii*	E
Cooley's meadowrue	*Thalictrum cooleyi*	E
Florida skullcap	*Scutellaria floridana*	T
Florida torreya	*Torreya taxifolia*	E
Fringed campion	*Silene polypetala*	E
Gentian pinkroot	*Spigelia gentianoides*	E
Godfrey's butterwort	*Pinguicula ionantha*	T
Harper's beauty	*Harperocallis flava*	E
Papery whitlow-wort	*Paronychia chartacea*	T
Telephus spurge	*Euphorbia telephioides*	T
White birds-in-a-nest	*Macbridea alba*	T
Reptiles		
Eastern indigo snake	*Drymarchon couperi*	T
Green sea turtle	*Chelonia mydas*	T
Hawksbill sea turtle	*Eretmochelys imbricata*	E
Kemp's ridley sea turtle	*Lepidochelys kempii*	E
Leatherback sea turtle	*Dermochelys coriacea*	E
Loggerhead sea turtle	*Caretta caretta*	T
Alligator snapping turtle	*Macrochelys temminckii*	PT

Source: (USFWS, 2022a) (IPaC report)
C = candidate species; E = endangered species; PE = proposed endangered species; PT = proposed threatened species; T = threatened species
Note:
1. Critical habitat is present in the study area.

3.1 SPECIES AND CRITICAL HABITATS ELIMINATED FROM DETAILED ANALYSIS

After consideration of the potential impacts from the Proposed Action, it was determined that there would be no meaningful potential for effects on federally listed plants. The Proposed Action would represent only a minimal increase in criteria pollutants over current operations and a very-minor increase over current annual emissions in the study area. The Proposed Action does not include the usage of flares or chaff, and there would be no ground disturbance associated with aircraft operations. Therefore, federally listed plants listed in Table 3-1 were eliminated from further analysis.

Federally listed amphibians, clams, fish, the manatee, and reptiles, the alligator snapping turtle (*Macrochelys temminckii*) (proposed for federal listing), and any critical habitat associated with these species, were not carried forward for detailed analysis because there would be no physical disturbance to terrestrial, aquatic, or estuarine habitats, and these species do not appear to be particularly sensitive to short-duration noise exposure, as would occur during overflights. For reptiles and amphibians, instances have been documented of "freezing" (brief

cessation of activity) or emergence at inappropriate times of year, but most of these studies examined noise exposure over much longer periods of time than would occur for an overflight (Bowles, 1995). Per studies summarized in *Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis*, when exposed to in-air noise, aquatic species typically show a slight startle response at most (Manci et al., 1988). Below an aircraft, sound is primarily transferred from air to water in a narrow cone, and, outside of this area, most sound is reflected off the water's surface; therefore, underwater noise would be detectable in only a small area. Additionally, any sound that did enter the water would attenuate with increasing depth. Overflight noise duration would be very brief (seconds), and the probability of a federally listed reptile, amphibian, fish, clam, or manatee occurring directly below an aircraft operated at low altitude would be small due to the infrequent occurrence of overflights and the dispersed distribution of these species.

Thus, the DAF has determined that the Proposed Action would have no effect on the federally listed amphibians, clams, fish, manatee, plants, and reptiles listed in Table 3-1, would have no effect on the alligator snapping turtle (proposed for listing), and would have no effect on the critical habitat for any of these species. These species and critical habitat were not carried forward for detailed analysis.

3.2 SPECIES DESCRIPTIONS

Descriptions of federally listed or candidate species potentially affected by the Proposed Action are provided in Table 3-2. The federally listed species and their critical habitats within the study area are shown in Figure 3-1.

Table 3-2. Summary Descriptions of Federally Listed or Candidate Species Potentially Affected by the Proposed Action

Species	Description	Breeding Season
Eastern black rail	Secretive species that occur in dense vegetative cover in a variety of salt, brackish, and freshwater marsh habitats that can be tidally or non-tidally influenced. Nests constructed within marsh vegetation. Occurs year-round along the Gulf coast of Florida.	Nests from mid-May to mid-August
Piping plover	Migratory shorebird that occurs in Florida during the non-breeding (migrating and wintering) season, from mid-July to mid-May. Typically uses sandy beaches and tidal flats. Feeds by gleaning invertebrates from the substrate.	Does not breed in the study area
Red knot	Migratory shorebird that occurs in Florida, particularly along Florida's central Gulf coast, during the non-breeding season (approximately September to May). Typically found along sandy beaches and tidal flats, including ephemeral tidal pools.	Does not breed in the study area
Red-cockaded woodpecker	Occurs in mature pine forest habitat, primarily longleaf pine (Pinus palustris), where cavities are excavated in live trees. Feeds mostly on insects found on or within the bark of pine trees. Non-migratory.	Nests from April to June
Wood stork	Forages in wetlands including freshwater and estuarine marshes and, in Florida, typically nests in mixed hardwood swamps and cypress domes.	February to June
Gray bat	Distribution in Florida appears to be very limited. Roosts colonially and only in cave systems. Hibernates in caves throughout the winter. Primarily forest foraging near streams and over water, feeding on flying insects.	Gives birth in late May
Tricolored bat	Roosts singly or in small groups in caves or culverts during the winter. Forms small maternity colonies during the summer in tree foliage or man-made structures. During spring, summer, and fall, roosts in trees and forages at night on small insects over waterways and forest edges, typically around treetop level.	Gives birth in May or June

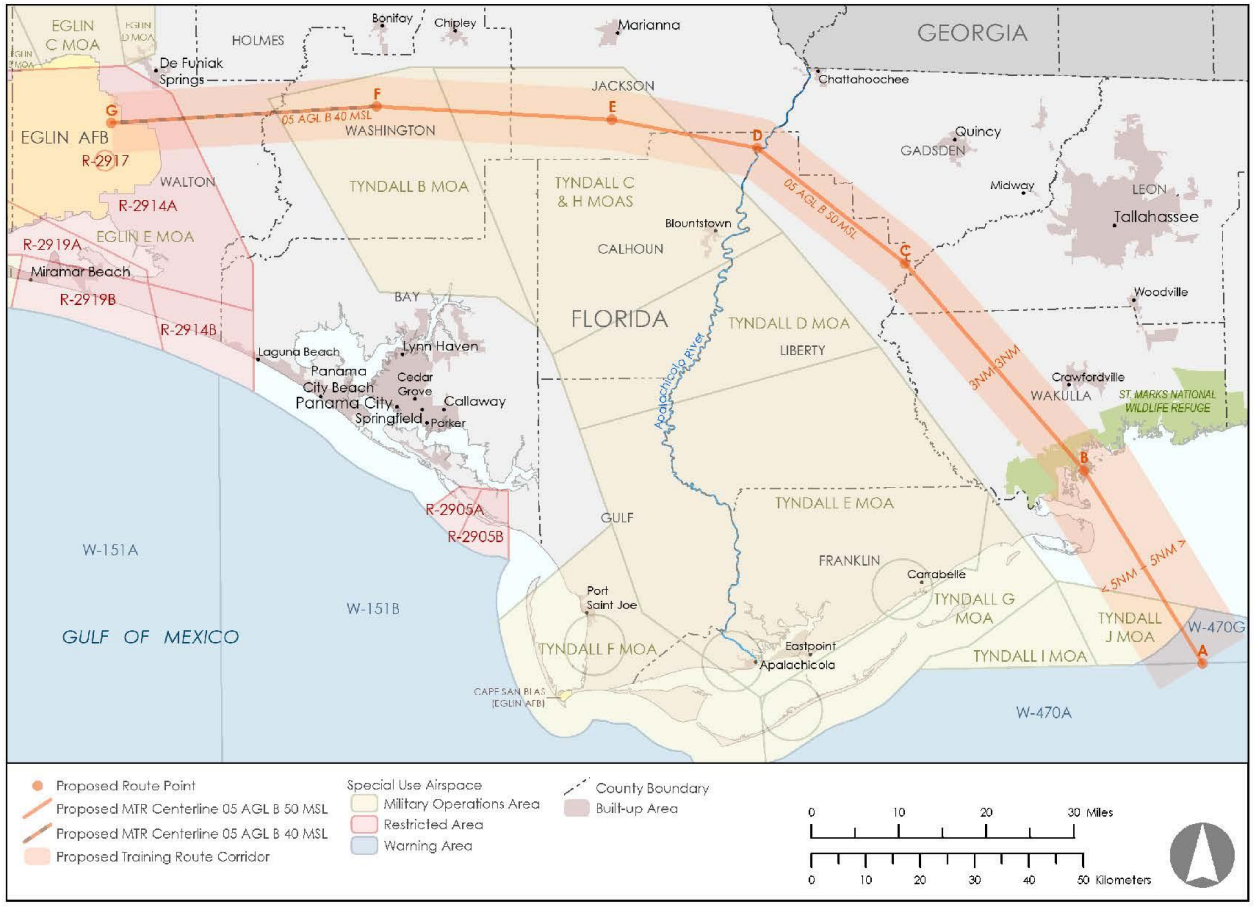

Figure 2-1. Proposed Route, IR-096

3.2.1 Eastern Black Rail

The eastern black rail is a small, secretive marsh bird, with a blackish bill and bright red eyes. It is federally listed as threatened under the ESA. There are year-round populations in Texas and a migrating population on the Atlantic Coast. This species occupies heavily vegetated wetlands. The best available scientific data indicate between 355 to 815 breeding pairs remain on the Atlantic Coast from New Jersey to Florida (including the Gulf coast of Florida). The species has been reported from 32 counties in Florida and uses a variety of habitats, including tidal salt marshes, interior freshwater wetlands, abandoned mines and impoundments, grassy fields, and coastal prairies (Watts, 2016). In northern Florida, most occurrence has been recorded within the extensive salt marsh habitat between Apalachicola and Cedar Key. St. Marks NWR is considered to be an important coastal site for the species. Within the study area, the eastern black rail would potentially occur along the coastline of Wakulla County, but there are no documented locations of eastern black rail nesting within the study area. The eastern black rail flies little during the breeding and wintering seasons, instead running for short distances along the ground (USFWS, 2018).

3.2.2 Piping Plover

The piping plover (*Charadrius melodus*), listed as threatened under the ESA, could potentially occur within the study area along the coastline of the St. Marks NWR, but a lack of open sandy beaches implies a rare occurrence in the study area, and sightings only occur every few years (USFWS, 2006). Piping plovers migrate seasonally between breeding habitat in the central and eastern United States and Canada and nonbreeding (winter) habitat along the Atlantic Coast and Gulf coast. Overwintering piping plovers forage in beach and estuarine shoreline areas, migrating to the area in July and departing in May. This bird's nonbreeding habitat extends along the coast from North Carolina to Mexico and into the Bahamas and West Indies. Piping plovers forage in exposed, wet sand areas such as wash zones, intertidal ocean beachfronts, wrack lines, washover passes, mud and sand flats, ephemeral ponds, and salt marshes. Plovers also use adjacent areas in dunes, debris, and sparse vegetation for sheltering. Critical habitat has been designated for the species at numerous beach areas along the Gulf coast of Florida but does not occur beneath the proposed route.

3.2.3 Red Knot

The red knot (*Calidris canutus rufa*), listed as threatened under the ESA, would occur within the study area along the coastline of Wakulla County. This shorebird nests mostly above the Arctic Circle during summer and migrates south in winter. Although many individuals migrate to South America, some winter in coastal areas of the southern United States, including areas along Florida's Atlantic and Gulf coasts. Individuals generally arrive in overwintering areas in September and depart in May. Typical nonbreeding habitat consists of coastal mudflats, tidal zones, and open sandy beaches. Red knots typically feed in these sandy or muddy habitats, which support a variety of prey items including small bivalves, snails, worms, and crustaceans. Red knots are typically found near the water's edge. Critical habitat has not yet been designated for the species but has been proposed, including on lands within an area of the St. Marks NWR, located approximately 10 miles east of the proposed route (Federal Register Volume 88, Number 71, April 13, 2023, 22530–22693).

3.2.4 Red-Cockaded Woodpecker

The red-cockaded woodpecker (RCW) is listed as a federally endangered species. The *National Workplan to Address Downlisting and Delisting Recommendations* (USFWS, 2022b) included the recommendation to downlist the RCW from endangered to threatened. However, a final determination has not yet been made. RCWs are endemic to open, mature pine forests in the southeastern United States. RCWs are the only woodpecker species in the southeast to excavate cavities in live pine trees, excavating cavities in mostly live longleaf pine (*Pinus palustris*) trees that are at least 85 years old. They require old pines for cavity excavation due to the greater presence of heartwood in older trees, and they prefer longleaf pines in particular, which have greater incidents of red heart disease and make cavity construction easier. Females lay eggs in the breeding male's roost cavity in mid-April, and eggs hatch approximately 10 to 12 days later. Nestlings fledge from the nest 24 to 27 days after hatching.

3.2.5 Wood Stork

Wood storks are large heavy-billed wading birds that may stand more than 3 feet tall. Wood storks may forage within the area overlain by the proposed route, though preferred foraging areas are located on either side of the route. There are no known wood stork nesting areas beneath the proposed route. Although not considered migratory, individuals may disperse from nesting areas seasonally. Wood storks may occur at altitudes up to 6,000 feet and travel 50 miles in search of food (Savannah River Ecology Laboratory, n.d.). The U.S. Fish and Wildlife Service (USFWS) proposed in the Federal Register to remove the southeast distinct population segment (DPS) of the wood stork from the federal list of threatened and endangered wildlife (Federal Register Volume 88, Number 31, February 15, 2023, 9830–9850). The best available scientific and commercial data indicate the southeast DPS of the wood stork has recovered and no longer meets the definition of an endangered species or threatened species under the ESA. The southeast DPS of the wood stork will still be directly protected under the Migratory Bird Treaty Act, and the Clean Water Act will ensure continued protection of its habitat.

3.2.6 Gray Bat

The gray bat, federally listed as endangered, is a small (less than 4 inches long), furry, winged nocturnal mammal that inhabits caves. It feeds on insects at night, remaining inactive throughout the day. The literature is unclear whether the gray bat still occurs in Florida, with some researchers recently suggesting that this species has been displaced by the southeastern myotis (*Myotis austroriparius*) (Holliday et al., 2023). Older literature states the gray bat may be found in multiple Florida panhandle counties (Florida Fish and Wildlife Conservation Commission, n.d.) or that the species inhabits from one to a few caves in Jackson County, Florida (Gore et al, 2012). Thus, gray bat occurrence within the proposed action study area cannot be completely ruled out.

3.2.7 Tricolored Bat

The tricolored bat (*Perimyotis subflavus*) is proposed for listing by the USFWS as endangered throughout its range, which includes all of Florida (Federal Register Volume 87, Number 177, September 14, 2022, 56381–56393). Massive population declines throughout this species' range have been mainly attributable to a fungus that causes white-noise syndrome, though the fungus has not been found in Florida (USFWS, 2021). By 2030, the USFWS estimates that the

tricolored bat will decline in abundance by 89 percent, with its number of colonies declining by 91 percent and its range contracting by 65 percent (USFWS, 2021). Within the study area, the species roosts in caves or culverts during the winter and in trees during other times of the year. Tricolored bats form small maternity colonies during the summer in tree foliage or man-made structures. The tricolored bat is small, approximately 3 to 4 inches long, and is distinguished by its unique tricolored fur (USFWS, 2022c).

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4. EFFECTS DETERMINATION

This section analyzes potential effects to federally protected species and their critical habitat resulting from the Proposed Action.

Potential impacts to listed species from the Proposed Action can be categorized as follows:

- *Direct Physical Impacts*—This refers to physical harm to listed species as a result of human activities. The main cause of direct physical impacts associated with the Proposed Action is physical contact with a species due to aircraft strikes, resulting in injury or mortality of an animal.
- *Harassment*—This is defined as disturbance or annoyance of individuals to such an extent as to substantially disrupt normal behavior patterns. The Proposed Action may result in harassment due to the disruption of normal foraging, breeding, nesting, and sheltering activity.

Wildlife Responses to Aircraft

Animal species exhibit a wide variety of responses to aircraft noise and visual stimuli. Because some species are more sensitive than others and vary in their responses, it can be difficult to generalize or to draw conclusions across species. Most of the effects of noise are mild enough and can be mixed with so many other variables (e.g., predators, weather, changing prey base, ground-based disturbance) that they may never be detectable as actual noise effects on population size or population growth (Bowles, 1995) or as an ultimate factor in limiting productivity of a certain nest, area, or region (Smith et al., 1988).

Noise effects on wildlife are classified in three ways. First, effects can be direct, such as the masking of biologically relevant sounds or, in relatively rare cases, physiological changes to the auditory system. Eardrum rupture and temporary or long-term hearing loss are direct physiological changes to the auditory system that are generally only associated with noises of long duration (e.g., as measured in hours or days) and/or extremely high intensity (e.g., clapping or banging noises exceeding 140 decibels). The risk of hearing loss also depends on the species' hearing sensitivities and the intensity of the noise at various frequencies. In general, the risk of direct effects, such as significant noise-induced hearing threshold changes, resulting from noises of short duration is low. Secondly, noise impacts may include non-auditory effects such as stress and hypertension; behavioral changes; interference with mating or reproduction; and impaired ability to obtain adequate food, cover, or water. The third type of effects are the result of other effects and include population decline and habitat loss.

As many animal species use sound to communicate, detect prey, and avoid predation, increased noise levels can reduce the distance and area over which animals can perceive important acoustic signals. Such secondary effects of noise vary widely with species, environmental variables, and the types, durations, and sources of noise (Manci et al., 1988). The potential for external noise to mask these important signals is of greater concern for continuous noise sources (e.g., compressors, busy highways) than for intermittent, brief noise exposures such as jet overflights. However, overflights can mask signals for short periods of time, and they may cause certain individuals to cease communications temporarily.

A general reaction in animals from exposure to aircraft is the startle response. A startle response can include behavioral responses (e.g., flying away) and physiological changes (e.g., elevated heart rate). The intensity and duration of the startle response appear to depend on the species, whether it is a group or an individual, and whether there have been previous exposures. Wildlife responses are influenced by various aspects of an overflight, such as the aircraft's size, speed, proximity, color, and level of engine noise. Other factors that can affect the type and degree of responses include wind direction, speed, and local air turbulence; landscape structures (i.e., vegetative cover); and whether the animals are in the breeding or nesting phase.

The startle reaction is a natural response that helps animals avoid predators; however, if the behavioral component of the startle is uncontrolled, this panic response can result in injury (i.e., breaking of limbs) or mortality. Responses can range from flight, trampling, stampeding, jumping, or running to simply alerting or moving the head in the apparent direction of the noise source. Startle effects are most likely to occur when a low-flying, high-speed aircraft flies in close proximity to an animal. The literature indicates the intensity and duration of the startle response typically decreases with the number and frequency of exposures (DAF, 1994), but individuals that do not acclimate may startle upon each exposure. Wildlife habituation to intermittent sounds can be gradual and possibly more limited than to regular exposures.

While the time a jet is visible to the animal is relatively brief, the combination of the visual and auditory effects could cause physiological responses due to fear or panic in addition to the behavioral responses. Examples of physiological responses to noise include increased hormonal production and increased heart rate. Increased heart rates, which are an indicator of excitement or stress, occur naturally as a response to predation. Thus, infrequent overflights may not, in and of themselves, be detrimental. However, the threshold for the frequency at which harmful effects may occur would vary by species. Although the relationship between physiological effects and species interactions with their environments has not been thoroughly studied, the limited literature suggests the degree of physiological response in wildlife species may lessen over time with repeated exposure to jet aircraft noise.

Isolated noise events have the potential to result in nest abandonment and reduced reproductive success for some animals, including both migratory and resident species. Some individuals may not acclimate to overflight noise and may continue to startle upon each exposure. Manci and others reported a reduction in reproductive success in some songbirds after exposure to low-altitude overflights (Manci et al., 1988). According to a recent study, some species exhibit an increase in sensitivity to overflights during harsh weather conditions (van der Kolk et al., 2020). Models of shorebird fitness impacts from raptor and human disturbance found that the birds could be disturbed up to 1 to 1.5 times per hour before their fitness was reduced in winters with abundant food and mild weather, but they could be disturbed only up to 0.2 to 0.5 times per hour when food was scarce and the weather severe (Goss-Custard et al., 2006).

Under the Proposed Action, increases in time-averaged noise levels within the IR-096 corridor resulting from aircraft operations would be relatively low due to the infrequency of flight operations. At the location with the greatest calculated increase, the time-averaged level would increase by 2.9 dBA L_{dnmr} (2.8 dBA DNL), to 51.8 dBA L_{dnmr} (51.7 dBA DNL). Noise levels would be greatest in locations close to the route centerline, decreasing near the edge of the MTR corridor, where overflights would be rare. A single direct overflight by an F-35A at 500 feet AGL

in typical MTR configuration and airspeed could generate noise levels as high as 116 dBA maximum noise level (L_{max}). Aircraft overflight noise levels would be decreased in certain sensitive areas underneath the airspace by implementing altitude restrictions. Pilots crossing the noise-sensitive St. Marks NWR / Wakulla County Airport avoidance area would maintain levels at or above 2,000 feet MSL (approximately 1,900 feet AGL), with the greatest potential noise level generated being 101 dBA L_{max}. In consideration of a noise-sensitive area and potential concentrations of birds, pilots would climb to 1,500 feet MSL to cross the Apalachicola River and floodplain areas and remain at 1,500 feet MSL until past Point D; 105 dBA L_{max} would be the greatest potential noise level generated. The 96 TW, in conversations with the USFWS and the Nature Conservancy, determined these altitudes would adequately minimize noise impacts over the St. Marks NWR and the Apalachicola River.

Bird-Wildlife/Aircraft Strikes

The potential for bird-wildlife/aircraft strikes would be influenced primarily by the altitude of aircraft operations, and secondarily by the time of day and time of year, as large numbers of migratory birds are in transit during the spring and fall. Most bird strikes occur at altitudes below 3,000 feet, and a study of bird strikes involving civil aircraft between 1990 and 2004 found 74 percent of strikes occurred at altitudes of 500 feet or less (Dolbeer, 2006). Strikes were primarily associated with takeoff and landing operations near airports, and the number of strikes decreased substantially with increasing altitude (Dolbeer, 2006). However, strikes of some species can occur at higher altitudes, particularly during migratory periods (FAA, 2023). Aircraft operations would occur throughout the authorized airspace (500 feet AGL to 5,000 feet MSL), with about 1.44 operations occurring between 500 and 1,000 feet AGL per week on average. Due to the low number of operations near the minimum altitude of 500 feet AGL, the greatest risk of strikes would be avoided. Additionally, the requirement for aircraft to maintain levels at or above 2,000 feet MSL while over St. Marks NWR and 1,500 feet MSL over the Apalachicola River and floodplain areas would further reduce the potential for bird strikes.

The DAF BASH Reduction Program provides measures to reduce bird strike potential, including awareness, bird control, bird avoidance, and use of the DAF Avian Hazard Advisory System. Existing BASH control measures detailed in the BASH Plans for Eglin AFB and Tyndall AFB would be expanded to cover the additional flight areas where BASH risk would increase. For areas of heavy bird activity, the DAF would take the necessary precautions to prevent bird strikes.

4.1 EASTERN BLACK RAIL

Establishing IR-096 would not likely adversely affect the eastern black rail. Aircraft would climb to 2000 feet MSL over St. Marks NWR and then continue along the remainder of the route through areas that are not high-quality habitat for breeding eastern black rails (Stevens & Conway, 2021) (Figure 4-1). Observing the higher altitude over St. Marks NWR would serve to lessen potential noise impacts to the eastern black rail, which inhabits marsh and wetland areas. The eastern black rail is described as secretive, rarely flying, and moves through dense wetland vegetation by “creeping around” (McLain, 2016). This behavior greatly reduces the potential for direct physical impact from an aircraft strike. The occasional noise and visual disturbance from aircraft flights would cause temporary disturbance and possibly brief physiological stress to the eastern black rail but would not affect their continued use of preferable habitat. In the context of the *Effects Determination Guidance for Endangered &*

Threatened Species (EDGES) – Eastern Black Rail (USACE, 2018), the effects of the action would be considered insignificant. Therefore, the Proposed Action may affect, but is not likely to adversely affect, the eastern black rail.

Source: (Stevens & Conway, 2021)

Figure 4-1. Eastern Black Rail Predicted Habitat Quality

4.2 PIPING PLOVER AND RED KNOT

Establishing IR-096 would not likely adversely affect the red knot or piping plover. Occurrence of these species would likely be limited to areas near the shoreline of the St. Marks NWR. Observing the altitude restriction over the refuge would decrease the potential for noise impacts. The results of one study suggest that shorebirds generally become acclimated to aircraft noise when overflights are regular and predictable (van der Kolk et al., 2020), although the overflight frequency at which behavioral impacts cease was not quantified. Aircraft would pass over areas potentially used by these species within a matter of seconds and one to two times per week. Researchers studying decreased fitness of shorebirds from military aircraft noise noted that an incident rate of 0.2 to 0.5 disturbances per hour in times of harsh weather and low food supply was required before fitness was reduced (van der Kolk et al., 2020). While the current disturbance rate for shorebirds from all sources (i.e., natural, human recreation) is unknown for the study area, any disturbance from the Proposed Action would only represent 0.012 disturbances per hour. Seventeen to 42 flights per week would be needed to have a potential adverse effect on shorebirds during harsh conditions, assuming the methodology of the van der Kolk et al. (2020) study is applicable to shorebird species within the study area. Piping plovers and red knots may occur within the flight corridor, particularly during migration. As described previously, implementation of BASH procedures would substantially decrease the risk of a direct strike. Thus, the Proposed Action may affect, but is not likely to

adversely affect, the piping plover and red knot nor result in the destruction or adverse modification of critical habitat for these species.

4.3 RED-COCKADED WOODPECKER

The RCW is a resident species in pine habitats located underneath approximately the eastern one-third of the proposed flight corridor (including portions of Wakulla, Leon, Liberty, Gadsden, and Walton Counties) and near the western corridor termination point at Eglin AFB. As with other bird species, exposure to overflights, particularly low-level overflights, may cause a startle response, stress, and behavioral modifications in individuals. Altitude restrictions over St. Marks NWR would decrease the potential for noise impacts in only a small portion of the RCW's range in the study area. Exposure to aircraft noise would be brief and infrequent, allowing birds time to recover between exposures. Also, RCWs may acclimate to the new soundscape over time. Healthy clusters are located on Eglin AFB near test areas that receive frequent bombing and aircraft traffic, suggesting that RCWs in the study area may be fairly resilient to noise impacts as long as suitable habitat is present (USFWS, 2013). Direct aircraft strikes would be possible, but the probability would be very low. RCWs do not migrate and would, therefore, not be expected to occur regularly at altitudes above 500 feet AGL, where aircraft operations would occur. Feeding occurs near treetop level or below, although individuals may potentially fly at a somewhat higher altitude when transiting through and between breeding and feeding areas. BASH procedures would decrease the risk of direct strikes on birds in general. Therefore, the Proposed Action may affect, but is not likely to adversely affect, the RCW.

4.4 WOOD STORK

Neither preferred wood stork foraging areas nor roosting areas are located beneath the proposed route. However, wood storks may still potentially occur beneath the airspace, particularly in wetland areas and could, therefore, be exposed to aircraft noise one to two times per week. Any noise and visual disturbance from aircraft overflights could cause temporary disturbance and possibly brief physiological stress. Adherence to altitude restrictions over the St. Marks NWR and Apalachicola River would decrease the potential for noise impacts, although storks could occur in other areas as well. Exposure time would be brief, lasting only a few seconds per overflight. Wood storks may travel variable distances to feed. If adequate food sources are available, individuals may feed near roosting or nesting areas (Ogden, 1990), spending a short time in flight. At other times, individuals may travel 50 miles or more to feeding sites, using thermals when available and potentially reaching altitudes up to 6,000 feet. Therefore, wood storks transiting to feeding areas or engaged in seasonal movements are potentially susceptible to aircraft strikes. Implementation of BASH procedures would decrease the risk of a direct strike. Based on the brief noise exposure time, infrequency of aircraft flights, and implementation of BASH protocols, the potential for noise impacts and direct strikes would be low. Therefore, the Proposed Action may affect, but is not likely to adversely affect, the wood stork.

4.5 GRAY BAT AND TRICOLORED BAT

Bat foraging occurs mainly between dusk and dawn, thus the limitation of proposed route usage to the hours of 6:00 a.m. to 5:00 p.m. would considerably decrease the potential for noise impacts on foraging and the potential for direct strikes. For example, a 10-year DAF Safety Center study on bat

strikes reported that about 82 percent of strikes occurred between 9:00 p.m. and 9:00 a.m. (Peurach et al., 2009). Therefore, only operations occurring relatively early in the morning would have potential to affect foraging bats. Most insect-eating bat species of the Florida panhandle generally forage from near treetop level to within a few feet of the ground surface or water surface (Mitchell, 1998; TPW, 2022a; TPW, 2022b; Discoverlife.org, 2005; USFWS, 2022c). Thus, although individuals may occur at higher altitudes while they fly between roost sites and feeding sites, the insectivorous gray bat and tricolored bat are not anticipated to occur regularly within the MTR airspace while feeding. The altitude at which the bat species occur during migration is unknown. Additionally, pilots would climb to 1,500 feet MSL over portions of Calhoun and Jackson Counties, where the gray bat was previously documented, thereby further reducing the potential for a strike.

Increased noise levels have the potential to affect bat behaviors, cause stress responses, and mask acoustic signals. As discussed for strike potential, bat foraging occurs mainly between dusk and dawn, when only a very small percentage of aircraft operations would occur. Most of the noise energy generated by fighter aircraft such as the F-16 and F-35 is low frequency, concentrated in the range of 0.1 to 2.5 kilohertz. The gray bat and tricolored bat detect prey by high-frequency echolocation signals, which are typically in the range of around 42 to 80 kilohertz and 41 to 58 kilohertz, respectively (Humbolt State University, 2011). Therefore, most noise produced by aircraft operating in the IR-096 corridor would be unlikely to mask bat echolocation returns and reduce foraging efficiency, as aircraft noise frequencies with the greatest energy are outside of the species' echolocation frequency range.

The relatively small proportion of aircraft noise that does contain high-frequency energy could interfere with foraging. In addition, lower-frequency noise could interfere with activities other than echolocation, such as social communication or passive listening for prey. Loud noise over a broad range of frequencies could startle or distract individuals, particularly bats located near the centerline of a low-altitude overflight. The potential to disturb roosting individuals would presumably be higher for the tricolored bat, which roosts in trees during spring, summer, and fall, than for the gray bat, which roosts in caves or within or under other structures (e.g., culverts and bridges) year-round. However, overflights at altitudes between 500 and 1,000 feet AGL would be infrequent (approximately 1.44 events per average week), and L_{max} exposure would last only a few seconds.

In summary, the potential for bat-aircraft strikes and noise impacts is very low because federally listed bats are not likely to occur above 500 feet AGL during the daily flight hours of 6:00 a.m. to 5:00 p.m.; thus, overall impacts to federally listed bats under the Proposed Action would not reach significant levels. The DAF finds that aircraft operations in the IR-096 corridor may affect, but are not likely to adversely affect, the gray bat or tricolored bat.

4.6 SUMMARY OF DETERMINATIONS

Overall, given the low number of operations (maximum of eight times monthly), the likelihood of a direct aircraft strike for any species is low. With the implementation of BASH control measures, no significant impacts to birds would be anticipated from aircraft strikes. There would be the potential for isolated noise events to result in nest abandonment, startling, masking, and reduced reproductive success, but noise exposure for any given individual would be relatively infrequent and temporary, lasting only the duration of an overflight.

Table 4-1 lists effect determinations for federally listed species resulting from the Proposed Action. There would be no effect to any areas of critical habitat.

Table 4-1. Summary of Effect Determinations for Federally Listed Species

Species	Impact Determination
Apalachicola rosemary	NE
Chapman's rhododendron	NE
Chipola slabshell[1]	NE
Choctaw bean[1]	NE
Cooley's meadowrue	NE
Eastern black rail	NLAA
Eastern indigo snake	NE
Fat threeridge[1]	NE
Florida skullcap	NE
Florida torreya	NE
Fringed campion	NE
Frosted flatwoods salamander	NE
Fuzzy pigtoe[1]	NE
Gentian pinkroot	NE
Godfrey's butterwort	NE
Gray bat	NLAA
Green sea turtle	NE
Gulf moccasinshell[1]	NE
Gulf sturgeon[1]	NE
Harper's beauty	NE
Hawksbill sea turtle	NE
Kemp's ridley sea turtle	NE
Leatherback sea turtle	NE
Loggerhead sea turtle	NE
Ochlockonee moccasinshell	NE
Oval pigtoe[1]	NE
Papery whitlow-wort	NE
Piping plover	NLAA
Purple bankclimber[1]	NE
Red-cockaded woodpecker	NLAA
Red knot	NLAA
Reticulated flatwoods salamander[1]	NE
Shinyrayed pocketbook[1]	NE
Southern kidneyshell[1]	NE
Southern sandshell[1]	NE
Tapered pigtoe[1]	NE
Telephus spurge	NE
Tricolored bat	NLAA
West Indian manatee	NE
White birds-in-a-nest	NE
Wood stork	NLAA

NE = no effect; NLAA = not likely to adversely affect

Note:

1. Critical habitat is present in the study area.

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5. CONCLUSION

Based on analysis of potential direct physical impacts and harassment associated with aircraft activities within IR-096, the Proposed Action may affect, but is not likely to adversely affect, the eastern black rail, piping plover, red knot, RCW, wood stork, gray bat, and the tricolored bat.

The Proposed Action would have no effect on the reticulated flatwoods salamander, frosted flatwoods salamander, Chipola slabshell, Choctaw bean, fat threeridge, fuzzy pigtoe, Gulf moccasinshell, Ochlockonee moccasinshell, oval pigtoe, purple bankclimber, shineyrayed pocketbook, southern kidneyshell, southern sandshell, tapered pigtoe, Gulf sturgeon, West Indian manatee, Apalachicola rosemary, Chapman's rhododendron, Cooley's meadowrue, Florida skullcap, Florida torreya, fringed campion, gentian pinkroot, Godfrey's butterwort, Harper's beauty, papery whitlow-wort, telephus spurge, white birds-in-a-nest, eastern indigo snake, green sea turtle, hawksbill sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, or alligator snapping turtle, and would have no effect on Gulf sturgeon, freshwater mussel, or reticulated flatwoods salamander critical habitat.

The DAF will implement the conservation measures listed in Section 2.3 (Conservation Measures) to minimize potential negative effects from aircraft usage of IR-096.

The Natural Resources Office will notify the USFWS immediately if any of the actions considered in this BA are modified or if additional information on listed species becomes available, as a reinitiation of consultation may be required. If impacts to listed species occur beyond what has been considered in this assessment, all operations will cease, and the USFWS will be notified. Any modifications or conditions resulting from consultation with the USFWS will be implemented prior to commencement of activities.

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APPENDIX C

FEDERAL AGENCY COASTAL ZONE MANAGEMENT ACT CONSISTENCY DETERMINATION

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FEDERAL AGENCY COASTAL ZONE MANAGEMENT ACT CONSISTENCY DETERMINATION

Introduction

This document provides the State of Florida with the Department of the Air Force's (DAF) Consistency Determination under the Coastal Zone Management Act Section 307 and 15 Code of Federal Regulations (CFR) Part 930, Subpart C. The information in this Consistency Determination is provided pursuant to 15 CFR Section 930.39 and Section 307 of the Coastal Zone Management Act; 16 United States Code Section 1456, as amended; and National Oceanic and Atmospheric Administration regulations in 15 CFR Part 930.

This Consistency Determination addresses the Proposed Action of the *Environmental Assessment for the Establishment of Military Training Route – Instrument Route (IR)-096 for Eglin Air Force Base*, which is for the 96 Test Wing (96 TW) to request the Federal Aviation Administration to create a new low-level military training route (MTR) in the Florida Panhandle to support developmental testing (DT) and operational testing (OT) and training, with the ability to transition from water to land.

Proposed Federal Agency Action

The Proposed Action is for the 96 TW to request the Federal Aviation Administration to create a new low-altitude IR, named IR-096, in the southeast United States, to meet current OT and DT and training needs, such as a long-range transition from water to land. The route would support low-level flight for terrain masking/maneuvering. Terrain masking is flying at lower altitudes than whatever detection system is being evaded, whether hugging the ground or using mountainous terrain to achieve that purpose. The curvature of Earth over the distance of the route, and the locations of radars on the western Eglin Range, allow for terrain masking along this route as part of the Low-Altitude Step Down Training mission. The point of origin would be over water on the boundary of Warning Area W-470 (Figure 1). From W-470, the proposed route (IR-096) would flow north for 22 nautical miles, continuing to flow west/northwest into the DAF restricted airspace block, R-2914A. The floor of the proposed route would be 500 feet above ground level, and the ceiling would be 5,000 feet mean sea level.

Use of the proposed MTR would be Monday through Friday between the hours of 6:00 a.m. to 5:00 p.m. The frequency of use, based on the number of test requirements, student pilots in training, and pilots on proficiency flights, would be approximately four to eight times monthly (one to two times per week). In addition, these missions would not use flares, chaff, or any expenditures along the route. A typical mission could look like an F-35 flying high speed and low level, attempting to determine which emitter located on the Eglin Range is an actual threat, or captive carrying a new weapon system and testing its guidance system. With captive carry, a weapon system is attached to the aircraft but is not released.

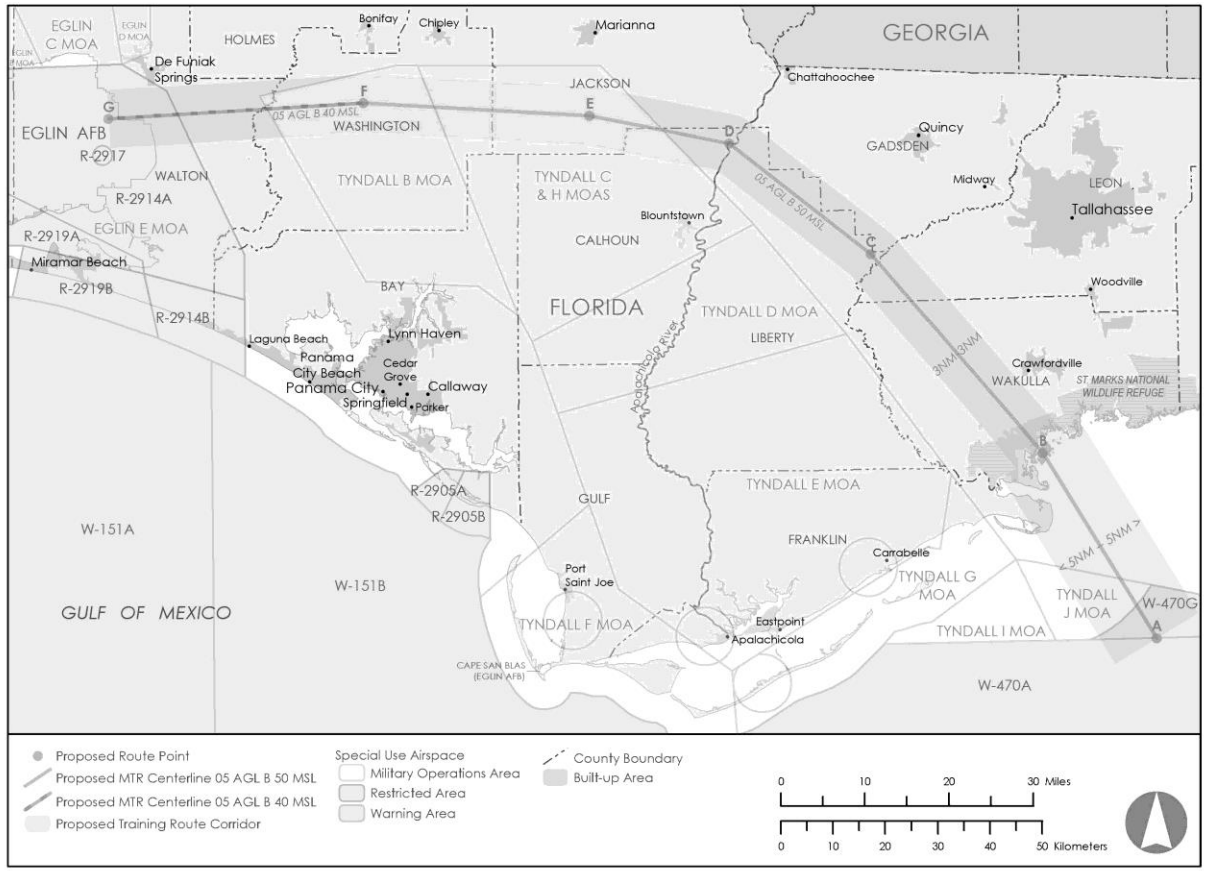

Figure 1. Military Special Use Airspace Associated With the Proposed Route

The Proposed Action to create a new MTR, named IR-096, would meet the purpose and need of conducting DT/OT with the F-35 and fifth-generation weapons, providing pilots and developing weapon systems with realistic Instrumental Meteorological Conditions flight in a transition from a water environment across the shore to low-level flight over land. The route would establish and maintain an all-weather capability for pilots to train on long-range low-altitude strike training missions.

Description of Proposed Route IR-096

The proposed route is depicted as points at directional changes, which join to form route segments, the details of which are provided in Table 1 and shown in Figure 1.

Table 1. Proposed Route Description

Segments	Parameters	Utilization Notes
A-B	500 feet AGL to 5,000 feet MSL, 5 NM left, and 5 NM right	Route would originate over water and enter the littoral area over St. Marks National Wildlife Refuge.
B-C	500 feet AGL to 5,000 feet MSL, 3 NM left, and 3 NM right	Aircraft would climb and maintain 2,000 feet MSL until passing Highway 319 and a noise-sensitive area. Aircraft would exercise caution as IR-019 crosses from NW to SE between Points B to C. IR-021 runs parallel. Aircraft would avoid Wakulla County Airport by 3 NM or 1,500 feet MSL. Aircraft would avoid the tower obstruction 775 feet in height, located 1.9 NM right of course. Aircraft would avoid the tower obstruction 824 feet in height, located 2 NM right of course. Aircraft would avoid the tower obstruction 421 feet in height, located 1.3 NM right of course.
C-D	500 feet AGL to 5,000 feet MSL, 3 NM left, and 3 NM right	Pilots would report over Point C to Tallahassee Approach Control. Pilots would climb to 1,500 feet MSL to cross the Apalachicola River and remain at 1,500 feet MSL until past Point D, in consideration of a noise-sensitive area and potential concentrations of birds.
D-E	500 feet AGL to 5,000 feet MSL, 3 NM left, and 3 NM right	Pilots would report over Point D to Tyndall Approach Control. Pilots would contact the 14 FTW, Columbus AFB, to deconflict with IR-017, which would cross, overlap, or run parallel with the proposed route between Points D and G. Pilots would make all attempts to cross Point D on the centerline or the northern portion of the route.
E-F	500 feet AGL to 5,000 feet MSL, 3 NM left, and 3 NM right	No notes for this segment.
F-G	500 feet AGL to 4,000 feet MSL, 3 NM left, and 3 NM right	Pilots would contact the 1st Special Operations Air Operations Squadron at Hurlburt Field to deconflict with IR-059 and IR-057, which overlap the proposed route between Points D and F.

Source: (Eglin AFB, 2022)
14 FTW = 14th Flying Training Wing; AFB = Air Force Base; AGL = above ground level; IR = Instrument Route; MSL = mean sea level; NM = nautical miles; NW = northwest; SE = southeast

Federal Review

After review of the Florida Coastal Management Program and its enforceable policies, the DAF has determined that the Proposed Action would affect a Florida coastal use or resource. The following provides an analysis of the Proposed Action's consistency with the enforceable policies of the Florida Coastal Management Program.

The Florida Coastal Management Program is comprised of 24 Florida Statutes. Statutes addressed as part of the Florida Coastal Zone Management Program consistency review are considered in the analysis of the Proposed Action and discussed in Table 2.

Table 2. Florida Coastal Management Program Consistency Review

Statute	Scope	Consistency
Chapter 161 *Beach and Shore Preservation*	This statute provides policy for the regulation of construction, reconstruction, and other physical activities related to the beaches and shores of the state. Additionally, this statute requires the restoration and maintenance of critically eroding beaches.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action involves only in-air activities constrained within a new MTR.
Chapter 163, Part II *Intergovernmental Programs: Growth Policy; County and Municipal Planning; Land Development Regulation*	Provides for the implementation of comprehensive planning programs to guide and control future development of the state.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action would not affect local government comprehensive plans.
Chapter 186 *State and Regional Planning*	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 regard to the state comprehensive plan.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action involves only in-air activities constrained within a new MTR.
Chapter 252 *Emergency Management*	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.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action would not affect the state's vulnerability to natural disasters or emergency response and evacuation procedures.
Chapter 253 *State Lands*	Addresses the acquisition, administration, management, control, supervision, conservation, protection, and disposition of all state lands.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action involves only in-air activities constrained within a new MTR.
Chapter 258 *State Parks and Preserves*	Addresses the state's administration of state parks, aquatic preserves, and recreation areas.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action would not affect the state's administration of state parks, aquatic preserves, and recreation areas.
Chapter 259 *Land Acquisitions for Conservation or 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.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action would not affect regulations regarding the management and conservation and recreation on state lands.
Chapter 260 *Florida Greenways and Trails Act*	Statewide system of greenways and trails established to conserve, develop, and use the natural resources of Florida for healthful and recreational purposes.	This enforceable policy is not applicable to the Proposed Action.

Table 2. Florida Coastal Management Program Consistency Review

Statute	Scope	Consistency
		The Proposed Action would not affect the Greenways and Trails Program.
Chapter 267 *Historical Resources*	Addresses the management and preservation of the state's archaeological and historical resources.	The Proposed Action would not be anticipated to adversely affect cultural resources. It is not anticipated that historic properties within the APE would be directly or indirectly affected by the Proposed Action. As no ground-disturbing activity is part of the Proposed Action, it would not affect the physical integrity or research value of most historic properties. Aircraft operations would have minimal to no direct impact on historic properties within the boundaries of the MTR. The potential for aircraft mishaps to directly impact cultural resources exists but is highly unlikely. The potential for indirect auditory and visual impacts does exist with aircraft operations. None of the 19 shipwrecks identified are located along the coast. It can be presumed that they are submerged and would not be adversely affected by the project. Consultation with Native American tribes and the SHPO and completion of the Section 106 process would be completed prior to performing Proposed Action activities. The results of these consultations would be followed (e.g., if they result in a memorandum of agreement). Per Standard Operating Procedure # 7.4 of the Eglin AFB ICRMP, if suspected cultural resources are inadvertently discovered, all actions in the immediate vicinity would stop, and efforts would be made to protect the find from further impact. The Cultural Resources Office would be contacted to assess the find and determine what legal and procedural activities are required. Therefore, the Proposed Action is consistent with this enforceable policy.
Chapter 288 *Commercial Development and Capital Improvements*	Promotes and develops general business, trade, and tourism components of the state economy.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action is not anticipated to have any effect on future business opportunities on state lands or the promotion of tourism in the region.

Table 2. Florida Coastal Management Program Consistency Review

Statute	Scope	Consistency
Chapter 334 *Transportation Administration*	Addresses the state's policy concerning transportation administration.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action would not affect the state's policy concerning transportation administration.
Chapter 339 *Transportation Finance and Planning*	Addresses the finance and planning needs of the state's transportation system.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action would not affect the finance and planning needs of the state's transportation system.
Chapter 373 *Water Resources*	Addresses sustainable water management; the conservation of surface and groundwaters for full beneficial use; the preservation of natural resources, fish, and wildlife; protecting public land; and promoting the health and general welfare of Floridians.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action involves only in-air activities constrained within a new MTR.
Chapter 375 *Outdoor Recreation and Conservation Lands*	Addresses the development of a comprehensive multi-purpose 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.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action would not affect opportunities for recreation on state lands.
Chapter 376 *Pollutant Discharge Prevention and Removal*	Regulates transfer, storage, and transportation of pollutants and cleanup of pollutant discharges.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action would not affect the transfer, storage, or transportation of pollutants.
Chapter 377 *Energy Resources*	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.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action would not affect energy resource production, including oil and gas and/or the transportation of oil and gas.
Chapter 379 *Fish and Wildlife Conservation*	Establishes the framework for the management and protection of the State of Florida's wide diversity of fish and wildlife resources.	Under the Proposed Action, IR-096 wildlife and domestic animals exposed to overflights may experience stress and behavioral modifications with the initial increase in the soundscape in portions of the corridor and may exhibit startle responses from peak noise levels. Animal communication signals may be temporarily masked by aircraft noise but would last only a few seconds. Given the low number of operations (maximum of eight times monthly) and the limitation of operations to daylight

Table 2. Florida Coastal Management Program Consistency Review

Statute	Scope	Consistency
		hours, combined with BASH protocols and the avoidance zones over St. Marks National Wildlife Refuge and the Apalachicola River and floodplains, the likelihood of a bird/bat/butterfly-aircraft strike is low. Overall impacts to wildlife, domestic animals, federally listed species, bald eagles, and migratory birds would not reach significant levels. Prior to implementing the Proposed Action, Eglin AFB would enter into Endangered Species Act section 7 consultation with the USFWS to ensure that effects would not jeopardize the continued existence of federally listed species. Therefore, the Proposed Action is consistent with this enforceable policy.
Chapter 380 *Land and Water Management*	Establishes land and water management policies to guide and coordinate local decisions relating to growth and development.	This enforceable policy is not applicable to the Proposed Action. 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.
Chapter 381 *Public Health: General Provisions*	Establishes public policy concerning the state's public health system.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action would not affect the state's policy concerning the public health system.
Chapter 388 *Mosquito Control*	Addresses mosquito control efforts in the state.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action would not affect mosquito control efforts.
Chapter 403 *Environmental Control*	Establishes public policy concerning environmental control in the state.	The Proposed Action would result in air emissions from the combustion of jet fuel by aircraft. No other emissions or sources are part of the Proposed Action. Emissions associated with the Proposed Action would not generate significant quantities of any pollutants. Therefore, there would be no significant impacts on air quality under the Proposed Action. No permits are required. The Proposed Action is consistent with the state's policy concerning environmental control efforts.

Table 2. Florida Coastal Management Program Consistency Review

Statute	Scope	Consistency
Chapter 553 *Building Construction Standards*	Addresses building construction standards and provides for a unified Florida Building Code.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action does not involve construction.
Chapter 582 *Soil and Water Conservation*	Provides for the control and prevention of soil erosion.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action involves only in-air activities constrained within a new MTR.
Chapter 597 *Aquaculture*	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.	This enforceable policy is not applicable to the Proposed Action. The Proposed Action involves only in-air activities constrained within a new MTR.

Source: (Florida Department of Environmental Protection, 2023)
= number; AFB = Air Force Base; APE = Area of Potential Effects; BASH = = Bird/Wildlife Aircraft Strike Hazard; ICRMP = Integrated Cultural Resources Management Plan; IR = Instrument Route; MTR = military training route; SHPO = State Historic Preservation Officer; USFWS = United States Fish and Wildlife Service

Conclusion

The DAF has determined that the Proposed Action would affect a use or resource of the Florida coastal zone; however, the Proposed Action is consistent to the maximum extent practicable with the enforceable policies of the Florida Coastal Management Program.

The DAF respectfully requests your concurrence. Pursuant to 15 CFR 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 CFR 930.41(b). Florida's concurrence will be presumed if Eglin Air Force Base does not receive its response on the 60th day from receipt of this determination.

References

Eglin AFB. (2022). *Test/Training Space Needs Statement for IR### Military Training Route (MTR) in Florida Panhandle Region for F-35 Test and Training Aircraft and ACAT 1D Test.* 96th Test Wing. May.

Florida Department of Environmental Protection. (2023). *24 Florida Statutes of the Florida Coastal Management Program.* Retrieved from Florida Department of Environmental Protection: https://floridadep.gov/rcp/fcmp/content/24-florida-statutes-florida-coastal-management-program.

APPENDIX D

PUBLIC INVOLVEMENT (TBD)

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APPENDIX E

NOISE MODELING

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FINAL
NOISE MODEL OPERATIONAL DATA DOCUMENTATION

FOR THE

ESTABLISHMENT OF MILITARY TRAINING ROUTE – INSTRUMENT ROUTE (IR)-096

FOR

EGLIN AIR FORCE BASE

September 2023

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TABLES

FIGURES

ACRONYMS AND ABBREVIATIONS

~	approximately
°	degrees
<	less than
%	percent
96 TW	96th Test Wing
a.m.	ante meridiem (morning)
AFB	Air Force Base
AGL	above ground level
Alt	Alternative
Avoid.	avoidance
Chg.	change
Corr.	Corridor
CTIT	turbine inlet temperature in degrees Celsius
dB	decibel(s)
dBA	A-weighted decibels
DNL	day-night average sound level
DoD	Department of Defense
ETR	engine thrust request
FAA	Federal Aviation Administration
FL	Flight Level
ID	Identification code
ID#	identification number
IR	Instrument Route
L_{dnmr}	onset rate-adjusted monthly day-night average sound level
L_{max}	maximum noise level
MOA	Military Operations Area
MR_NMAP	Military Operations Area and Route Noisemap
MSL	mean sea level
MTR	military training route
N	No
N	North
N/A	not applicable
NC	core engine speed
NF	fan speed
NM	nautical miles
NPS	National Park Service
p.m.	post meridiem (afternoon)
R-	Restricted Area
SME	subject matter expert
SR	Slow Route
SUA	Special Use Airspace
VR	Visual Route
W	West
Y	Yes

1. EXECUTIVE SUMMARY

This Noise Model Operational Data Documentation presents noise modeling parameters and results associated with the proposal by the 96th Test Wing (96 TW) to create a new low-altitude military training route (MTR), to be named Instrument Route (IR)-096, in the Florida Panhandle. The proposed new MTR would be similar to an MTR that was deactivated and returned to the flying public in January of 2020, which was named IR-015. Under the Proposed Action, the proposed new MTR, named IR-096, would begin in the Gulf of Mexico, flow north to intercept the original IR-015, and from there would flow north and west into Restricted Area (R-)2914A. Under Alternative 1, the 96 TW would request the Federal Aviation Administration (FAA) to create a new MTR named IR-096 that would be identical to the original IR-015 along its entire original route. IR-015 originated overland east of Tallahassee, Florida; flowed south to the coast; and then flowed north and west into R-2914A. Under either action alternative, the MTR floor altitude would be 500 feet above ground level (AGL), hours of use would be Monday to Friday from 6:00 a.m. to 5:00 p.m., and the expected frequency of use would be four to eight times monthly (equates to less than two operations per average week).

Ongoing military training activity on existing MTRs, Military Operations Areas (MOAs), and Restricted Areas generates noise levels as high as 49.5 A-weighted decibels (dBA) onset rate-adjusted monthly day-night average sound level (L_{dnmr}) (49.5 dBA day-night average sound level [DNL]) in the affected environment under baseline conditions.[1] These ongoing operations include aircraft operating at low altitude and high airspeeds in portions of the Proposed Action's (new IR-096) and Alternative 1's (identical to the original IR-015) corridors. Human activity beneath most portions of the route is dispersed and/or sporadic. A study conducted by the National Park Service (NPS) suggests that average ambient noise levels (i.e., sound levels when aircraft are not audible) are low, in the range of 34 to 47 dBA.

Noise levels at sensitive locations would be 51.8 dBA L_{dnmr} (51.7 dBA DNL) or less under the Proposed Action and would be 50.2 dBA L_{dnmr} (50.2 dBA DNL) or less under Alternative 1. Noise levels would vary along the route because of avoidance areas, concentration of proposed flights near the proposed route centerline, and the noise contributions of ongoing baseline aircraft operations in existing overlapping military training airspace. Noise levels would remain well below the 65-decibel (dB) DNL land use compatibility threshold beneath all portions of the MTR under all alternatives. Changes in noise levels would also not be sufficiently large and end-state noise levels would not be sufficiently high to be "reportable" as defined by FAA Order 1050.1F.

Aircraft operations no longer occur on the de-activated IR-015 and are not part of baseline conditions, but may serve as a useful point of reference for any persons that experienced noise generated by those operations. Flight parameters on the proposed route, such as floor altitude, engine power setting/airspeed, and aircraft types would be similar to, or the same as, those used previously on IR-015. Noise levels generated by aircraft operations on the proposed MTR would be similar to noise levels generated on the original IR-015.

Individual overflights by aircraft have the potential to be as loud as 116 dBA maximum noise level (L_{max}) if an F-35A aircraft flies directly overhead at the MTR floor altitude of 500 feet AGL. Loud

[1] L_{dnmr} is the onset rate-adjusted monthly day-night average sound level. See Section 3.1 for a discussion of L_{dnmr} and other relevant noise metrics.

overflights have the potential to interfere with activities, such as conversation. Overflights that are both low-altitude and high-speed result in sudden onset noise, which has the potential to startle. Overflight noise would be brief, lasting only a few seconds, and relatively infrequent, occurring less than twice per average week. Operations would occur within a limited time window (Monday to Friday, 6:00 a.m. to 5:00 p.m.) reducing the potential for interference with activities, such as recreation, that are more common during weekends.

2. INTRODUCTION

2.1 PURPOSE

This document presents noise modeling parameters and results associated with a 96 TW proposal to request that FAA create a low-level MTR in the Florida Panhandle. The purpose of the Proposed Action is for the 96 TW at Eglin Air Force Base (AFB) to establish and maintain an all-weather long-range low-altitude airspace IR capability to test new weapon systems and their components, and to train Eglin AFB 33rd Fighter Wing F-35 student pilots on strike missions in accordance with their training syllabus. The proposed new MTR would be similar to the original IR-015, which was an MTR in the Florida Panhandle before being de-activated and returned to the flying public in January of 2020. Since that time, the 96 TW has determined that it has a need for the former IR-015 MTR, with some modifications, so the 96 TW is proposing to create a new MTR.

This Noise Model Operational Data Documentation describes analytical methods (Section 3), proposed MTR operational parameters (Section 4), and modeling results (Section 5). Baseline operations in overlapping military training airspace are described in Appendix A.

2.2 OVERVIEW OF SCENARIOS

This analysis considers noise levels associated with the baseline, Proposed Action, and Alternative 1 scenarios. Proposed route corridors under the Proposed Action and Alternative 1 are shown in Figure 2-1 and Figure 2-2, respectively.

2.3 DESCRIPTION OF THE STUDY AREA

2.3.1 Sensitive Locations

The Proposed Action (new IR-096) and Alternative 1 (identical to the original IR-015) corridors traverse areas that are predominately sparsely inhabited. The Homeland Infrastructure Foundation-Level Data database was searched to identify daycares, hospitals, nursing homes, and schools within the proposed MTR corridors (National Geospatial-Intelligence Agency, 2022a). The results of the search are shown in Figure 2-3. The latitudes and longitudes of each location are provided in Table 2-1. Places of worship were not studied because their noise-sensitivity is typically greatest during evenings and weekends, and proposed flight operations would not occur during these times. Sensitive locations studied do not include all locations beneath the MTR corridors that could be considered noise sensitive. For example, individual residences were not identified or studied. It is also worth noting that some of the school locations that were studied include multiple schools that are located close together.

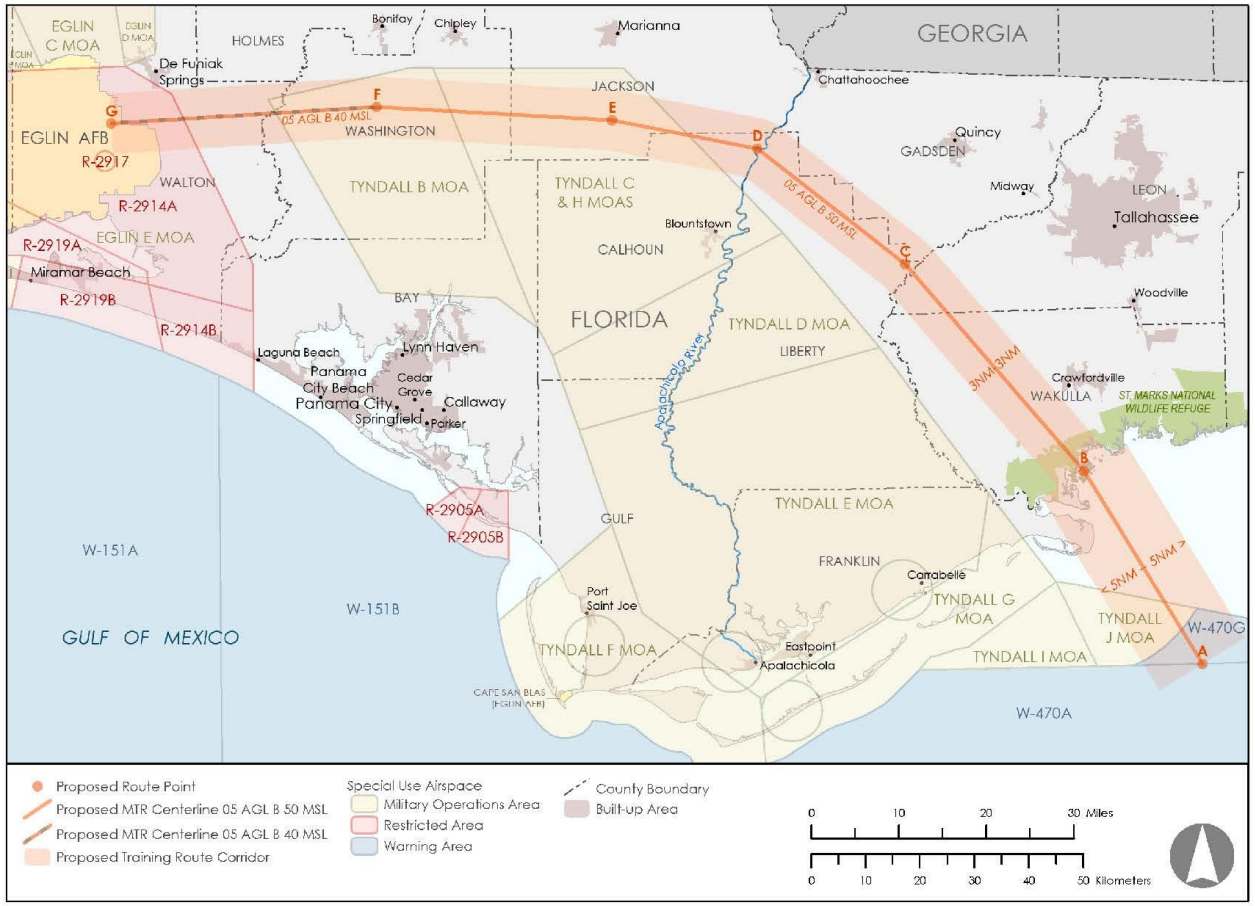

Figure 2-1. Proposed Action (New IR-096) MTR Corridor

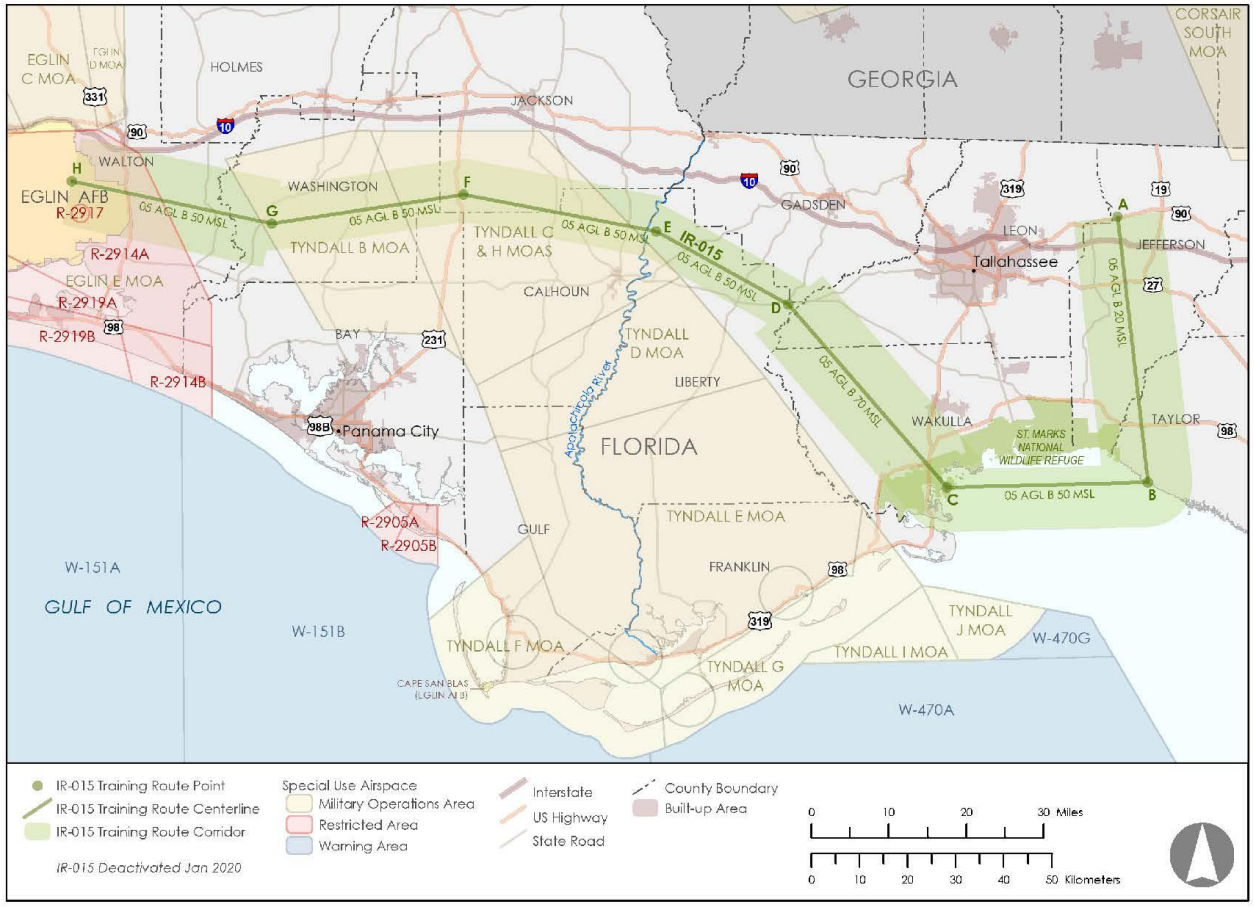

Figure 2-2. Alternative 1 (Identical to the Original IR-015) MTR Corridor

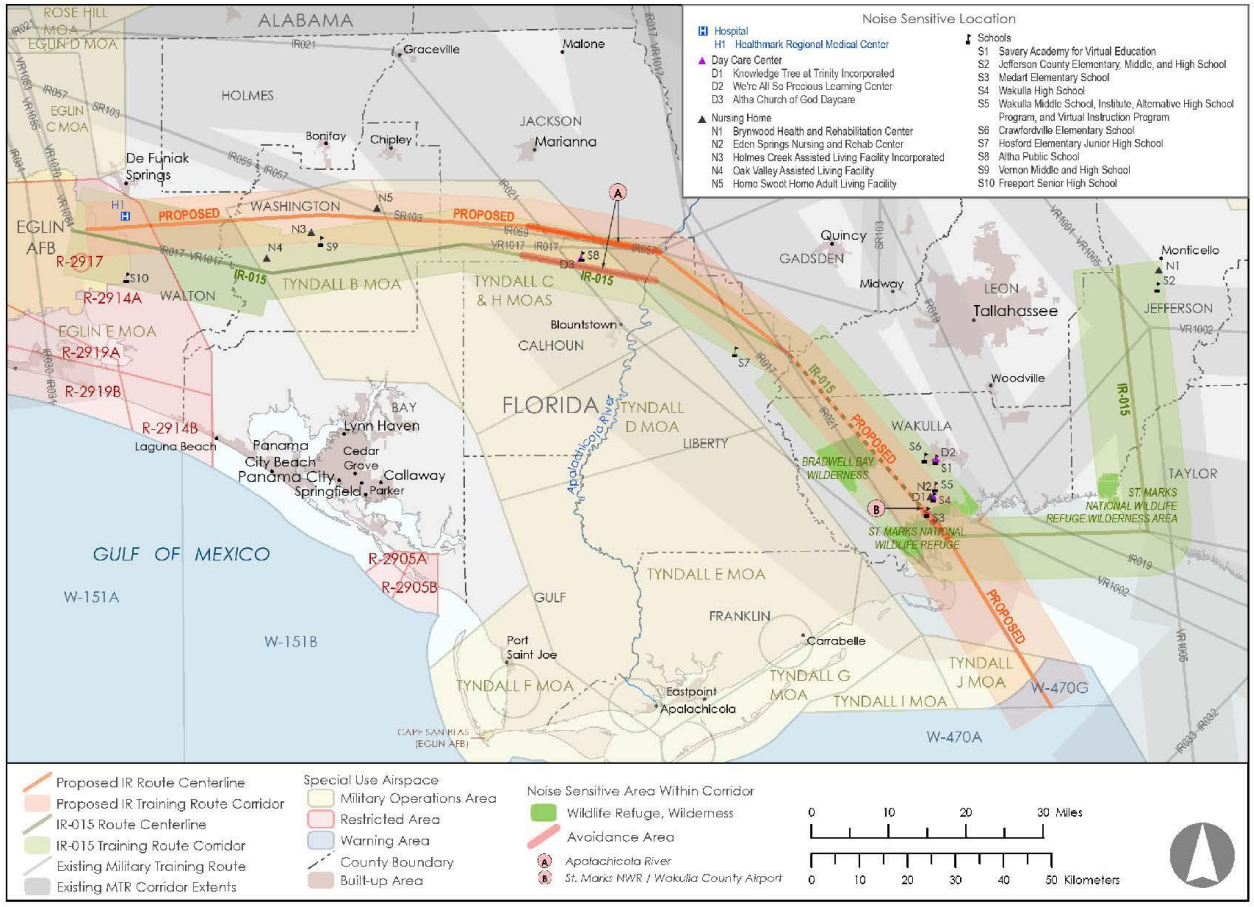

Figure 2-3. Sensitive Locations Beneath the Proposed Action and Alternative 1 MTR Corridors

Table 2-1. Sensitive Location Names, Latitudes, and Longitudes

Category	ID#	Location Name	Latitude (degrees north)	Longitude (degrees west)
Daycare	D1	Knowledge Tree at Trinity Incorporated	30.109	84.3793
	D2	We're All So Precious Learning Center	30.1795	84.3705
	D3	Altha Church of God Daycare	30.5697	85.1316
Hospital	H1	Healthmark Regional Medical Center	30.6597	86.118
Nursing Home	N1	Brynwood Health and Rehabilitation Center	30.5241	83.8739
	N2	Eden Springs Nursing and Rehab Center	30.1093	84.381
	N3	Holmes Creek Assisted Living Facility Incorporated	30.6259	85.7115
	N4	Oak Valley Assisted Living Facility	30.5786	85.8093
	N5	Home Sweet Home Adult Living Facility	30.6697	85.5686
School	S1	Savary Academy for Virtual Education	30.1783	84.3695
	S2	Jefferson County Elementary, Middle, and High School	30.4909	83.88
	S3	Medart Elementary School	30.0801	84.3906
	S4	Wakulla High School	30.1073	84.3763
	S5	Wakulla Middle School, Institute, Alternative High School Program, and Virtual Instruction Program	30.1271	84.3713
	S6	Crawfordville Elementary School	30.182	84.393
	S7	Hosford Elementary Junior High School	30.389	84.7979
	S8	Altha Public School	30.573	85.1266
	S9	Vernon Middle and High School	30.6084	85.693
	S10	Freeport Senior High School	30.5435	86.1155

Source: (National Geospatial-Intelligence Agency, 2022a)
ID# = identification number

2.3.2 Ambient Sound Levels

The sparsely inhabited areas that make up the majority of the area beneath the Proposed Action (new IR-096) and the Alternative 1 (identical to the original IR-015) corridors are characterized by low ambient sound levels (i.e., sound levels when military aircraft operations are not under way). The NPS conducted a large-scale study linking measured sound levels to characteristics of the environment (e.g., land cover, nighttime light level) and generated a nationwide ambient sound map (National Park Service, 2022). The study shows that nearby human activities are a primary factor in predicting ambient noise levels. Time-averaged daytime ambient sound levels in urbanized areas are predicted to be approximately 47 dBA, while less developed areas are predicted to be as low as 34 dBA. The sound metric used in the NPS study reflects the sound level exceeded 50 percent of the time. While this metric is not directly comparable to the L_{dnmr} or DNL metrics, the NPS study results provide a useful point of reference.

2.3.3 Noise Prior to IR-015 Disestablishment

Although IR-015 was disestablished in January 2021 and is not part of baseline conditions, some people currently residing, working, or recreating in the affected area may remember overflights

by military aircraft operating on that route. These individuals have a useful point of reference for noise levels expected to occur under the Proposed Action and Alternative 1.

2.4 OPERATIONAL DATA COLLECTION

Operational data collection was conducted via teleconferences with the subject matter experts (SMEs) listed in Table 2-2. Mr. PJ Antcliff and Mr. Wendell Thompson acted as primary points of contact, providing expected usage parameters for the Proposed Action (new IR-096) and Alternative 1 (identical to the original IR-015) MTRs, as well as information about ongoing usage of existing overlapping airspace units scheduled by the 96 TW. Mr. Antcliff also provided contact information for other SMEs that subsequently provided information about operations overlapping existing military airspace units that are not scheduled by 96 TW. Data collection took place between September and December 2022.

Table 2-2. Subject Matter Experts Consulted

Unit	Location	Data Provided
96th Test Wing	Eglin AFB	Proposed Action IR-096 and Alternative 1 IR-096 expected usage parameters; ongoing usage of R-2914A, VR-1082, VR-1085, VR-1083, and VR-1084
Training Wing 6	Naval Air Station Pensacola	IR-021 usage parameters
14th Fighter Training Wing	Columbus AFB	IR-017 and VR-1017 usage parameters
1st Special Operations Wing	Hurlburt AFB	IR-057, IR-059, and SR-103 usage parameters
Fleet Area Control and Surveillance Facility	Naval Air Station Jacksonville	VR-1002, VR-1001, VR-1005, IR019, IR-033, IR-030, IR-031 usage parameters
325th Fighter Wing	Tyndall AFB	Tyndall MOAs usage parameters

Source: (Antcliff, 2022)
AFB = Air Force Base; IR = Instrument Route; MOA = Military Operations Area; R- = Restricted Area; SR = Slow Route; VR = Visual Route

3. NOISE METRICS AND MODELS

3.1 NOISE METRICS

Noise metrics are units of measure used to describe noise and predict its impacts. The noise metrics and impact thresholds used in this analysis are described below.

Decibels (dB). Characteristics of a sound that affect how the sound is perceived include its level and frequency. Sound level is described using a logarithmic unit of measure, the dB. Differences in sound level of less than 3 dB are typically not noticeable by a person with normal hearing in a non-laboratory setting. Sounds at different frequencies (pitches) are not heard equally well by human ears. Dog whistles, for example, generate sound that may be intense, but is at frequencies that are inaudible to human ears. Sound intensities that have been adjusted to account for the differential sensitivity of human ears to various frequencies are termed dBA.

Figure 3-1 lists typical levels (in dBA) of common sounds.

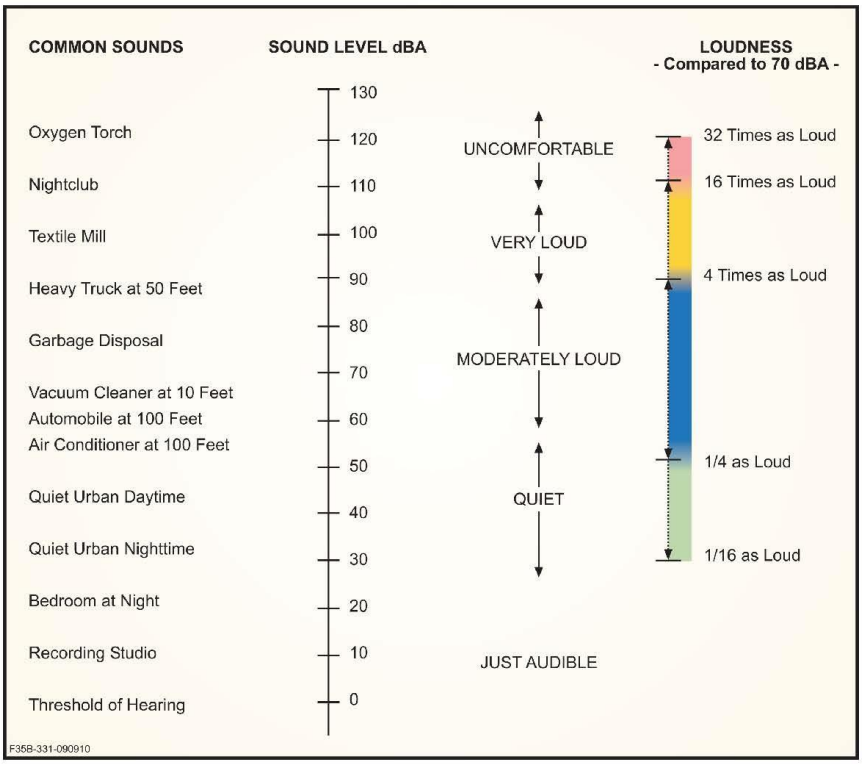

Figure 3-1. Typical A-Weighted Levels of Common Sounds

Maximum Noise Level (L_{max}). The way a sound changes over time is also important to how it is perceived. An aircraft overflight, for example, becomes louder as the aircraft approaches the listener and then becomes quiet again as the aircraft recedes into the distance. Several noise metrics have been created to describe time-varying sound levels. The L_{max} metric is simply the highest sound level reached for a fraction of a second during a single event. This easily understood metric is important in judging the interference caused by a noise event with conversation, TV listening, sleep, or other common activities.

Day-Night Average Sound Level (DNL). Actual sound environments are a complex mixture of many time-varying sounds. The DNL metric describes complex acoustic environments by summing individual noise events and averaging the acoustic energy over a 24-hour period. Because it is an average, this metric reflects the sound level and duration of the events as well as the number of events that occur. The DNL metric adds 10 dBA to events that occur between 10:00 p.m. and 7:00 a.m. to account for the increased intrusiveness of noise events that occur at night when ambient noise levels are relatively low. The DNL metric does not provide specific information on the number of noise events or the specific individual sound levels that occur. For example, a DNL of 65 dBA could result from a few very noisy events or a large number of quieter events. However, it has been found to correlate with the percentage of people highly annoyed by noise, and has been adopted by the Department of Defense (DoD), the FAA, and other federal

agencies, as the primary metric for prediction of community reaction. At sound levels exceeding 65 dB DNL, not all land uses are considered to be compatible in accordance with DoD and FAA guidelines. In locations where DNL is less than 65 dB, a relatively small percentage of the population can be expected to be highly annoyed. For example, at 52 dB DNL, approximately two percent of people would be expected to be highly annoyed by the noise (Finegold, Harris, & von Gierke, 1994).

Onset Rate-Adjusted Monthly Day-Night Average Sound Level (L_{dnmr}). L_{dnmr} is a version of DNL modified to account for the effects of operational noise in training airspace. The metric L_{dnmr} adds up to 11 dB to the noise levels of overflights at low altitude and high airspeed to account for the potential "surprise factor" associated with sudden onset noise. For this analysis, Special Use Airspace (SUA) operations were distributed equally among all 12 months, such that the "busy month" operations tempo is the same as an "average month" operations tempo. The onset-rate penalty, which is incorporated into the L_{dnmr} metric but is not included in the DNL metric, is important for the accurate assessment of community reaction to low-altitude flying operations.

3.2 NOISE MODELS

Noise modeling was conducted using the model MOA and Route Noisemap (MR_NMAP) (version 3), which is approved by the Department of the Air Force for modeling of aircraft noise in training airspace. MR_NMAP models flight operations as occurring either 1) as dispersed operations within a defined volume of airspace such as a MOA, or 2) as occurring on, or at defined distances from, a defined flight track such as an MTR, aerial refueling route, or strafing track. The model requires that representative flight profiles be defined for each aircraft mission in each airspace segment. These airspace mission profiles include relative amount of time in each altitude band, representative engine power setting(s), and representative airspeed(s) for each aircraft type. Multiple airspace profiles may be defined for a single aircraft type in instances where multiple missions with distinct parameters are flown. MR_NMAP calculates several noise metrics either on a pre-defined grid of data points or at user-specified points of interest.

3.2.1 Atmospheric Conditions

Averaged climatological values used to calculate representative atmospheric absorption of sound energy for use in MR_NMAP are displayed in Table 3-1. The average monthly temperature values listed reflect the years 1981 to 2010, and the relative humidity values listed reflect the years 1948 to 2018. The data reflects Tallahassee, which is the closest weather station for which all necessary data were available. The program MR_NMAP calculates atmospheric absorption for each month and uses the month with median absorption in modeling sound propagation. April was the month found to have median atmospheric absorption.

Table 3-1. Climate in the Affected Area

Month	Temperature (degrees Fahrenheit)	Relative Humidity (percent)
January	51	71
February	55	69.5
March	60	68
April	**66**	**67**
May	74	67.5

Table 3-1. Climate in the Affected Area

Month	Temperature (degrees Fahrenheit)	Relative Humidity (percent)
June	80	72
July	82	76
August	82	76.5
September	78	74.5
October	69	70.5
November	60	70.5
December	53	72
January	51	71
February	55	69.5

Source: (National Oceanographic and Atmospheric Administration, 2022)
Note: **Bold** indicates median atmospheric absorption.

3.2.2 Other Modeling Parameters

A 5,000-foot grid spacing of 181 points in the east-west direction and 101 points in the north-south direction was used for calculation of yearly DNL and L_{dnmr}. MR_NMAP makes use of a single representative ground elevation and assumes "soft" surface impedance of sound energy. For this project, 100 feet above mean sea level was used as the representative ground elevation.

Points of interest were selected from publicly available data sources, as described in Section 2.3.1. Points of interest are intended to be representative of noise-sensitive locations in the affected area. The representative locations chosen for analysis are not intended to reflect all locations within the affected are that could be considered noise sensitive.

4. PROPOSED MTR OPERATIONAL DETAILS

4.1 PROPOSED OPERATIONS TEMPO

Under both the Proposed Action and Alternative 1, there would be 92 operations flown per year with operations tempo being approximately equal in all months. This annual tempo equates to 1.8 total operations per average week, of which approximately 70 percent would be flown by F-35A aircraft and 30 percent would be flown by F-15 aircraft. Other aircraft types could potentially be used, including multiple variants of the F-15 (e.g., C, E, and EX models). The F-15E, equipped with Pratt and Whitney 220 engines, was used as the representative aircraft for modeling of 4th generation tactical aircraft noise on the proposed MTR. Although the nominal operational hours of the proposed routes would begin at 6:00 a.m., operational SMEs indicated that operations during acoustic night (10:00 p.m. to 7:00 a.m.) are not expected to occur (Table 4-1). Representative flight parameters for F-35A and F-15 aircraft, which would be applicable to MTR operations under both the Proposed Action and under Alternative 1, are listed in Table 4-2.

Table 4-1. Proposed Operations Counts

Operational Descriptor	F-35A	F-15	Total
Annual Operations	65	27	92
Operations per average week	1.3	0.5	1.8
Percent during acoustic night (10:00 p.m. to 7:00 a.m.)	~0%	~0%	~0%

~ = approximately; % = percent

Table 4-2. Proposed Route Representative Flight Parameters

Representative Parameter	F-35A	F-15
Airspeed (NM/hour)	420	420
Engine Power (aircraft-specific units)	85% ETR	90% NC
Percent Time at 500–1,000 feet AGL	80%	80%
Percent Time at 1,000 feet AGL to ceiling	20%	20%

% = percent; AGL = above ground level; ETR = engine thrust request; NC = core engine speed; NM = nautical miles

4.2 PROPOSED ROUTE STRUCTURE

Table 4-3 describes the route structure of the Proposed Action's IR-096, and Table 4-4 describes Alternative 1's IR-096 route structure (identical to the original IR-015). The route structures are defined by a series of segment vertices at the geographic locations specified. Each route segment takes the form of a corridor with defined floor and ceiling altitudes as well as boundaries at set distances to the right and to the left of the route centerline. Utilization notes applicable to some segments provide specific instructions to include areas or locations aircrews must avoid. Route structure for the Proposed Action IR-096 is as described in the Test and Training Space Needs Statement (96th Test Wing, 2022a). The route structure for the Alternative 1 IR-096 (identical to the original IR-015) is as described in a version of the *DoD Flight Information Publication Area Planning Military Training Routes North and South America for 17 Dec 2009 to 11 Feb 2010* (National Geospatial-Intelligence Agency, 2009).

Table 4-3. Proposed Action IR-096 Route Description

Segment Start	Latitude	Longitude	Parameters	Utilization Notes
A	29.708333 °N	84.133333 °W	500 feet AGL to 5,000 feet MSL; 5 NM left, and 5 NM right	Route would originate overwater and enter the littoral area over Saint Marks National Wildlife Refuge.
B	30.033333 °N	84.35 °W	500 feet AGL to 5,000 feet MSL, 3 NM out to the left, 3 NM out to the right	Aircraft would climb and maintain 2,000 feet MSL until passing Highway 319, and a noise sensitive area. Aircraft would avoid Wakulla County Airport by 3 NM or 1,500 feet MSL.
C	30.383333 °N	84.683333 °W	500 feet AGL to 5,000 feet MSL, 3 NM left and 3 NM right	Pilots would climb to 1,500 feet MSL to cross the Apalachicola River and remain at 1,500 feet MSL until past Point D, in consideration of a noise sensitive area and potential concentrations of birds.
D	30.58 °N	84.961667 °W	500 feet AGL to 5,000 feet MSL, 3 NM left and 3 NM right	Pilots would deconflict with IR-017, would cross, overlap or run parallel with the proposed route between Points D and G. Pilots would make all attempts to cross D on the centerline or the northern portion of the route.
E	30.631389 °N	85.239444 °W	500 feet AGL to 5,000 MSL, 3 NM left and 3 NM right	No notes for this segment.
F	30.658333 °N	85.691667 °W	500 feet AGL to 4,000 feet MSL, 3 NM left and 3 NM right	No notes for this segment.
G	30.634722 °N	86.201944 °W	N/A (Route end)	N/A (Route end)

° = degrees; AGL = above ground level; MSL = mean sea level; N = North; N/A = not applicable; NM = nautical miles; W = West

Table 4-4. Alternative 1 IR-096 (Identical to the Original IR-015) Route Description

Segment Start	Latitude	Longitude	Parameters	Utilization Notes
A	30.533333 °N	83.966667 °W	500 feet AGL to 2,000 feet MSL; 5 NM left, and 5 NM right	Route would originate over land
B	30.033333 °N	83.916667 °W	500 feet AGL to 2,000 feet MSL, 5 NM out to the left, 2 NM out to the right	No notes for this segment.
C	30.033333 °N	84.35 °W	500 feet AGL to 5,000 feet MSL, 5 NM left and 5 NM right	Aircraft would climb and maintain 2,000 feet MSL until passing Highway 319, and a noise sensitive area. Aircraft would avoid Wakulla County Airport by 3 NM or 1,500 feet MSL.
D	30.383333 °N	84.683333 °W	500 feet AGL to 5,000 feet MSL, 3 NM left and 3 NM right	Pilots would climb to 1,500 feet MSL to cross the Apalachicola River and remain at 1,500 feet MSL until past Point F, in consideration of a noise sensitive area and potential concentrations of birds.
E	30.525 °N	84.966667 °W	500 feet AGL to 5,000 MSL, 3 NM left and 4 NM right	No notes for this segment.
F	30.6 °N	85.383333 °W	500 feet AGL to 5,000 feet MSL, 3 NM left and 4 NM right	No notes for this segment.
G	30.55 °N	85.8 °W	500 feet AGL to 5,000 feet MSL, 5 NM left and 5 NM right	No notes for this segment.
H	30.633333 °N	86.233333 °W	N/A (Route end)	N/A (Route end)

° = degrees; AGL = above ground level; MSL = mean sea level; N = North; N/A = not applicable; NM = nautical miles; W = West

5. RESULTS

5.1 L_{DNMR} AND DNL RESULTS

Ldnmr and DNL would stay well below 65 dBA at all sensitive locations studied under both Proposed and Alternative 1 (Table 5-1). Low calculated time-averaged noise levels at the sensitive locations reflect the relative infrequency of flights on the proposed MTR (less than two per average week) and the effects of avoidance areas. The highest time-averaged sound level at the locations studied would be 51.8 dBA Ldnmr (51.7 dBA DNL) under the Proposed Action and would be 50.2 dBA Ldnmr (50.2 dBA DNL) under Alternative 1.

Table 5-1 also lists several characteristics of sensitive locations that are relevant to noise levels. These characteristics include whether the location is in an avoidance area, beneath existing MOA or Restricted Area, within existing MTR corridor(s), within the Proposed Action IR-096 corridor, and within the Alternative 1 IR-096 (identical to the original IR-015) corridor. Locations close to the MTR centerline and not within an avoidance area would experience the largest changes in noise level. At locations near the edge of the MTR, overflights would be rare, and at locations outside of the corridor, direct overflights would not occur. At locations where noise levels would be less than 45 dB Ldnmr or DNL, noise levels in Table 5-1 are stated as "less than (<) 45." As discussed in Section 3.1, time-averaged sound levels less than 45 dB are below any currently accepted guidelines for aircraft noise land use compatibility. Noise levels are highest in locations where ongoing (baseline) operations in existing training airspace also contributes to overall noise levels.

Table 5-1. L_{dnmr} and DNL Results

Receptor ID	Also Affected By:			Proposed Action IR-096		Alt 1 IR-096 (identical to the Original IR-015)		L_{dnmr} (dBA)					DNL (dBA)				
	Avoid. Area[1]	SUA	Other MTR	Corr.	Center line	Corr.	Center line	Baseline	Proposed	Chg.	Alt 1	Chg.	Baseline	Proposed	Chg.	Alt 1	Chg.
D1	Y	N	Y	Y	10,369	Y	10,369	<45	<45	0	<45	0	<45	<45	0	<45	0
D2	Y	N	Y	N	28,841	Y	28,841	<45	<45	0	<45	0	<45	<45	0	<45	0
D3	Y	Y	Y	Y	14,872	Y	5,284	49.5	49.6	0.1	50.2	0.7	49.5	49.6	0.1	50.2	0.7
H1	N	Y	Y	Y	7,572	Y	17,180	48.3	51.3	3	49.5	1.2	48.1	50.9	2.8	49.2	1.1
N1	N	N	Y	N	229,548	Y	28,831	<45	<45	0	<45	0	<45	<45	0	<45	0
N2	Y	N	Y	Y	10,024	Y	10,024	<45	<45	0	<45	0	<45	<45	0	<45	0
N3	N	Y	Y	Y	11,457	Y	23,468	<45	<45	0	<45	0	<45	<45	0	<45	0
N4	N	Y	Y	N	27,050	Y	9,507	<45	<45	0	47.2	2.2	<45	<45	0	46.9	1.9
N5	N	Y	Y	Y	6,723	N	33,120	48.9	51.8	2.9	48.9	0	48.9	51.7	2.8	48.9	0
S1	N	N	Y	N	28,807	Y	28,807	<45	<45	0	<45	0	<45	<45	0	<45	0
S2	Y	N	Y	N	220,412	Y	25,880	<45	<45	0	<45	0	<45	<45	0	<45	0
S3	Y	N	Y	Y	919	Y	919	<45	<45	0	<45	0	<45	<45	0	<45	0
S4	Y	N	Y	Y	10,707	Y	10,707	<45	<45	0	<45	0	<45	<45	0	<45	0
S5	Y	N	Y	Y	16,512	Y	16,512	<45	<45	0	<45	0	<45	<45	0	<45	0
S6	N	N	Y	N	23,934	Y	23,934	<45	<45	0	<45	0	<45	<45	0	<45	0
S7	N	N	Y	N	21,263	Y	16,298	<45	<45	0	<45	0	<45	<45	0	<45	0
S8	Y	Y	Y	Y	13,369	Y	6,780	49.4	49.6	0.2	50.1	0.7	49.4	49.6	0.2	50.1	0.7
S9	N	Y	Y	N	18,109	Y	16,361	<45	<45	0	<45	0	<45	<45	0	<45	0
S10	N	Y	Y	Y	34,659	Y	23,903	48.3	48.4	0.1	48.8	0.5	48.1	48.1	0	48.5	0.4

< = less than; Alt = Alternative; Avoid.= avoidance; Chg.= change; Corr. = Corridor; ID = identification code; MTR= Military Training Route; N = No; SUA= Special Use Airspace; Y = Yes

Notes:

Aircrews crossing the Saint Marks National Wildlife Refuge/Wakulla County Airport avoidance area are instructed to maintain an altitude at or above 2,000 mean sea level (MSL) until after crossing Highway 319. Aircrews crossing the Apalachicola River, and for several miles thereafter, are instructed to maintain an altitude at or above 1,500 feet MSL.

5.2 SUPPLEMENTAL RESULTS

Individual overflights on the proposed MTR and in existing military training airspace under baseline conditions have the potential to be quite loud. Direct overflight by an F-35A and F-15E aircraft at 500 feet AGL results in approximately 116 dBA L_{max} and 112 dBA L_{max}, respectively (Table 5-2). Approximately 70 percent of the proposed operations (approximately one per week) would be flown by F-35A aircraft, and the other 30 percent would be flown by F-15E or similar aircraft (approximately one every other week). Overflights that are not at the floor altitude of 500 feet AGL and/or not be directly overhead relative to a listener would be less loud than the highest expected potential L_{max} values that are listed in Table 5-2.

Locations within the Saint Mark's National Wildlife Refuge/Wakulla County Airport avoidance area would be overflown at not less than approximately 1,900 feet AGL, and locations within the Apalachicola River avoidance area would be overflown at not less than approximately 1,400 feet AGL. Overflights at higher altitudes would result in lower L_{max} values (Table 5-2).

As shown in Figure 2-3, much of the area beneath the Proposed Action IR-096 and the Alternative 1 IR-096 (identical to the original IR-015) corridors is overlain by existing MTRs and SUA, and people in these areas experience overflight noise under baseline conditions. Table 5-2 lists L_{max} values associated with overflights by representative aircraft types (e.g., F-18E, C-130, A-10, and T-1) that use the existing military training airspace.

Table 5-2. Individual Overflight L_{max}

Representative Aircraft [1]	Engine Power Setting	Airspeed (NM/hour)	L_{max} (dBA) At Various Distances (feet) [2]		
			500	1,400	1,900
F-35A	85% ETR	420	116	105	101
F-15E (PW220)	90% NC	420	112	101	97
F-18E	83% NC	360	106	95	91
C-130	900 CTIT	250	91	81	77
A-10	5333 NF	350	98	86	81
T-1	80% NC	240	84	71	67

Source: SELCALC3 using local median acoustic atmospheric conditions (66 degrees Fahrenheit and 67% relative humidity)
% = percent; CTIT = turbine inlet temperature in degrees Celsius; dBA = A-weighted decibels; ETR = engine thrust request; L_{max} = maximum noise level; NC = core engine speed; NF = fan speed; NM = nautical miles
Notes:
1. The aircraft types listed are representative of the wide variety of aircraft types that use the military training airspace and flight configurations used by those aircraft.
2. Noise levels listed are for direct aircraft overflights. Aircraft flying at higher altitudes and/or at some lateral distances from a listener generate lower sound levels than those listed.

As noted previously, high-airspeed and low-altitude direct overflights are experienced as rapidly rising sound levels followed by a sound level maximum and then a quick return to ambient as the aircraft recedes into the distance. Such overflights have the potential to be startling, but are also brief, with the entire event typically lasting only a few seconds.

6. REFERENCES

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APPENDIX A BASELINE OPERATIONAL DETAILS

A.1 Operations on Existing MTRs

Table A-1 lists the number of annual operations flown on each of the military training routes (MTRs) that overlaps the Proposed Action IR-096 or Alternative 1 IR-096 (identical to the original IR-015) corridors. Operational subject matter experts, which are listed in Table 2-2, stated that several of the MTRs have not been used in the past several years. For those routes that have been used recently, operations are described for a 12-month time period ending with November 2022. Flying operations occurred with approximately equal frequency in each of the months of the study period, and the "busy month" was treated as being the same as the average month for the purposes of noise modeling. Operations during acoustic night (10:00 p.m. to 7:00 a.m.) were described by the subject matter experts contacted as being extremely rare on each of the routes listed. Representative flight parameters for the aircraft described as having used the MTRs are listed in Table A-2. Route structures for existing MTRs are listed in the *DoD Flight Information Publication Area Planning Special Use Airspace for North and South America 3 Nov 2022 to 29 Dec 2022* (National Geospatial-Intelligence Agency, 2022b).

Table A-1. Existing MTR Operations Counts

Route ID	T-1	Cessna 172	T-6	C-17	F-18	F-15	C-130	A-10	Total
IR-021	0	0	0	0	0	0	0	0	0
IR-017	0	0	0	0	0	0	0	0	0
IR-019	0	0	0	0	0	0	0	0	0
IR-030	0	0	0	0	0	0	0	0	0
IR-033	0	0	0	0	0	0	0	0	0
IR-057	0	1	0	0	0	0	0	0	1
IR-059	0	0	0	0	0	0	0	0	0
SR-103	0	5	0	0	0	0	0	0	0
VR-1001	0	0	0	0	0	0	17	0	17
VR-1002	262	0	262	7	98	26	0	0	656
VR-1005	0	0	0	0	0	0	0	30	30
VR-1017	58	0	0	0	0	0	0	0	58
VR-1070	0	0	0	0	0	0	0	0	0
VR-1083	0	0	0	0	0	0	0	0	0
VR-1084	0	0	0	0	0	0	0	0	0

Source: Operational subject matter experts (see Table 2-2)
IR = Instrument Route; SR = Slow Route; VR = Visual Route

Table A-2. Existing MTR Representative Flight Parameters

Representative Parameter	T-1	Cessna 172	T-6	C-17	F-18	F-15	C-130	A-10
Airspeed (NM/hour)	240	188	210	250	360	450	250	350
Engine Power (aircraft-specific units)	80% NC	100% RPM	55% Torque	1.3% EPR	83% RPM	77% NC	900 CTIT	87.1% NC
Percent Time at 500–1,000 feet AGL	90%	90%	90%	90%	N/A	90%	90%	90%
Percent Time at 1,000 feet AGL to ceiling	10%	10%	10%	10%	N/A	10%	10%	10%
Percent Time at 500–2,000 feet AGL	N/A	N/A	N/A	N/A	90%	N/A	N/A	N/A
Percent Time at 2,000 feet AGL to ceiling	N/A	N/A	N/A	N/A	10%	N/A	N/A	N/A

Source: Operational data reviewed by subject matter experts (see Table 2-2)
% = percent; AGL = above ground level; CTIT = turbine inlet temperature in degrees Celsius; EPR = engine pressure ratio; N/A = not applicable; NC = core engine speed; NM = nautical miles; RPM = revolutions per minute

A.2 Operations in Existing Special Use Airspace

Table A-3 lists the number of annual operations flown and percentage of operations that occurred between 10:00 PM and 7:00 AM on each of the Special Use Airspace (SUA) units that overlaps the Proposed Action IR-096 or Alternative 1 IR-096 (identical to the original IR-015) corridors. R-2914A usage is based on calendar year 2021 recorded usage (96th Test Wing, 2022b). Tyndall Military Operations Area (MOA) usage mirrors modeling in F-35A Wing Beddown at Tyndall Air Force Base (AFB) and MQ-9 Wing Beddown at Tyndall AFB or Vandenberg AFB (Department of Air Force, 2020)) which was confirmed still be a valid representation by the operational subject matter expert. Flying operations occurred with approximately equal frequency in each of the months of the study period, and the "busy month" was treated as being the same as the average month for the purposes of noise modeling. Representative flight parameters for each aircraft in each of the SUA units are listed in Table A-4 and Table A-5. SUA structures are as listed in the *DoD Flight Information Publication Area Planning Special Use Airspace for North and South America 3 Nov 2022 to 29 Dec 2022* (National Geospatial-Intelligence Agency, 2022b).

Table A-3. Existing MOA and Restricted Area Operations Counts

Airspace Description	Aircraft	Sorties (annual)	% Between 10:00 p.m. and 7:00 a.m.
R-2914A	C-130	437	25%
	C-135	222	9%
	F-15	792	4%
	F-16	521	0%
	F-35	288	0%
	H-60	108	16%
	MU-2	1,208	12%
	V-22	95	26%
Tyndall B&H MOA	F-35A	1,487	1%
	MU-2	91	0%
	F-16 (incl drones)	455	0%
	E-9	91	0%
Tyndall C MOA	MU-2	2,420	0%
	F-16	1,642	0%
	C-130H	1	0%
	F-15C	238	0%
	A-10	14	0%
	AH-64	65	0%
	MH-60	152	0%
	UH-1	7	0%
	F-35	67	0%

Source: (96th Test Wing, 2022b; Department of Air Force, 2020)
% = percent; MOA = Military Operations Area; R- = Restricted Area

Table A-4. Existing Special Use Airspace Representative Flight Parameters

Representative Parameter	F-35A	MU-2[1]	F-16	E9	F-15	C-130	V-22	A-10	AH-64	H-60	H-1	KC-135
Airspeed (NM/hour)	425	200	465	200	450	220	120	325	110	100	100	240
Engine Power (aircraft-specific units)	90% ETR	85% RPM	94% NC	85% RPM	77% NC	850 CTIT	120 NM/hour	5333 NF	110 NM/hour	100 NM/hour	100 NM/hour	80.3% NC
Average Time in SUA (minutes)	60	60	60	60	60	60	60	60	60	60	60	60

% = percent; AGL = above ground level; CTIT = turbine inlet temperature in degrees Celsius; ETR = engine thrust request; NC = core engine speed; NF = fan speed; NM = nautical miles; RPM = revolutions per minute

Note:

1. Surrogate aircraft is C-23

Table A-5. Existing Special Use Airspace Representative Altitude Usage

Altitude Band	Compass Lake	R-2914A	Tyndall C	Altitude Band	Compass Lake	R-2914A	Tyndall C
F-35				**MU-2 (C-23 surrogate)**			
500 AGL – 2,000 AGL		1%		500 AGL – 2,000 AGL			
2,000 AGL – 5,000 AGL		0%		2,000 AGL – 5,000 AGL			
5,000 AGL - FL100		5%	100%	5,000 AGL – FL100			
FL100 – FL180		24%		FL100 – FL180			
9,000 – FL180	29%			9,000 – FL300	100%	100%	
FL180 – FL300	65%	59%		300 AGL – 6,000 AGL			100%
>FL300	6%	10%					
F-16				**E-9**			
500 AGL – 1,500 AGL		2%		500 AGL – 2,000 AGL			
1,500 AGL – 3,000 AGL		3%		2,000 AGL – 5,000 AGL			
3,000 AGL – 5,000 AGL		15%		5,000 AGL – FL100			
5,000 AGL – FL100		0%	100%	FL100 – FL180			
FL100 – FL140		70%		9,000 – FL300	100%	100%	
FL140 – FL200		0%					100%
FL200 – FL 230		10%					
9,000 AGL - FL180	100%						
F-15				**C-130**			
150 AGL – 250 AGL		2%		500 AGL – 1,000 AGL		20%	
250 AGL – 1000 AGL		6%		1,000 AGL – 3,000 AGL		60%	
1,000 AGL – 10,000 MSL		18%		3,000 AGL – 5,000 AGL		10%	

Table A-5. Existing Special Use Airspace Representative Altitude Usage

Altitude Band	Compass Lake	R-2914A	Tyndall C	Altitude Band	Compass Lake	R-2914A	Tyndall C
10,000 MSL – 18,000 MSL		30%		5,000 AGL – FL100		5%	
18,000 MSL – 30,000 MSL		35%		FL100 – FL140		5%	
30,000 MSL – 50,000 MSL		9%		300 AGL – 6,000 AGL			100%
5,000 MSL – 10,000 MSL			100%				
10,000 MSL – 18,000 MSL							
V-22				**A-10**			
1,000 AGL – 2,500 AGL		17%		300 AGL – 6,000 MSL			100%
2,500 AGL – FL100		83%					
AH-64				**H-60**			
300 AGL – 500 AGL			1%	300 AGL – 500 AGL			1%
500 AGL – 1,000 AGL			81%	500 AGL – 1,000 AGL			81%
1,000 AGL – 2,000 AGL			4%	1,000 AGL – 2,000 AGL			4%
2,000 AGL – 3,000 AGL			5%	2,000 AGL – 3000 AGL			5%
3,000 AGL – 5,000 AGL			6%	3,000 AGL – 5,000 AGL			6%
5,000 AGL – 6,000 AGL			3%	5,000 AGL – 6,000 AGL			3%
H-1				**KC-135**			
300 AGL – 1,000 AGL			100%	FL180 – FL300	75%		
				FL300 – FL500	25%		

% = percent; AGL = above ground level; FL = Flight Level; MSL = mean sea level; R- = Restricted Area

APPENDIX F

LAND USE SUPPLEMENTAL INFORMATION

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Table F-1. Land Use Summary Under the Proposed Action and Alternative 1

Land Use (Class 1)	County	Acres under Proposed Action	Acres under Alternative 1
1000 Urban/Built-Up	Bay	0	236.7
	Calhoun	1,223.5	3,649.0
	Franklin	323.5	0.7
	Gadsden	5.5	305.9
	Jackson	11,792.3	10,248.2
	Jefferson	0	7,040.8
	Leon	158.7	1,571.7
	Liberty	1,615.5	1,382.8
	Taylor	0	1,926.4
	Wakulla	3,712.0	7,636.5
	Walton	3,573.8	5,239.5
	Washington	7,565.1	16,737.8
	Total	**29,969.8**	**55,975.9**
2000 Agriculture	Bay	0	372.6
	Calhoun	9,807.3	15,526.7
	Franklin	0	0
	Gadsden	17.7	13.6
	Jackson	14,678.8	3,913.0
	Jefferson	0	15,888.6
	Leon	19.1	681.2
	Liberty	1,062.6	700.0
	Taylor	0	6.2
	Wakulla	496.7	2,061.1
	Walton	4,979.9	5,118.4
	Washington	15,120.8	8,535.0
	Total	**46,182.9**	**52,816.3**
3000 Rangeland	Bay	0	274.7
	Calhoun	788.2	2,817.5
	Franklin	420.7	8.2
	Gadsden	17.2	0.8
	Jackson	3,658.8	2,379.1
	Jefferson	0	2,437.6
	Leon	33.6	505.8
	Liberty	1,430.4	1,098.0
	Taylor	0	2,741.4

Table F-1. Land Use Summary Under the Proposed Action and Alternative 1

Land Use (Class 1)	County	Acres under Proposed Action	Acres under Alternative 1
	Wakulla	3,562.6	4,970.1
	Walton	4,053.7	8,668.4
	Washington	4,832.1	4,964.4
	Total	**18,797.2**	**30,865.9**
4000 Upland Forest	Bay	0	3,685.9
	Calhoun	12,820.8	34,921.0
	Franklin	3,962.6	154.4
	Gadsden	4,135.4	6,518.5
	Jackson	46,933.2	31,990.3
	Jefferson	0	74,717.2
	Leon	8,176.7	22,167.4
	Liberty	60,960.6	61,094.9
	Taylor	0	26,311.7
	Wakulla	41,494.5	67,034.1
	Walton	48,405.0	94,047.2
	Washington	57,270.2	76,589.7
	Total	**284,158.8**	**499,232.5**
5000 Water	Bay	0	27.0
	Calhoun	438.0	819.7
	Franklin	566.4	9.5
	Gadsden	49.2	1,871.6
	Jackson	1,351.0	1,398.1
	Jefferson	0	2,111.7
	Leon	148.4	1,029.2
	Liberty	601.4	646.3
	Taylor	0	2,087.5
	Wakulla	1,411.5	2,338.9
	Walton	892.2	1,147.6
	Washington	1,892.9	5,378.7
	Total	**7,351.9**	**18,865.6**
6000 Wetland	Bay	0	1,712.6
	Calhoun	6,790.2	17,306.8
	Franklin	2,089.8	83.3
	Gadsden	1,495.3	2,894.8
	Jackson	15,674.3	11,961.9
	Jefferson	0	63,960.6
	Leon	8,638.8	21,044.7
	Liberty	24,981.4	24,630.9

Table F-1. Land Use Summary Under the Proposed Action and Alternative 1

Land Use (Class 1)	County	Acres under Proposed Action	Acres under Alternative 1
	Taylor	0	44,389.0
	Wakulla	61,560.4	90,890.0
	Walton	17,986.3	36,098.5
	Washington	31,124.2	34,302.2
	Total	**170,341.0**	**349,275.2**
7000 Barren	Bay	0	53.2
	Calhoun	144.3	464.0
	Franklin	65.1	8.0
	Gadsden	20.2	39.2
	Jackson	712.5	606.6
	Jefferson	0	742.0
	Leon	1.7	105.0
	Liberty	682.1	565.0
	Taylor	0	69.4
	Wakulla	138.5	199.2
	Walton	1,178.8	1,789.4
	Washington	1,398.6	1,379.0
	Total	**4,341.8**	**6,019.9**
8000 Special Transportation, Communication, and Utilities	Bay	0	105.1
	Calhoun	247.9	918.4
	Franklin	32.7	5.9
	Gadsden	28.2	78.1
	Jackson	1,115.1	981.1
	Jefferson	0	1,425.1
	Leon	0	379.8
	Liberty	658.9	695.8
	Taylor	0	243.1
	Wakulla	507.3	924.4
	Walton	948.8	1,672.9
	Washington	1,104.1	1,927.2
	Total	**4,643.0**	**9,356.8**

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APPENDIX G

CULTURAL RESOURCES DESKTOP STUDY

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FINAL

CULTURAL RESOURCES DESKTOP STUDY FOR THE PROPOSED MILITARY TRAINING ROUTE, IR-096

PRIME CONTRACT NUMBER: W91278-20-D-0047, TASK ORDER W9127822 F0259

PREPARED FOR

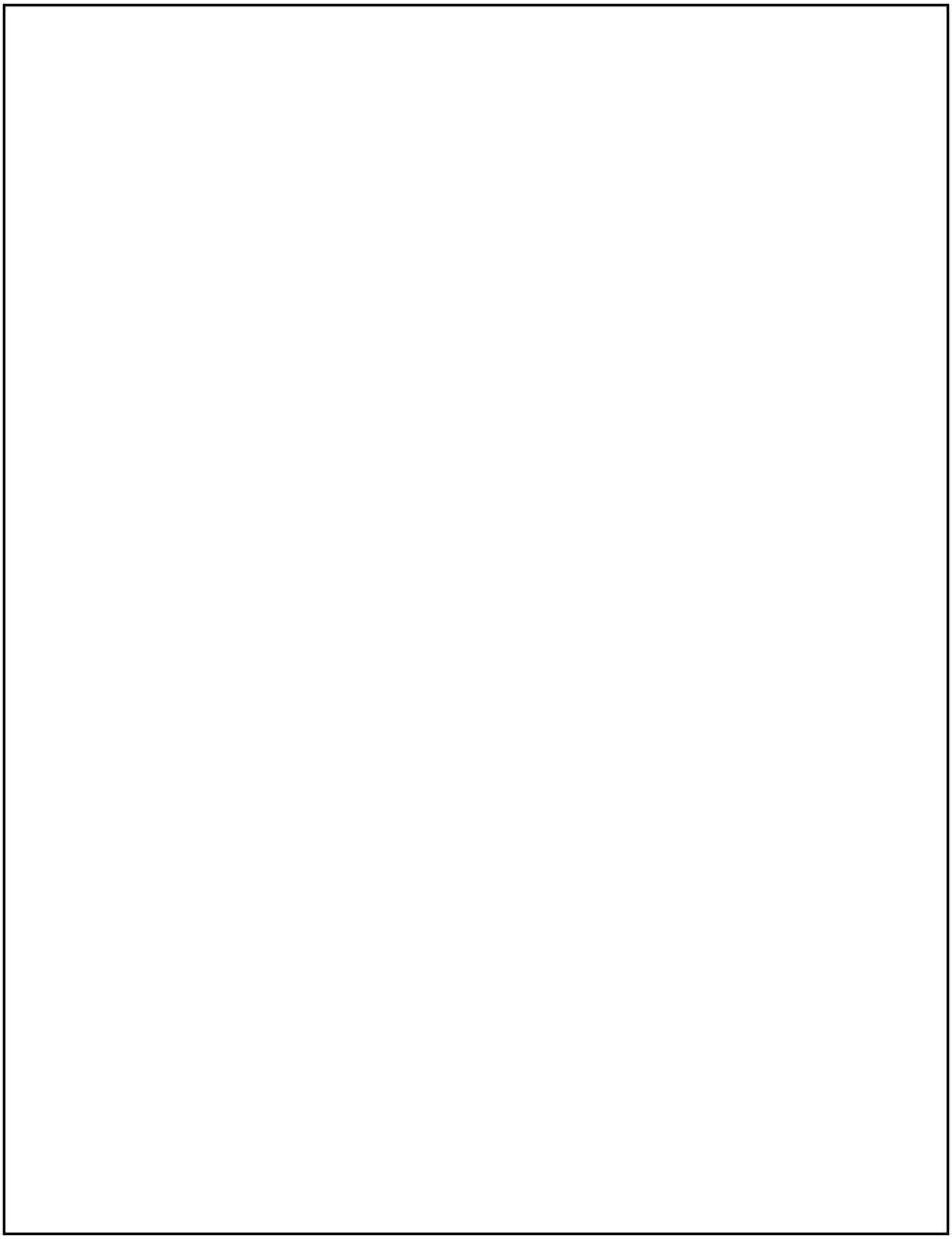
LEIDOS
1140 EGLIN PARKWAY
SHALIMAR, FL 32579

PREPARED BY

SEARCH

SEARCH PROJECT NUMBER: F22197

APRIL 2023



FINAL

CULTURAL RESOURCES DESKTOP STUDY FOR THE PROPOSED MILITARY TRAINING ROUTE, IR-096

PRIME CONTRACT NUMBER: W91278-20-D-0047; TASK ORDER W9127822 F0259

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EXECUTIVE SUMMARY

SEARCH Inc. completed this desktop study on behalf of Leidos to support the Environmental Assessment for areas underlying the proposed military training route IR-096, which is proposed for the 96th Tactical Wing to conduct aircraft and weapons system training and testing along a route that spans from the Gulf of Mexico to Eglin Air Force Base, spanning seven counties (Calhoun, Jackson, Leon, Liberty, Wakulla, Walton, and Washington) in northwest Florida. The purpose of the Environmental Assessment is to identify the potential environmental impacts associated with the operation of IR-096 in accordance with the National Environmental Policy Act of 1969, as amended (Title 42 U.S.C.), and its implementation under 40 CFR 1500-1508. The purpose of this desktop study is to identify potential impacts to cultural resources relevant to the Environmental Assessment. The types of cultural resources included in this analysis are archaeological sites, structures, districts, landscapes, and cemeteries, and the primary sources of information include the Florida Master Site File database, shipwreck databases, and historic maps.

Based on Florida Master Site File data, the study area encompasses 1,556 previously recorded cultural resources, including 1,030 archaeological sites, 476 historic structures, 29 cemeteries, 13 resource groups (districts, landscapes, and linear resources), and eight bridges. These include a total of three resources that are listed in the National Register of Historic Places (NRHP), 41 that have been evaluated as eligible for listing in the NRHP, 575 that have been evaluated as ineligible, and 937 that are unevaluated or for which the NRHP eligibility is unknown. Furthermore, much of the study area has not been systematically surveyed for cultural resources and is likely to include additional unrecorded and unevaluated resources.

The direct effects of the establishment of the military training route IR-096 are limited to visual, audible, and vibratory effects that would be perceived from a given cultural resource during active training or testing within IR-096. In most cases that there would be no significant impacts to these resources. However, there are specific types of cultural resources for which aspects of setting and feeling are more likely to represent important components of historic integrity or that serve other culturally important functions that might be disrupted when IR-096 is in active use. These types of cultural resources potentially include:

- Native American mound sites
- Archaeological sites with aboveground ruins that could be incorporated into public spaces for recreational or educational purposes
- Historic districts and landscapes
- Cemeteries that remain in active use
- Other resources that serve ceremonial or religious functions that may be characterized by quiet or solemn settings, such as churches.

In addition to direct visual, audible, or vibratory effects, these resources may be susceptible to indirect or cumulative effects. If the direct effects of the establishment of the military training

route IR-096 are perceived as disturbances, they could potentially have the indirect effect of dissuading continued use of these cultural resources for their traditional or historical purposes. Cumulative effects arising from these direct and indirect effects might include the eventual loss of historical integrity through abandonment and deterioration.

Factors to consider when assessing the severity of these effects include the frequency of testing and training missions, the time of day in which missions are scheduled, the public availability and awareness of mission schedules, and the degree to which the visual, audible, and vibratory effects exceed those that are associated with the ambient noise or existing levels of air traffic within the study area. Potential avenues for further information may include field visits to specific resources; outreach to community leaders and tribal stakeholders; and consultation with the Florida Division of Historical Resources, including the offices of the State Archaeologist and the State Historic Preservation Officer.

ACRONYMS AND ABBREVIATIONS

96TW	96th Tactical Wing
AFB	Air Force Base
AWOIS	Automated Wreck and Obstruction Information System
BOEM	Bureau of Ocean Energy Management
ca.	circa
CCC	Civilian Conservation Corps
DoD	Department of Defense
DT/OT	Developmental Testing/Operational Testing
EA	Environmental Assessment
ENC	Electronic navigation charts
FAA	Federal Aviation Administration
ft	feet
FDHR	Florida Division of Historical Resources
FMSF	Florida Master Site File
FNAI	Florida Natural Areas Inventory
GIS	Geographic Information Systems
GLO	General Land Office
GMWD	Global Maritime Wrecks Database
IFR	Instrument Flight Rules
IR	Instrument Route
MTR	Military Training Route
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRHP	National Register of Historic Places
SEARCH	SEARCH Inc.
USGS	US Geological Survey
VFR	Visual Flight Rule
WPA	Works Progress Administration

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1 INTRODUCTION

SEARCH Inc. (SEARCH) completed this desktop study on behalf of Leidos to support the Environmental Assessment (EA) for areas underlying the Military Training Route (MTR) IR-096, which is proposed for the 96th Tactical Wing (96TW) to conduct aircraft and weapons system training and testing along a route that spans from the Gulf of Mexico to Eglin Air Force Base (AFB), spanning seven counties (Calhoun, Jackson, Leon, Liberty, Wakulla, Walton, and Washington) in northwest Florida (**Figure 1**). The purpose of the EA is to identify the potential environmental impacts associated with the establishment of the military training route IR-096, in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (Title 42 U.S.C.), and its implementation under 40 CFR 1500-1508. The purpose of this desktop study is to identify potential impacts to cultural resources relevant to the EA.

SEARCH conducted the work as a subcontractor to Leidos, and the work was funded via a Leidos contract with the US Army Corps of Engineers, Mobile District (Prime Contract W91278-20-D-0047, Task Order W9127822 F0259). Christopher Sypniewski, MA, RPA served as the principal investigator for this analysis, and William Werner, MA served as the project manager. Following a brief introduction to the establishment of IR-096, this desktop study provides a methodology for identifying known cultural resources and historic areas underlying the proposed route and for identifying potential direct, indirect, or cumulative effects to these resources as a result of establishing IR-096.

1.1 PROJECT BACKGROUND

MTRs are joint operations between the Federal Aviation Agency (FAA) and the Department of Defense (DoD) as sole military use for the purpose of conducting low altitude (below 10,000 ft above mean sea level) navigation and high-speed training (over 250 knots) (FAA 2022). Instrument Routes (IR) are more specific MTRs that use specific flight rules to navigate usually by either Instrument Flight Rules (IFR) or Visual Flight Rules (VFR).

Recently, 96TW identified a need for a new MTR to prevent backlogs of training and missed or conflicting testing requirements and the continued advancement in weapon systems development. The purpose of this new MTR is to support long-range low altitude aircraft proficiency training for F-35 and F15X pilots at Tyndall AFB and Developmental Testing/Operational Testing (DT/OT) of the F-35 at Eglin AFB, as well as support for medium- to long-range weapons testing (e.g., cruise missiles). The floor of IR-096 would be 500 ft above ground level, and the ceiling would be 5,000 ft above mean sea level. The proposed MTR is approximately 249 kilometers (155 miles) long and covers approximately 305,201 hectares (754,167 acres). The width would be 5 nautical miles on either side over water and 3 nautical miles on either side over land.

IR-096 is preceded by IR-015, which was established under management of the 23rd Fighter Wing at Moody Air Force Base, Georgia until its deactivation in January 2020. The route of IR-015

originated overland near Monticello, Florida, extended south to the Gulf of Mexico, and turned generally west and then northwest towards Eglin AFB. The proposed point of origin for IR-096 is overwater on the boundary of Warning Area W-470, where it continues north-northwest, crossing overland near the town of Panacea in Wakulla County. The route of IR-096 from this point towards Eglin AFB is nearly identical to that of the previous IR-015.

Figure 1. Location of Eglin MTR study area.

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2 METHODOLOGY

The primary objectives of this desktop study are to (1) present an inventory of previously recorded cultural resources underlying the proposed MTR IR-096, and (2) identify the cultural resources most likely to be impacted by the direct, indirect, or cumulative effects of IR-096. The study area is identical to the proposed boundary of IR-096 (see **Figure 1**).

2.1 IDENTIFICATION OF CULTURAL RESOURCES

The Florida Master Site File (FMSF), maintained by the Florida Division of Historical Resources (FDHR), is the primary repository for information regarding cultural resources (archaeological sites, cemeteries, buildings, bridges, linear resources [e.g., highways, railroads, canals], districts, and landscapes) that have been formally documented in Florida, typically as a result of compliance with federal, state, or municipal historic preservation statutes. SEARCH performed a query of the FMSF Geographic Information Systems (GIS) database in July 2022 to obtain the bulk of the data discussed herein. However, it is important to note that the FMSF does not represent a comprehensive inventory of every cultural resource that is present within the study area; most of land underlying IR-096 has not been systematically surveyed by cultural resource professionals and is likely to contain numerous cultural resources not yet recorded in the FMSF.

SEARCH queried several additional databases to supplement the data available from the FMSF; these include the Bureau of Ocean Energy Management Shipwreck and Archaeological Database (BOEM), the Global Maritime Wrecks Database (GMWD), National Oceanic and Atmospheric Administration (NOAA) Automated Wreck and Obstruction Information System (AWOIS) Database, and the NOAA Electronic Navigation Charts (ENC) Database.

Finally, SEARCH reviewed historic General Land Office (GLO) maps, which often depict significant cultural features such as Native American villages or substantial structures that were observed by land surveyors in the mid-nineteenth century, as well as historic US Geological Survey (USGS) topographic maps (Bureau of Land Management 2022; USGS 2022). SEARCH examined the GLO survey plat for each of the townships and ranges within the study area using the U.S. Department of the Interior Bureau of Land Management GLO Records website. Historic topographic maps available from the USGS Get Maps website were collated into an ArcGIS Online webmap and systematically inspected for prominent features. Due to the scale of the study area and the level of detail available on these maps, this analysis did not seek to identify every potential cultural feature depicted on these maps and instead focused on identifying the main historic population centers where unrecorded historic features are most likely to occur. FMSF data were included as a layer in the webmap to enable a comparison of the locations of recorded cultural resources in relation to prominent towns, transportation routes, and hydrological features.

2.2 IDENTIFICATION OF EFFECTS

40 CFR 1508(1) defines three types of effects or impacts that must be considered under NEPA:

1. Direct effects, which are caused by the action and occur at the same time and place.

2. Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

3. Cumulative effects, which are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Direct effects to cultural resources underlying IR-096 would be limited to visual, audible, and vibratory impacts while the MTR is in active use during testing or training missions. It is anticipated that such effects would be relatively infrequent and short in duration. Furthermore, there would be no direct effects to cultural resources that are below the surface of the ground or water, such is the case with most archaeological sites. However, these effects may cause temporary disruptions to the setting or feeling of cultural resources such as historic structures, districts, landscapes, and archaeological sites or cemeteries that have aboveground components.

Many types of cultural resources continue to serve their historical functions in the present-day or are regularly visited for recreational, educational, religious, or ceremonial purposes that could potentially be disrupted by IR-096. Indirect effects to cultural resources underlying IR-096 might occur if the direct effects of the MTR lead to changes in land use or cultural practices as they relate to cultural resources, such as a decision to abandon use of a family cemetery or reduced visitation to a public archaeological site. Cumulative effects could result from additional agency actions in response to changes in land use following establishment of IR-096, such as future increases in the frequency, duration, or types of missions utilizing IR-096; changes in the use of airspace for civilian purposes; or the future decisions of land managing agencies and landowners in response to the direct and indirect effects of IR-096. An example of a cumulative effect would be reduced historic preservation funding for an area that has seen a reduction in visitors and tourists, which over time could contribute to the loss of integrity for cultural resources through deterioration.

Importantly, effects to cultural resources do not necessarily constitute significant impacts under NEPA. The definition of significance is clarified in 40 CFR 1508.27, which states that the significance of a proposed action must be analyzed in terms of its *context* and *intensity*. Context refers to the various scales and dimensions that may be affected by the proposed action in either the short or long term, while intensity refers to the severity of impact across a number of considerations, two of which specifically reference cultural resources:

- The unique characteristics of a geographic area such as proximity to cultural and historical resources (40 CFR 1508.27[b][3])
- The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places (NRHP) or cause destruction to other significant cultural or historical resources (40 CFR 1508.27[b][8])

The concepts of adverse effects and NRHP eligibility referenced above merit further consideration. NRHP eligibility is defined in 36 CFR 60.4, under the authority of the National Historic Preservation Act of 1972, as amended (NHPA):

> The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and,
>
> A. that are associated with events or activities that have made a significant contribution to the broad patterns of our history; or
> B. that are associated with the lives of persons significant in our past; or
> C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
> D. that have yielded, or may be likely to yield, information important in prehistory or history.

Per 36 CFR 800.5, a federal undertaking has an adverse effect on a historic property when it diminishes one or more of the seven aspects of integrity listed above (e.g., location) to the extent that the resource no longer conveys its significance per Criteria A-D. However, 36 CFR 800.8(a)(1) explicitly states that an adverse effect under the NHPA does not necessarily constitute a significant impact under NEPA.

The effects of establishing IR-096 are unlikely to impact the location, design, materials, workmanship, or association of underlying cultural resources. However, the setting and feeling of these resources may be temporarily altered by the direct visual, audible, and vibratory effects of IR-096. Setting refers to the physical environment of a resource, while feeling refers to the aesthetic qualities of a resource as they relate to the specific period of time during which the resource became significant (National Park Service [NPS] 1995:45). The discussion below reviews the primary types of cultural resources that are present in the study area. The purpose of this information is to provide resource-specific context for assessing the intensity and overall significance of these impacts.

2.3 CULTURAL RESOURCE DEFINITIONS

2.3.1 Structures

Historic structures include architectural resources such as residential, commercial, and public buildings as well as other elements of the built environment such as roads, railroads, bridges, industrial and agricultural facilities, monuments, docks, wells, and privies. In general, structures must be more than 50 years old to warrant consideration for listing in the NRHP, though more recently built structures may meet the criteria for designation if they are of exceptional importance or have the potential to gain significance in the future. To be considered significant, "the structure must represent a part of history, architecture, archeology, engineering, or culture of an area, and it must have the characteristics that make it a good representative of properties associated with that aspect of the past" (NPS 1995:7). Certain types of structures, namely linear resources and bridges, are classified separately in the FMSF database and have state-specific guidance to assist in evaluating significance (e.g., Lund et al. 2012).

2.3.2 Districts

A historic district draws its collective significance from the density of historic resources within it, rather than from the individual significance of any particular resource. Therefore, individual resources can be determined contributors to a historic district without being individually NRHP-eligible. A contributing resource is one that adds to a historic district's context and integrity. A district is further composed of resources unified through common historical themes or architectural types or styles (NPS 1999:6). A contributing resource adds to these overall themes by not necessarily possessing exceptional individual significance but rather through its expression of historic integrity.

2.3.3 Landscapes

The NRHP recognizes both designed and rural historic landscapes. A designed landscape "has significance as a design or work of art; was consciously designed and laid out by a master gardener, landscape architect, architect or horticulturalist to a design principle, or an owner or other amateur using a recognized style or tradition; has a historical association with a significant person, trend, event, etc." (Keller and Keller n.d:2). Examples of designed historic landscapes can include estate grounds, zoological gardens, plazas or other public spaces, city planning, battlefield parks and outdoor recreation areas, such as golf courses, stadiums and racetracks. Designed historic landscapes should maintain integrity of location, design intent, setting, materials, workmanship, feeling and association.

A rural historic landscape is a "geographical area that historically has been used by people, or shaped or modified by human activity, occupancy, or intervention, and that possesses a significant concentration, linkage, or continuity of areas of land use, vegetation, buildings and structures, roads, and waterways, and natural features (McClelland et al. 1999:1–2). Examples of

rural historic landscapes include maritime activities, such as fishing and shipbuilding, transportation systems, migration trails, and agriculture. Usually, examination of rural areas being recommended as a rural historic landscape requires collaboration from architectural historians, archaeologists, historians, folklorists and several others. McClelland et al. (1999:3) identify eleven characteristics to consider:

- Land uses and activities
- Patterns of spatial organization
- Response to the natural environment
- Cultural traditions
- Circulation networks
- Boundary demarcations
- Vegetation related to land use
- Buildings, structures, and objects
- Clusters of buildings and structures
- Archaeological sites
- Small-scale elements

2.3.4 Cemeteries

Burial places are defined as a "location where the dead are prepared for burial or cremation, or where the remains of the dead are placed" (Potter and Boland 1992:1–2). They can include isolated graves as well as compound burial sites that are intentionally planned and landscaped. NPS guidelines state that cemeteries as a category are not considered eligible for listing in the NRHP; however, they may be eligible if they are associated with persons of outstanding historical importance or are connected to important historical events. Furthermore, the symbology of grave markers, the organization of burial grounds and the differing views of spiritual and cultural groups in society can contribute to the eligibility of a cemetery or burial site. Regardless of NRHP eligibility, cemeteries may be valued by their communities as places for quiet and solemn reflection, often religious in nature with those buried. Cemeteries are protected by state law, and Native American human remains and associated items on federal land are protected by the Native American Graves Protection and Repatriation Act of 1990.

2.3.5 Archaeological Sites

The NRHP defines archaeological properties as "places where the remnants of a past culture survive in a physical context that allows for the interpretation of these remains" and usually includes artifacts and ecological evidence (Little et al. 2000:7–8). FDHR defines an archaeological site as three or more artifacts based on its definition of archaeological occurrences of two or less artifacts.

An archaeological property can be a district, site, structure or object. It can be pre- or post-contact. In order to be eligible for listing in the NRHP, an archaeological property should have local, state, or national context, and qualities of integrity, which include location, design, setting,

materials, workmanship, feeling and association (Little et al. 2000). Archaeological sites are usually eligible under NRHP Criterion D (yield or likely to yield important information) but can be eligible under any of the criteria.

2.3.6 Vessels and Shipwrecks

Given that a portion of the study area crosses the Gulf of Mexico, consideration was also given to historic vessels and shipwrecks. A historic vessel is "any craft built to navigate a waterway (oceans, lakes, rivers, canals) regardless of type of construction or motive or power employed" (Delgado et al. 1992:2). The five types of historic vessels are floating historic vessels, dry-berthed historic vessels, small craft, hulks and shipwrecks. A historic vessel must be, at a minimum, a good representation of a vessel type, associated with a significant designer, or involved in important events or activities. Shipwrecks are defined as "any vessel that has foundered, stranded or wrecked" and can be intact or scattered components. Shipwrecks recorded with the FMSF would be classified as archaeological sites.

3 CULTURAL AND HISTORICAL CONTEXT

Table 1 summarizes the major cultural and historical periods recognized in Florida. The following sections present a narrative summary of these periods. The first section summarizes the Native American culture history of northwest Florida derived chiefly from archaeological studies. The second section presents a brief summary of the major post-contact historical trends for the region with more detailed discussion about each of the historical towns and municipalities within the project region as identified on historical maps.

Table 1. Archaeological Periods in Northwestern Florida.

Calendrical Dates	Archaeological Stage	Periods or Cultures
AD 1945-1991	Post-Contact	Post-World War II and Cold War
AD 1900-1945		Early 20th Century & World War II
AD 1861-1900		Civil War/Late 19th Century
AD 1821-1860		American Territorial/Early Statehood
AD 1783–1821		Second Spanish
AD 1763–1783		British
AD 1698–1763		First Spanish
AD 1516-1698		Early European Exploration
AD 1200–1516	Mississippian	Pensacola/Fort Walton
AD 800–1200	Woodland	Late Woodland (Late Weeden Island/ Wakulla)
AD 200–800		Middle Woodland (Santa Rosa-Swift Creek)
1000 BC–AD 200		Early Woodland (Deptford)
3000–1000 BC	Archaic	Late Archaic/Gulf Formational (Norwood)
5000–3000 BC		Middle Archaic
8000–5000 BC		Early Archaic (Kirk/Bolen)
11,000–8000 BC	Paleoindian	Clovis

3.1 NATIVE AMERICAN CULTURE HISTORY

3.1.1 Paleoindian Period

The most widely accepted model for the peopling of the New World argues that Asian populations migrated to North America over the Bering land bridge that linked Siberia and Alaska some 14,000 years ago. However, data are mounting in support of migrations that date to before 14,000 years ago (Adovasio et al. 1990; Dillehay et al. 2008; Waters et al. 2011). Alternative migration routes that have been hypothesized for early inhabitants include populations traveling along the Pacific and Atlantic Coasts using boats or following an exposed shoreline (Anderson and Gillam 2000; Bradley and Stanford 2004; Dixon 1993; Faught 2008; Fladmark 1979). These sites would now be inundated because of higher sea levels. Regardless of the precise timing of the first occupation of North America, the earliest radiocarbon dates in Florida that are firmly associated with human artifacts come from the Sloth Hole site in Jefferson County (Hemmings 2004) and indicate that Paleoindian people were in Florida by at least 11,000

years BP. These early Native Americans may have been nomadic hunter-gatherers who relied upon Pleistocene megafauna and wild plant foods for their subsistence (Clayton 1983; Dunbar 2006; Webb et al. 1984). However, big-game hunting was not as common in Florida as in other portions of North America because a rich and diverse Florida habitat during the Pleistocene/Holocene transition favored a generalized subsistence strategy (e.g., Dunbar et al. 2005). The Paleoindian tool assemblage contains lanceolate projectile points, blades, bola stones, carinate scrapers, drills, end scrapers, thumbnail scrapers, gouges, and Edgefield scrapers, reflecting a reliance on the hunting and butchering of animals and the use of well-made scraping tools for wood working, hide scraping, and other tasks. Large lanceolate Clovis points and Cumberland, Redstone, Suwannee, and Simpson points are typical diagnostic artifacts of the period (Anderson 1990; Dunbar 2006).

The end of the Paleoindian period coincided with the Younger Dryas climatic event, a cold period that was followed by rapid warming (Anderson and Sassaman 2012:38). Firestone et al. (2007) have suggested that impact from a comet may have caused the cooling associated with the Younger Dryas, but this remains controversial (Anderson and Sassaman 2012:58).

Because the climate during the Paleoindian period was cooler and drier than today's climate, with coastal sea levels and the inland water table as much as 120 meters lower (Carbone 1983; Watts et al. 1996; Watts and Hansen 1988), many archaeologists believe that the paucity of potable water sources played a crucial role in the distribution of Paleoindian groups across the landscape. They hypothesize that human groups frequented sinkholes and springs to collect water and to exploit the flora and fauna that were also attracted to these locations (Dunbar 1991). Many of these freshwater sources were in areas of exposed Tertiary-age limestone that had become silicified, providing people during Paleoindian period with a raw material source (chert) for tool manufacture. Thus, it is thought that permanent freshwater sources (i.e., sinkholes and springs) along with outcrops of high-quality chert were primary factors influencing Paleoindian settlement patterns in Florida. Dunbar and Waller (1983) mapped the distribution of Paleoindian sites, finding that evidence of Paleoindian occupation of west-central Florida from Tampa Bay to the Big Bend is extensive and that Paleoindian sites are highly correlated with freshwater springs and chert outcrops. However, they found no sites of this period in the panhandle region. A more recent survey of Paleoindian projectile point finds indicates that lanceolate points have been found in small numbers in the interior regions of Calhoun (n=13), Jackson (n=24), Okaloosa (n=9), and Walton (n=2) Counties (Paleoindian Database of the Americas 2011). Some Paleoindian sites are likely submerged in offshore locations, drowned by rising sea levels since the late Pleistocene (Faught 2004; Faught and Gusick 2011).

A study conducted by Thulman (2006) examined the distribution of lanceolate forms in Florida, and the results support the hypothesis that Paleoindian groups began to settle into specific river drainages while maintaining social interaction networks with populations living elsewhere. According to this hypothesis, these networks would have enabled Paleoindian groups to rapidly colonize the southeastern United States with small groups of people while maintaining reproductive viability (Anderson 1990; Anderson and Sassaman 2012:50). Thulman's study may

have identified the earliest evidence for regionalization in Florida, which intensified during later periods.

3.1.2 Archaic Period

Around 10,000 years ago, the environment and landscape of Florida underwent pronounced changes associated with the onset of the Holocene. These changes were interconnected and included a gradual warming trend, a rise in sea level, a reduction in the width of peninsular Florida, and the spread of oak-dominated forests and hammocks throughout much of the state (Milanich 1994; Smith 1986). Concomitant with these environmental changes was the extinction of the Pleistocene fauna. Native subsistence strategies became more diverse due to the emergence of new plant, animal, and aquatic species. Also occurring at this time was a significant increase in population numbers and density, with native groups developing regional habitat-specific adaptations and material assemblages (Milanich 1994; Smith 1986:10). As conditions became wetter, coastal, riparian, and lacustrine adaptations became increasingly more common. The Archaic period is typically divided into Early, Middle, and Late sub-periods.

The Early Archaic period (8000–5000 BC) in Florida is marked by small side- and corner-notched projectile points, such as the Bolen type, and by the invention of the spear thrower or atlatl. This increase in subsistence adaptations was due in large part to the physiographic and climatic changes occurring in Florida during this period. The coastal shoreline was about 60 meters below modern levels, and although generally warmer than the terminal Pleistocene, seasonal variation was greater than it is today, with warmer summer temperatures and colder winters. Research at Page-Ladson, an inundated site in the Aucilla River, indicates that the water table in local sinkholes dropped dramatically at the beginning of the Holocene, suggesting drought-like conditions (Dunbar 2002). The duration of the drought has been dated to about three centuries, based on radiometric dates obtained from Page-Ladson (Dunbar 2002:148). Arid conditions may explain why many Early Archaic sites are found in similar locales as earlier Paleoindian sites, near springs and chert sources, although riverine settings also were exploited (Austin and Mitchell 1999). As with the Paleoindian period, many Early Archaic sites are probably located in offshore locations, which were once exposed when sea levels were lower. By 8,500 years ago, the water table was near modern levels (Dunbar 2002; Watts and Hansen 1988).

Early Archaic sites generally are of two types: base camps and smaller extractive stations. The Early Archaic settlement pattern involved seasonal movements of small family-based groups that occupied small short-term camps for part of the year. During the fall, when food was more plentiful, these small groups may have gathered at larger base camps (Bense 1994). Subsistence information for the Early Archaic is limited. Based on preserved plants and animal remains at the Windover site in Brevard County, which date to the latter portion of the Early Archaic, it is presumed that Early Archaic peoples ate a variety of plants and animals, including acorn, hickory, persimmon, prickly pear, maypop, wild plum, wild grape, deer, opossum, rabbit, raccoon, and squirrel (Doran and Dickel 1988; Newsom 2002). Analysis of blood residue on side-notched tools from 8LE02105 in Leon County indicates that they were used to kill or process rabbit and bear

(Hornum et al. 1996). Evidence of bird species, including duck and heron, and fish, including largemouth bass and catfish, also was recovered from Windover (Doran and Dickel 1988).

The Middle Archaic period (5000–3000 BC) coincided with the climatic episode known as the Hypsithermal, a period in which temperatures peaked and rainfall diminished. This sub-period is poorly understood in northwest Florida. Based on research elsewhere, it is presumed that there was a shift to a system of more nucleated floodplain base camps supported by smaller satellite camps. Subsistence strategies likely involved hunting, fishing, and gathering. Middle Archaic sites in the northwest Florida area are relatively rare, and few have been recorded in the area. Artifacts associated with this period include broad-bladed, stemmed projectile points such as the Hardee, Sumter, Alachua, Putnam, and Newnan types; specialized tools such as microliths, burins, and large chopping implements; and an array of expedient tools (Bense 1994).

During the Late Archaic period (3000–1000 BC), the coastal shoreline was near modern levels, the climate was wetter, and conditions became increasingly more similar to the modern environment (Bense 1994). However, perturbations in sea levels and rainfall did occur, which affected local populations (Austin et al. 2013; Mikell and Saunders 2007). Coastal shell middens began to appear, reflecting a greater reliance on marine resources. The projectile point styles that mark the Late Archaic include broad-bladed, stemmed bifaces that are similar to those of the preceding Middle Archaic period. Ground and polished stone tools and ornaments were developed during this period, and steatite cooking vessels were used (Yates 2000). Toward the end of the Late Archaic, around 4,000 years ago, the first ceramic vessels appeared. This pottery, which was tempered with plant fibers, is referred to as Norwood in northwest Florida (Milanich 1994). This pottery is usually undecorated or stick impressed. It was later replaced by a sand-tempered ware, some of which also have stick-impressed designs, which were likely derived from the earlier Norwood pottery (Milanich 1994).

A northwest Florida variant of the Late Archaic termed Elliott's Point appeared around 4,500 years ago and is characterized by the presence of artifacts similar to those found at Poverty Point in Louisiana, such as baked-clay objects, stone microliths, and exotic materials. It has been suggested that these materials indicate interaction with the Lower Mississippi Valley (Thomas and Campbell 1991, 1993). An alternative hypothesis is that materials such as baked-clay objects and microliths are widely distributed in space and time, while exotic materials such as steatite and jasper may have arrived on the northwest gulf coast via long-standing trade routes along the major north-south rivers, such as the Apalachicola and the Escambia (Austin et al. 2013; Sassaman 2010; Yates 2000). Elliott's Point is usually considered a localized expression of the Late Archaic focused around Choctawhatchee Bay; however, excavations at 8ES03427 in Pensacola suggest that the Elliott's Point complex may have extended much farther west (Phillips et al. 2009). Fiber-tempered pottery was adopted by local Elliott's Point groups beginning around 3,000 years ago (Campbell et al. 2004), although it appeared about 900 years earlier in the Apalachicola drainage basin to the east (White 2003).

Although several Elliott's Point sites have been recorded in Santa Rosa, Okaloosa, and Walton Counties, only a few have received extensive excavation. Meig's Pasture (8OK00102) and Bayou

Park (8OK00898) contain arc-shaped midden deposits, and the latter also contains numerous features, including a possible earth oven, smaller hearths, several large storage and/or refuse pits, smaller refuse pits, and postmolds from at least two structures (Austin et al. 2013; Curren 1987). Subsistence remains at the two sites were similar with an emphasis on estuarine resources, particularly oysters, augmented by a variety of fish and terrestrial species such as deer, squirrel, rabbit, turkey, alligator, and gopher tortoise. Elliott's Point occupants at Bayou Park also collected and processed various plants, including coontie, hackberry, wild grasses, and bottle gourd. The presence of this last species is suggestive of incipient horticulture.

3.1.3 Woodland Period

The widespread use of ceramics, the interment of the dead in mounds, and increased regionalization characterize the Woodland period, which began at around 1000 BC and continued until about 1200 AD.

Deptford

Deptford culture flourished in northwest Florida between about 500 BC and AD 200. Milanich and Fairbanks (1980:66) describe the Deptford people as primarily a "coastal dwelling culture" that relied heavily on maritime subsistence strategies. Tesar (1994) suggests that Deptford groups forged a transition between the earlier Late Archaic hunter-gatherers and the later, more complex Swift Creek societies. Deptford villages located on the coast are usually found in conjunction with live oak, magnolia, and palm hammocks located near salt marshes. Interior Deptford is found along lakes and streams where hickory and oak are present. Deptford sites contain plain pottery or ceramics with checked patterns stamped on the exterior of the pot (Milanich 1994). These exterior patterns were produced by impressing or stamping the vessel with carved wooden paddles before firing. These paddled designs have been incorporated into the name of the wares by archaeologists. Deptford ceramics also are marked by a change from fiber-tempering to sand and grit-tempering. Besides check-stamping, surface treatments can be plain, cord-wrapped, brushed, punctated, or malleated, and many have distinctive podal supports (Milanich 1994).

Excavations at two Deptford sites in northwest Florida, Hawkshaw (8ES01287) and Pirate's Bay (8OK00183), have produced much information about Deptford subsistence and settlement (Bense 1985; Thomas and Campbell 1984). Both are coastal sites that provide evidence that Deptford people exploited a wide range of local marine and terrestrial food resources. In addition, trade items from the Lower Mississippi Valley and southern Georgia were recovered from both sites, providing evidence of participation in a far-flung exchange network with neighboring cultures.

An important component of Deptford culture in northwest Florida is a mortuary-ceremonial complex referred to as Yent and originally defined by Sears (1962). The Yent Complex included the inclusion of exotic goods obtained through exchange in mortuary contexts. These exotic items, which included galena, mica, artifacts made of metamorphic rock, and similarities in

ceramic vessel design, may have come to Florida via exchange with Hopewell cultures farther north (Milanich 1994). The Yent Complex appears strongest in the Big Bend region of northwest Florida. Farther east, burial mounds and characteristic Yent Complex artifacts are rare (Milanich 1994). Instead, Deptford people disposed of their dead in graves within or adjacent to their villages (Thomas and Campbell 1993).

Santa Rosa-Swift Creek

The Santa Rosa-Swift Creek culture replaced Deptford throughout northwest Florida, beginning about AD 150, according to Milanich (1994), although Bense (1999) posits that the transition did not occur until about AD 350 in the Pensacola region. It is marked by two ceramic series, Swift Creek and Santa Rosa. It seems that Swift Creek ceramic designs originated in southern Georgia and were subsequently adopted by Deptford people in Florida. Swift Creek pottery exhibits complicated stamped designs consisting of scrolls, concentric circles, teardrops, and spirals. Check stamping also was used by Swift Creek potters. Swift Creek vessel forms include squat bowls and deep cylindrical pots. The replacement of Deptford ceramics by Swift Creek in the Florida panhandle took place over several centuries. Santa Rosa ceramics contains incised, punctated, and rocker-stamped designs and appears to be a continuation of ceramic traditions that originated in the Lower Mississippi Valley.

Santa Rosa-Swift Creek villages were located on the coast and in the interior forests and river valleys throughout the panhandle. Excavations at the Bernath Place midden (8SR00986) in Santa Rosa County and Horseshoe Bayou (8WL00036) in Walton County have provided information about Santa Rosa-Swift Creek subsistence, settlement, and socio-political and religious organization (Bense 1999; Phillips 1992; Thomas et al. 2001). A wide range of local marine and terrestrial food resources were exploited (DeFrance 2001; Ruhl 2000). Mounds for the interment of burials also are common features at Santa Rosa-Swift Creek sites (Milanich 1994).

The socio-religious aspect of this culture has been defined as the Green Point complex (Sears 1962), which had associations with the Hopewell interaction sphere and may have developed from the preceding Yent Complex. Through this exchange network, Santa Rosa-Swift Creek people gained access to exotic items, such as copper, mica, ear spools, and ceramics (Bense 1999). Individuals interred with these materials in burial mounds have been interpreted as high-status people, perhaps socio-religious specialists (Milanich 1994).

Weeden Island/Wakulla

The emergence of Weeden Island cultural attributes in the panhandle of Florida began at about AD 500. Weeden Island has been defined as a religious-ceremonial complex that was adopted by local regional cultures in southern Georgia and Alabama and along the west coast of Florida (Milanich 1994). In northwest Florida, the early Weeden Island period is generally believed to have lasted until about AD 800 and was followed by the Wakulla period to approximately AD 1200 (Milanich 1994).

Early Weeden Island is characterized by the appearance of complicated stamped pottery along with the characteristic Weeden Island pottery decorated with incised and punctated lines (e.g., Carrabelle Incised, Carrabelle Punctated, Keith Incised, and Weeden Island Incised). There appears to be some continuity between Santa Rosa-Swift Creek and Weeden Island occupations. Not only are both cultural expressions found in the same coastal environmental settings, but these cultures exploited similar marine resources. Fish remains include herring, saltwater catfish, sea catfish, jack, porgies, sheepshead, mullet, flounder, bowfin, drum, and gar. Shell middens indicate a preference for oysters, although conch, *Rangia*, and other species also are present. Vertebrate faunal remains include whitetail deer, freshwater turtle, and birds. Acorns and hickory nuts were collected, as were various plant species, such as yaupon, wild grape, palmetto shoots, and gallberry.

Mortuary ceremonialism reached its peak during early Weeden Island times. Ornately decorated ceramics and those shaped as stylized designs or animal effigies were interred in burial mounds, often on the mounds' east side (Milanich and Fairbanks 1980). Early Weeden Island villages also appear to have been arranged in circular patterns as evidenced by several "ring" sites that were identified on Tyndall AFB (Russo et al. 2009).

Late Weeden Island (AD 80–1200) is identified by the presence of check-stamped and cob-marked pottery and is referred to as Wakulla Weeden Island (Milanich 1994). Wakulla sites are located on the coast and in the interior of the panhandle, as well as in southwest Georgia and southeast Alabama. Maize agriculture was adopted in the panhandle during the Wakulla period (Milanich 1994). The higher frequency of sites and the use of previously uninhabited environments suggest a larger population during the Wakulla period. Wakulla sites also are located on soils not previously preferred by Weeden Island groups. Tesar (1980) suggests that Wakulla people selected home sites based on soils more suitable for agriculture. The nucleated villages and mound centers that were characteristic of early Weeden Island were absent during the late Weeden Island period. Percy and Brose (1974) suggest that settlement was in single-family groups, a trend that ultimately led to population pressure as soils became exhausted by agriculture.

3.1.4 Mississippian Period

Cultural influences emanating from the Mississippi Bottoms began to appear in northwest Florida around 800 years ago. These included maize agriculture, shell-tempered pottery, institutionalized social inequality, a chiefdom level of political organization, and participation in long-distance exchange relations that involved the movement of exotic items and religious iconography throughout the Southeast (Ashley and White 2012). However, these influences were not adopted uniformly, and two regional cultures are recognized for this period, Apalachicola-Fort Walton and Pensacola.

Apalachicola-Fort Walton

The Fort Walton culture was centered in the Red Hills surrounding modern Tallahassee and extended west to the Apalachicola River. It was only in the Red Hills, however, that most of the trappings of the wider Mississippian phenomenon, including maize agriculture, were adopted. In the Apalachicola River Basin, there is limited evidence of maize, few large mound centers, and no evidence for complex chiefdoms (White et al. 2012). The lower river basin is low-lying and swampy, offering little opportunity for growing crops but providing abundant aquatic resources. Shell middens are common along the river and in coastal settings.

Apalachicola-Fort Walton is believed to have developed directly out of the preceding Weeden Island-Wakulla culture about 1,200 to 1,000 years ago based on similarities in ceramic form, temper, and decoration. Ceramics include most of the diagnostic Fort Walton types, including Lake Jackson Plain and Incised, Cool Branch Incised, Point Washington Incised, and Marsh Island Incised. The pottery is tempered primarily with grit with lesser amounts of sand or grog (pieces of fired clay). Shell tempering is rare.

White et al. (2012) document four mound centers, which include Yon (8LI00002), Cayson (8CA00002), Pierce (8FR00014), and Chattahoochee Landing (8GD00004), distributed along the length of the river. A few burial mounds and at least one cemetery (8JA00007) also are known. The only possible evidence for palisades or embankments is at Waddell's Mill Pond (8JA00065; Gardner 1966), although White et al. (2012) raise doubts about its function and temporal association. A rectangular structure at Waddell's Mill Pond was interpreted as a town house by Tesar and Jones (2009).

Pensacola

The Pensacola variant of the Fort Walton culture evolved in place out of the preceding Wakulla Weeden Island culture and was influenced by cultural developments in Alabama (Milanich 1994). These contacts brought new ideas to the indigenous population for organizing increasingly larger societies and for developing more intensive and efficient agriculture. The culture was identified originally in the Mobile Bay area in Alabama (Fuller 1985; Stowe 1985) where two phases were defined: Bottle Creek (AD 1200–1450) and Bear Point (AD 1450–1700). Pensacola was considered to lack many of the key ingredients of Mississippianism, but excavations at the Bottle Creek site identified maize, numerous mounds, plazas, and middens, all dating between AD 1250 and 1550 (Brown 2003).

Shell-tempered pottery is the diagnostic ware for Pensacola sites, and it is found throughout southern Alabama and the Florida panhandle as far as the Apalachicola River. Its proportional representation, however, decreases the farther east one goes. There is an area of overlap between Mobile Bay and Apalachicola Bay where shell-tempered Pensacola Series pottery and grit-tempered Fort Walton Series pottery occur, which has caused confusion in determining cultural relationships. Harris (2012) has suggested that this area may represent a third, as yet

unnamed, regional variant along the Gulf Coast, which shared few characteristics with the core regions to the west and east.

Despite northern influences, the coastal Pensacola culture continued the earlier Weeden Island settlement pattern and subsistence system, and the Pensacola culture's political system does not appear to have been as complex (Harris 2012; Payne 1991). Settlements were located in coastal hammocks with smaller satellite camps in coastal and upland environments. Hunting, gathering, and fishing were the primary sources of subsistence, and agriculture may not have been as important as during the earlier Wakulla Weeden Island period. There also appears to be fewer ceremonial sites with mounds in the coastal zone occupied by the Pensacola culture when compared to areas to the north and east (e.g., Bottle Creek and Moundville in Alabama and Lake Jackson in Tallahassee). This lack of mounds may reflect the lower agricultural production potential of the coastal soils; greater dependence on hunting, gathering, and fishing; lower population densities; and consequently, less support of a chiefly ruling class.

Although there were fewer mounds than in Weeden Island times, there is some evidence of mound centers, particularly in the Choctawhatchee Bay region. The most impressive example is the Fort Walton Temple Mound (8OK00006), a large platform mound that is the type site of the Fort Walton culture, although it is more likely to have been a regional center for the Pensacola culture. The mound is associated with an adjacent village midden. The site has been the subject of several investigations that have produced evidence of multiple burials, shell and bone tools, shellfish, and vertebrate fauna, lithics, and mica (Fairbanks 1965; Lazarus and Fornaro 1975).

The Apalachee, who inhabited the Tallahassee area in the sixteenth century when Spanish explorers Pánfilo de Narváez and Hernando de Soto arrived, were probably the historic descendants of the Fort Walton culture (Payne and Scarry 1998). The Apalachee immediately began dying off as a result of contact with European diseases and were replaced by native groups from the north who brought a distinctive type of pottery known as Lamar (White et al. 2012). The evidence for Lamar occupation of the Apalachicola region is scant, and it is possible that without direct Spanish contact, the local Fort Walton populations continued practicing their traditions well into the seventeenth or eighteenth centuries.

3.2 POST-CONTACT HISTORY

After ruthlessly installing Spanish power in Puerto Rico, Ponce de León's ships reached the Cape Canaveral area in Brevard County on the east coast of Florida in 1513. Claiming the land for Spain and naming it "La Florida" because it was sighted during the *Pascua Florida*, or Feast of Flowers, de León then sailed southward through the Keys and up the western coast of Florida before returning to Puerto Rico. Seven years later in 1521, de León journeyed again to Florida with intent to establish a stronger foothold, but American Indians in the lower Gulf Coast strongly resisted his attempt to disembark. Gravely wounded by an arrow, de León canceled the expedition and returned to Cuba where he died (Gannon 1965:2—3; Milanich 1995:107-108).

Several years after the failed de León expedition, Panfilo de Narváez organized a new attempt to explore and settle this land. Landing on the north side of Tampa Bay, Narváez trekked northward as his soldiers attacked native villages and stole food stores along their way. The expedition reached the Apalachee region, which contains today's Jefferson, Leon, and Wakulla Counties, but continued conflict with Native Americans and navigational confusion stifled their efforts. The specific route of the Narváez expedition is uncertain despite the detailed account left by a surviving member, Álvar Núñez Cabeza de Vaca. Cabeza de Vaca's writings seem to indicate that members of the expedition explored the Apalachicola River valley, bringing them into this region of northwest Florida (Núñez Cabeza de Vaca 1999[1542]).

Next came Hernando de Soto, a veteran of the brutal Spanish conquests in Central and South America, who held a charter to conquer this land and focused on collecting gold and silver. Making landfall in the Tampa Bay region, he pushed northward through the peninsula and mercilessly dealt with the native peoples he encountered. As the expedition neared the present-day Georgia border, it turned westward into a region occupied by the Apalachee. De Soto and his men occupied the Apalachee capital, Anhaica, in present-day Tallahassee, from October 1539 until March 1540. The expedition then turned north and ultimately westward, exploring much of the present-day southeastern United States. While the De Soto expedition apparently did not travel into Florida land west of Leon County, American Indian groups in this region felt the impact of war, disease, and enslavement led by the Spanish (Milanich and Hudson 1993).

In northwest Florida, a legacy of the Spanish and British colonial periods was closer contact with Native Americans through missions and trade networks, as well as a gradual rise in frontier violence. The latter part of the sixteenth century witnessed the expansion of Spanish presence across northern Florida. Between the years 1565 and 1704, Spanish priests established over 100 missions. The missions, which radiated outward from St. Augustine to the Tallahassee area, became loci for interactions between the Spanish and the Native Americans of Florida. They also served as a source of much needed labor for the Spanish, who forced native people to cultivate crops and haul them into the major location of Spanish population at St. Augustine. The Spanish operated Mission San Luis as the capital of the Apalachee region (Milanich 1995; Milanich 1999).

In the late sixteenth and through the seventeenth century, antagonism between the Spanish in Florida and the English in neighboring Georgia and South Carolina increased. English slave raiders preyed upon the missions, enslaving Native Americans while destroying and looting mission sites. Several times, the English mounted invasions to try to take control of Florida. Reliant on the missions for agricultural labor, the Spanish retaliated by sending war parties northward into Georgia. By thus period, foreign diseases had begun to decimate the Native Americans who encountered Europeans, contributing to massive population loss across Florida. Finally, James Moore, English Governor of South Carolina, attacked the Spanish and the missions of northern Florida with a force of Creeks and Englishmen in 1702 and again in 1704. The latter attack struck at the heart of the Apalachee missions, and the mission system never recovered (Gannon 1965:74-83)

After many decades of struggling to spread influence and control over Florida, Spain surrendered the colony to Great Britain in 1763 as the French and Indian War ended. Great Britain encouraged the development of a plantation-style economy in Florida, which was fairly successful in the northwestern parts of the territory. The British also grew their geographical knowledge of Florida as they commissioned a detailed survey of the coast of the colony. The British also developed extensive trade networks with various Native American groups across the Southeast (Coker and Watson 1986; Schafer 2010; Ware 1982). During the British Period (1763-1784), Florida was divided into two provinces: East and West Florida. The border of the two was the Apalachicola River, placing present-day Leon, Liberty, and Wakulla counties in East Florida, the capital of which was far away St. Augustine, and today's Calhoun, Jackson, Walton, and Washington counties in West Florida. The Apalachicola River was an important landmark as the site of several trading posts, as a transportation corridor, and as the location of numerous Lower Creek towns in this period. Through trade, the British became familiar with the region to an extent unforeseen by the Spanish (Coker and Watson 1986:321; Romans 1999 [1775]).

As war and disease decimated the Native American population in Florida, Creeks from Georgia and the Carolinas migrated into the area; in Florida, these various bands became collectively known as the Seminoles (Fernald and Purdum 1992). The Seminoles established permanent towns from the Apalachicola River to the St. Johns River. Working within the British trading system, Seminoles traded deer, wild cattle, and furs in exchange for guns, iron tools, cloth and a variety of ornamental jewelry (Fairbanks 1973). During this time, enslaved Black people from the Carolina colonies fled to Florida and sought refuge either in a Black colony outside St. Augustine or in the Seminole settlements in the interior of the colony. The Seminoles helped the refugees form their own settlements, and often prevented them from being re-enslaved (Fairbanks 1973).

The American colonies declared their independence from British rule in 1776. Georgia and South Carolina required their citizens to take a strict oath of loyalty to the causes of the American colonies, thus forcing many British loyalists to seek shelter in British East Florida (Wright 1975). In 1783, the Treaty of Paris ended the American Revolution and returned control of Florida to Spain. During the Second Spanish period, Spain continued the British system of negotiating with the Seminoles through trade and supply. Rum became a common trade good, and credit was extended to the Seminoles. Seminole land was often accepted as payment. At the same time, the Seminoles' friendly manner toward enslaved people who escaped continued to anger the slaveholders of Georgia, Alabama, South Carolina, and Mississippi (Fairbanks 1973).

Clashes between Euro-American settlers residing along Florida's northern border and Seminoles occurred with increasing frequency during the first decade of the nineteenth century. Border incidents resulting in the loss of American lives led to the appointment of General Andrew Jackson as head of an effort to bring the Seminoles under control. The result was the First Seminole War. General Andrew Jackson, known to the Seminoles as "Sharp Knife," invaded Seminole territory in Spanish Florida and destroyed Seminole towns. In March of 1818, Jackson led a force of 3,500 men, the majority of whom were Creek warriors, against the Seminoles. Jackson's forces quickly swept across northwest Florida and captured the area from St. Marks to Pensacola within five months. In August of 1818, to stabilize diplomatic relations with Spain, the

United States returned lands captured by Jackson. However, by 1819, a treaty of cessation was arranged between the United States and Spain followed, by another treaty making Florida a territory of the United States, when ratified on February 22, 1821 (Ellis and Rogers 1999:24).

Jackson was appointed Governor and organized the Territory of Florida into two counties, Escambia and St. Johns (Tebeau 1971). The First Seminole War ended with the Treaty of Moultrie Creek in 1823, which stipulated that all Native Americans in Florida move onto a reservation in the middle of the state. Most of the state's white population resided in the northern half of Florida, leaving much of the central and southern half of the state bereft of homesteaders. Because of the Treaty of Moultrie Creek, the Native American village of Tallahassee was abandoned and was subsequently chosen as the seat of the US territorial government (Ellis and Rogers 1999:35). By 1830, nine years after becoming a territory, 34,730 people called Florida home (Andriot 1993:96). During the territorial period, the two large counties divided to created numerous new counties, including Jackson (1822), Leon (1824), Walton (1824), Washington (1825), Calhoun (1838), and Wakulla (1843) (Map of US 2023).

Migration into the region increased greatly after Florida became a US territory and continued throughout the first half of the nineteenth century. Many of these migrants came from other states in the US South and brought enslaved Black laborers along with them. The fertile soils bordering the numerous rivers and waterways made for a very profitable farming economy. By the antebellum era, large-scale, plantation-style farms produced cotton, sugar, and tobacco (Baptist 2002). Portions of Leon and Jackson counties, along with Gadsden, Jefferson, and Madison constituted Florida's cotton belt (Paisley 1968:2). In addition to agriculture, incoming migrants made use of the vast forests of northwest Florida, with the timber and sawmill industries growing rapidly during the territorial and early statehood periods. The creation of sawmills often led to the development of new communities (Florida Natural Areas Inventory [FNAI] 2005). On March 3, 1845, Florida Territory became a state despite its meager population and undeveloped status (Almy and Horvath 1999:3-4). In 1855, Liberty County was formed from the southern part of Gadsden County (Map of US 2023).

Action on both land and sea was limited in Florida during the Civil War, though Union forces raided and occupied Florida coastal communities frequently. In a blockaded south where supplies were difficult to obtain, the Confederate Impressment Act collected food supplies from Floridians that were stored in warehouse depots throughout the state. Despite these depots, there were few military objectives in the interior to draw attention, and no Union invasion occurred until 1864 (Tebeau 1971). Confederate troops retained control of Florida's interior until the end of the war. In late February and early March of 1865, Federal troops landed and attempted to extricate Confederate soldiers stationed at the St. Marks fort. A decisive battle occurred at Natural Bridge, in a swampy area in Leon County, where the Confederates repulsed two Union charges (Ellis and Rogers 1999). On April 9, 1865, General Lee surrendered his forces at Appomattox, and Union forces occupied Tallahassee on May 20, 1865. The Civil War disrupted the local plantation economy, and many large planters left the region or the state. Formerly enslaved people continued to work the plantation fields, compensated through a wage labor system that evolved into a sharecropping (Paisley 1989). Sharecropping resulted in African Americans renting tracts

on former plantations, indebted from the start for tools and other items. At the end of the year, many renters remained in debt that was carried over to the next year, creating a cycle that was very difficult to end (Paisley 1968).

In the late nineteenth century, a tourism industry began to grow in Florida, including areas of the panhandle. Florida was often seen as an untouched land, bringing northern explorers to the rivers and forests of the state. Promoters touted the climate of Florida for both vacationing and healing purposes. Mineral springs and baths promised additional health benefits, and many entrepreneurial residents built hotels and other facilities to further entice visitors (Proctor 1996). While agriculture continued to play a large role in the economies of northwestern Florida counties, a burgeoning naval stores and timber industries also grew rapidly. This area of the state had a reputation for many years for its abundant yellow pine forests, which supported the growth of a naval stores industry. The industry relied largely upon Black laborers to collect the raw material from the trees for processing into turpentine. Naval stores communities, which usually consisted of crude laborer shacks, distilleries, and company stores, sprung up in the backwoods of numerous counties in Florida (Blount 1993; Drobney 1997).

The construction of railroads in the late nineteenth and early twentieth centuries helped connect the small and disjointed communities of the Florida panhandle to town centers and shipping points within the state and the rest of the country. The Pensacola & Atlantic Railroad crossed through the entire region, connecting Pensacola with the central and Atlantic Coast communities in Florida, as well as with the Louisville & Nashville Railroad which connected with national network of rails. In some cases, the railroad lines brought additional resources to preexisting towns, while other communities developed along the routes. In the early twentieth century, the growing popularity of the automobile led to the development of a state highway system, which often followed similar routes and brought additional access and growth to small communities (Turner 2008).

The buildup in preparation for World War II brought numerous military facilities to Florida, and the largely open lands of northwestern Florida provided the space necessary to establish training and stationing bases, some of which continue to operate today. The increasing number of servicemen stationed there also aided Florida's economy, and many small towns and cities in the panhandle benefitted from the economic growth and jobs brought by the military (Mormino 1996). The postwar period saw a further increase in the tourism industry, especially the beaches that lined most of the state. Coastal communities especially saw an increase in seasonal visitation, though vacation travel to many parts of the state increased rapidly (Mormino 2008). Today, much of the northwestern portions of Florida remains rural with tourism, agriculture, lumber, transportation, education, and construction playing major roles in the economies of panhandle counties.

3.2.1 Historic Towns

Altha

Little development occurred in Altha until the early twentieth century. A pioneer Florida family, the Richards, emigrated from Virginia in the early 1800s, and several generations of Richards served in military conflicts in the state beginning with the First Seminole War. Richards family members worked as soldiers and interpreters, coordinating treaty efforts that removed Native Americans and made way for white settlement. The family also built several early churches throughout the Florida panhandle, including houses of worship in Chipola, Vernon, and Wewahitchka. In 1876, Daniel Thomas Richards and his sons built a log church near present-day Altha. In 1899, one of the sons, Martin L. Richards, bought land and platted the town (Historical Marker Database 2003a, 2003b). His wife, Lula Mozelle Cannon Richards, served as the first postmistress and named the town, purportedly calling it Altha after searching through postal guides looking for a unique name. Local residents built a new Altha Methodist Church in 1908 that served the area until the 1970s (Historical Marker Database 2003a; Morris 1995).

In 1910, the completion of the Marianna & Blountstown Railroad, which passed through Altha, linked Calhoun County with larger railroad networks in the state and nation. This line was largely used for hauling timber and supported passenger service before the popularity of the automobile (*Pensacola News Journal* 24 Feb 1910:2). In 1915, a total of 300 people lived in Altha, 296 of whom were white, and just over 1,100 people lived in Precinct 11 within the vicinity of the town (State of Florida 1915). The 1925 Florida Census only included the population of the entire precinct, which had grown by 46 residents to 1,148 (State of Florida 1925). Residents erected a high school in Altha in 1926; the facility included 16 classrooms and an auditorium. The Public Works Administration renovated the school in 1939, and additional renovations occurred in the early 1990s (State Library and Archives of Florida 1928). The population of Altha shrank to 217 in 1935, with 921 in the precinct, but the latter number grew to 1,157 in 1945 and included 8 Black residents (State of Florida 1935, 1945). A list of local businesses in 1935 indicates that the economy revolved around lumber and agriculture (Florida State Chamber of Commerce and Florida Emergency Relief Administration 1935:64). This changed little over the course of the late twentieth and early twenty-first centuries, with farming and logging continuing to play a role in the economy, supplemented by a growing prison system. Between 500 and 700 residents lived in Altha in 2019 (Burlew 2019).

Eucheeanna

The community of Eucheeanna developed in the early nineteenth century and served as the county seat of Walton County from 1845 to 1886. The name is likely a reference to the Yuchi tribe of Native Americans, which has historically also been written as Uchee or Euchee. The town was settled by people of Scottish descent who came to Florida by way of North Carolina. In 1820, Neil McLendon (also referred to as McClendon and McLennan) visited the Euchee Valley and met with a Yuchi chief known by the English name, Sam Story. McLendon was said to be overwhelmed by the beauty of the area and the kindness of the Yuchi that he chose to stay, writing to encourage

friends and family to join (McKinnon 1911:13—21; McLeod 2006:18—19). Soon, a colony of Scottish families developed on this land, including McLendon's associates Colonel John L. McKinnon, who later served as Walton County's surveyor, and Donald McLean, a Presbyterian Church leader (Walton County Heritage Association 2019, 2022). In 1824, Walton County was created as part of the Florida Territory, with the settlement of Eucheeanna within its boundaries (McLeod 2006:18). The new settlers established businesses and community institutions soon after relocating. In 1827, Donald McLean helped form and served as an elder for one of the first Presbyterian churches in the Florida Territory. The Euchee Valley Presbyterian Church first served fifteen pioneer families; the associated cemetery includes the remains of many pioneer settlers, including signers of Florida's constitution, veterans, and local political, civic, and religious leaders (Historical Marker Database 2012; Walton County Heritage Association 2019).

At its peak, the town boasted general stores, social halls, a school, a courthouse, a sawmill, and a grist mill (Walton County Florida n.d.). The growth of the settlement was apparent when Eucheeanna became the seat of Walton County in 1845, the same year Florida became a state (McLeod 2006:18—19). In the following decades, several events stifled development in the community. During the Civil War, Federal troops raided the community as it marched through. In the 1880s, the Pensacola & Atlantic constructed its railroad through DeFuniak Springs; soon after, a fire destroyed the county courthouse at Eucheeanna, including many early records, and the county seat was moved to DeFuniak Springs in 1885 (McLeod 2006:18—19). Many of the families who remained in the late nineteenth and early twentieth century worked as farmers to support themselves (McKeon 2017). In 1905, Eucheeanna had a population of 789, which dwindled to 567 in 1945 (State of Florida 1906, 1915). Few additional remnants of the former community exist today (McKeon 2017).

Medart

Early settlers of Medart came from New England, including James W. Smith of Pawtucket, Rhode Island around 1843. Though an abolitionist in the north, Smith built a plantation home and enslaved 22 laborers on his property. In 1850, he served in the state legislature for Wakulla County (McCarthy 2007:284). George W. Tully moved his sawmill from Crawfordville to "the wilds" of Medart in 1892, building a small house for he and his sons to live in while working the mill. This home was moved to Crawfordville as part of a county heritage museum in 2014 (Wakulla County Historical Society n.d.). The first post office for the town opened in 1894 and closed in 1908 (Gallagher 1997:186). In 1905, 600 people lived in the Medart precinct, which grew to 1,275 in 1915 (State of Florida 1906, 1915). This number dropped back down to 646 in 1925, growing very slightly to 656 in 1935, and dropping again to 645 in 1945 (State of Florida 1925, 1935, 1945). In 1920, Bernard Pigott opened a general and grocery store, which continued to operate until the early twenty-first century (Page 2001:121).

Panacea

Though it was a populated area before the late nineteenth century, Panacea was put on the map in the 1890s by W.C. Tully. Tully constructed many of the important buildings in the area, building

the post office, housing, and the Panacea Mineral Springs Hotel. Like the former county seat at Newport, Panacea's mineral springs were touted for their healing properties, and visitors came from all over the country to visit the area. The town and the accommodations that Tully constructed (which housed 125 visitors) were quite popular in the first decades on the twentieth century. Unfortunately, Tully's hotel burned down in the 1920s. During this period of increased attraction, more facilities were constructed to draw northern visitors to the springs. Water from the various springs was also marketed and sold (Page 2001). In the 1940s, various military training installations in neighboring counties allowed Panacea and Wakulla County more broadly to prosper from the influx of new people. Business growth during this period included several restaurants. However, Wakulla's status as a dry county forced some business owners to get creative; for example, the Bridge Café and Bar was constructed on stilts offshore to escape the regulations. Wakulla's location also made it ideal for seafood restaurants and related businesses, including Metcalf and Son fishery and restaurant, built in 1952 (Page 2001:70).

Rock Bluff

Eleven families settled Rock Bluff on the east side of the Apalachicola River in 1857, two years after the creation of Liberty County. The community opened its first post office in 1867 with Mrs. N. Jackson as the postmistress (Gallagher 1997:107; Works Progress Administration [WPA] ca. 1939:2). By the mid-1880s, around 60 to 80 families received mail at Rock Bluff. The community served as a stop for steamboat traffic on the river, which helped connect it to the state's growing railroad routes. Two churches, one Baptist and one Methodist, existed in the late nineteenth century (Webb 1885:70). Black residents were more than 70 percent of the 850 total people listed in the Rock Bluff precinct on the Florida state census in 1905 (State of Florida 1906). The overall population of the precinct fell to 720 with 468 Black residents (65 percent) in 1915, dropped to 548 total with 311 Black residents (57 percent) in 1925, rose to 650 total with 369 Black residents (57 percent) in 1935, and again dropped to 491 total with 327 Black residents (67 percent) in 1945 (State of Florida 1915, 1925, 1935, 1945). In the 1930s, the Civilian Conservation Corps (CCC) worked to develop Torreya State Park, including construction of a stone bridge near Rock Bluff, which is today also recognized as a State Geological Site (Florida Department of Environmental Protection 2022, 2023; State Library and Archives of Florida 2001). A 1930s history of Rock Bluff described it as having "no business interests" (WPA ca. 1939:2).

Sink Creek

Few details were discovered on the history of Sink Creek in Jackson County, Florida. The community appears to have developed in the early twentieth century as transportation routes—including the Marianna & Blountstown Railroad and state highways—connected the county center at Marianna to outlying areas (FNAI 2005; Florida State Road Department 1917). The first post office opened in 1919 and closed by 1925 (Gallagher 1997:88). In 1925, local residents established the Sink Creek Church, affiliated with the Church of Jesus Christ of Latter-Day Saints (WPA 1938a). The community was not listed by name in the Florida State Census records from 1905 to 1945. A cemetery for Sink Creek holds the remains of 178 people, though only three of these individuals died before 1900 (Find A Grave 2023).

Sopchoppy

The settlement of Sopchoppy dates to the Antebellum period, with the first post office opening in 1848 (Gallagher 1997:187). Before 1855, people from North and South Carolina immigrated to the area, drawn by the abundance of land available for stock raising and agricultural pursuits (Webb 1885:112). Sopchoppy Methodist Church appears to be the first church constructed in Sopchoppy, built in 1850 (WPA 1937). A Baptist church was added in 1853, as well as a Primitive Baptist church in 1870; the first Black church, Oak Grove Methodist Church, was established in 1880 (WPA 1938b, 1938c, 1939). In 1860, the population stood at 200; by 1884, 250 people lived in Sopchoppy, making it the largest settlement in Wakulla County (Webb 1885:112; WPA 1942:6—7). However, many accounts of the town's history indicate the 1890s as its founding period; between 1891 and 1895, the town was platted and a depot station built in anticipation of its first railroad line, the Georgia, Florida, & Alabama Railroad (FNAI 2005b). The platted town was located east of the original settlement (Quigg and Jones 2001:8-1). Additional developments in the 1890s included a telegraph line and a Masonic building (State Library and Archives of Florida ca. 1890; WTXL 2016). By the turn of the century, Sopchoppy was home to many businesses and civic ventures, including hotels and boarding houses, a drug store, barbershop, bakeries, a blacksmith, and an opera house (Quigg and Jones 2001:8-1).

The additional development of the late nineteenth century brought increases to the population; in 1915, 544 total residents lived in the Sopchoppy precinct, while 150 were listed as residents of the town. About 82 percent of the population was listed as white. By 1925, the precinct included 1,196 residents with 1,147 counted in 1935 and 1,264 in 1945; during these periods, white residents made up at least two-thirds of the population (State of Florida 1915, 1925, 1935, 1945). In 1924, construction began on the county's first high school, located in Sopchoppy. Though numerous one-room classrooms existed before this, none included a large enough enrollment for accreditation. The Sopchoppy School was accredited in 1928. The WPA completed additions on the school in the 1930s, including limestone exteriors indicative of Spanish Mission architecture. New construction to the school also took place in the 1940s and 1950s, and the school is currently listed on the NRHP (Quigg and Jones 2001:8-1—8-4). Beginning in the 1970s, Sopchoppy became known for its Worm Gruntin' Festival, a reference to the means of extracting fishing worms from the soil (Hunt 2003:40).

Vernon

The settlement of Vernon dates to the 1820s soon after the US took control of the territory from Spain. Some of the earliest settlers were Methodist missionaries who established a mission site and schoolhouse in the early 1820s near Moss Hill. Stephen J. Roche also established a trading post along Holmes Creek in the 1820s; growth around this post led to the development of Vernon. The Florida Legislature created Washington County soon after in 1825. Vernon was named the new county seat in 1851 as a result of its position on Holmes Creek and along a military road. Connected to water and stagecoach routes, Vernon became integral to shipping and travel in the Holmes Valley and provided a stopover between Tallahassee and Pensacola. Also in 1851, the first post office for the settlement began operation. In 1857, a new Methodist church was erected

at Moss Hill and is today listed on the NRHP as an example of frontier architecture and for its role in the development of West Florida (Carswell and Paarlberg 1983:8-1; Gallagher 1997:192; Historical Marker Database 2016).

The development of the Pensacola & Atlantic Railroad in the 1880s led to an eventual decline in Vernon, as the line was constructed north of the town. In 1885, Wanton S. Webb described the town in two sentences as "the count-seat ... situated on Holmes Creek, a branch of the Choctawhatchee. It has three stores" (Webb 1885:114). However, the population remained large at the tun of the century, with 1,435 citizens in the Vernon precinct in 1905 (State of Florida 1906). Though the numbers began to decline, 1,273 people still lived within the vicinity of Vernon in 1925 (State of Florida 1925). In 1927, the county seat moved from Vernon to Chipley, which had grown in the northern portion of the county due to its position along the railroad line. A school for Vernon's white students was built in 1931, and the Shady Grove Elementary School for African American Children opened in 1953. After desegregation came to Washington County in 1965, the county closed the latter school and moved some of the facilities for use in a new, desegregated elementary school (Historical Marker Database 2022a, 2022b).

Wausau

West of Vernon and without the added benefit of a waterway, Wausau did not develop as a community until the end of the nineteenth century. John B. Glen built the first store in the area in 1889, which served as the impetus for the community's development. The community likely got its name from the town in Wisconsin where Glen had spent his childhood. Glen also served as the first postmaster, with the Wausau office opened in 1892 (Washington County Historical Society 2011). Local citizens built a Baptist church in 1889, a Methodist church in 1895, and a Pentecostal Holiness church in 1915 (WPA 1941a, 1941b, 1941c). Just over 800 people lived in the Wausau vicinity by 1905, a number that climbed over 1,000 in 1915. This grew to 973 in 1925, still larger to 1,177 residents in 1935, and fell to 818 in 1945. The population during this period was at least 80 percent white (State of Florida 1905, 1915, 1925, 1935, 1945). Wausau was first incorporated in 1963, and in the 1980s, the town gained a reputation for its monument to the possum, which grew into an annual Possum Festival (Friend and Keatley 2018; Washington County Historical Society 2011).

4 FINDINGS

According to the FMSF database, the study area includes 1,556 previously recorded cultural resources, including 1,030 archaeological sites, 476 structures, 29 cemeteries, 13 resource groups (including districts, landscapes, and linear resources), and eight bridges. The full inventory of resources in included in Appendix A. These resources span the breadth of archaeological and historical contexts for northwest Florida described in the previous section. The following sections provide overviews of each of the resource categories present within the FMSF database, focusing on those that are NRHP-listed, eligible for listing, or unevaluated and those that have attributes most likely to be affected by the proposed project. These specific resources are included in tables below, and they are depicted on maps in Appendix B.

4.1 ARCHAEOLOGICAL SITES

The FMSF database includes 1,030 previously recorded archaeological sites within the study area. One archaeological site is listed in the NRHP, 17 have been evaluated as eligible for listing, 310 are not eligible for listing, and 702 have not been evaluated for eligibility. As described above, the anticipated effects of the proposed IR-096 to cultural resources are limited to temporary visual, audible, or vibratory interruptions to the setting and feeling of these resources. Most archaeological sites, consisting of scattered remains on or below the ground surface, already lack integrity of setting and feeling. However, setting and feeling can be important aspects of integrity for archaeological sites with aboveground structural features or landscape elements such as mounds or earthworks (Little et al. 2000:36). The 720 sites that are listed, eligible for listing, or which have not been evaluated for NRHP eligibility were reviewed to identify those that potentially include these types of attributes. This review identified 25 sites, which are discussed in more detail below. The 310 sites previously found to be ineligible for listing in the NRHP presumably lack integrity, significant historical associations, or information potential and therefore any impacts to these sites are not likely to be significant.

Table 2 summarizes the 25 archaeological sites that are NRHP-listed, eligible for listing, or have been evaluated and which also feature aboveground components or landscape features. Of these 25 sites, 11 are pre-contact Native American mounds, one is a historic-period earthwork, and the remaining 13 are the aboveground remains of houses, mills, or other structures. The precontact Native American Yent Mound (8FR00005) is listed on the NRHP, and the twentieth-century Bradwell Game Farm Historic Site (8LI00414) has been evaluated as eligible for listing in the NRHP. The remaining 23 archaeological sites have not been evaluated for NRHP eligibility.

In addition to considerations of NRHP eligibility, certain types of archaeological sites may be culturally significant in other ways that are more likely to be impacted. Precontact mound sites may have ceremonial or religious significance to descendant Native Americans, particularly if they are known to contain burials. Such sites, characterized by their relative visibility on the landscape, may also serve to increase public awareness of Native American history and archaeology, and are sometimes incorporated into educational programs or maintained as public

parks and greenspaces. The religious, ceremonial, and public contexts of these types of sites would be subject to the direct visual, audible, and vibratory effects of the proposed project. Additional information would be needed to determine if any of the aboveground archaeological sites below IR-096 are in fact utilized in a public or ceremonial manner and the degree to which the visual, audible, or vibratory effects of testing and training along IR-096 would be perceived as disruptions. If such disruptions occur, they could also have the indirect effect of dissuading continued use of these sites for public, educational, or ceremonial purposes. Such changes to the public context of these sites may also lead to cumulative effects such as a lack of maintenance or long-term preservation measures for these sites.

Table 1. Archaeological Sites with Aboveground or Landscape Features.

Site	Site Name	Site Type	Components Present	NRHP Status
CA00005	Atkin's Landing	Pre-contact mound	Unknown Native American	Not evaluated
FR00004	Tucker	Pre-contact mound	Deptford– Weeden Island I/II (700 BC–AD 1000)	Not evaluated
FR00005	Yent Mound	Pre-contact burial mound	Deptford–Swift Creek (700 BC–AD 450)	Listed
LI00005	Mound near Rock Bluff Landing	Pre-contact burial mound	Swift Creek–Weeden Island (300 BCE–AD 1000)	Not evaluated
LI00073	Old Miles Place	House	Nineteenth century American–twentieth century (1821–1999)	Not evaluated
LI00074	Old Phillips Place	House	Nineteenth century American–twentieth century (1821–1999)	Not evaluated
LI00334	Confederate Gun Pits	Earthworks	American Civil War (1861–1865)	Not evaluated
LI00414	Bradwell Game Farm Historic Site	Above ground building remains; post-contact burials	Twentieth century (1900–1999)	Eligible
LI00551	Scott's Mill	Above ground building remains	Unknown post-contact	Not evaluated
LI00563	Rock Bluff Black Public School	Above ground building remains	Twentieth century (1900–1999)	Not evaluated
WA00001	Marsh Island	Pre-contact burial mound	Weeden Island–Ft. Walton (AD 450–1500)	Not evaluated
WA00005	Spring Creek	Pre-contact mound	Santa Rosa, Swift Creek	Not evaluated
WA00028	Old Creek Mound	Pre-contact mound	Weeden Island–Ft. Walton (AD 450–1500)	Not evaluated
WA00177	USFS 80-5	House	Twentieth century (1900–1999)	Not evaluated
WL00088	Neal Mound	Pre-contact mound	Weeden Island (AD 450–1000)	Not evaluated
WL00889	German Mill	Grist mill	Nineteenth century–twentieth century (1800–1999)	Not evaluated
WL01574	McLeod's Mill	Mill	Statehood and Antebellum (1845–1860)	Not evaluated
WL01577	Spencer's Mill	Mill	Statehood and Antebellum (1845–1860)	Not evaluated

Table 1. Archaeological Sites with Aboveground or Landscape Features.

Site	Site Name	Site Type	Components Present	NRHP Status
WL01588	Wilson Grist Mill	Mill	Nineteenth century (1821–1899)	Not evaluated
WL01622	McDonald House Site #2	Above ground building remains	Nineteenth century American–twentieth century (1821–1999)	Not evaluated
WL01768	X565-F	Above ground building remains	Unknown Native American; nineteenth century American–twentieth century (1821–1999)	Not evaluated
WL01778	X-565-J	Above ground building remains	Nineteenth century American–twentieth century (1821–1999)	Not evaluated
WS00007	Rhoulac Mound	Pre-contact burial mound	Weeden Island (AD 450–1000)	Not evaluated
WS00036	Bear Hammock	Pre-contact burial mound	Unknown Native American	Not evaluated
WS00037	Mount Hammock	Pre-contact burial mound	Unknown Native American	Not evaluated

4.2 BUILDINGS

The FMSF database includes 476 previously recorded buildings within the study area. Two buildings are listed in the NRHP, 18 have been evaluated as eligible for listing, 252 are not eligible for listing, and 204 have not been evaluated for eligibility. Comparison to historic topographic maps indicates that many of the buildings are clustered around the historic small towns of Vernon, Wausau, Altha, Spring Creek, and Panacea. **Table 3** summarizes the 224 buildings that are listed, eligible for listing, or which have not been evaluated for NRHP eligibility; these records were inspected to assess which resources are most likely to be impacted by the project. Because the remaining 252 buildings were previously found to be ineligible for listing in the NRHP, it can be reasonably assumed that impacts to these resources, if any, would be insignificant.

Table 2. Historic Buildings that are NRHP Listed, Eligible, or Unevaluated.

Site	Site Name	Year Built	Style	NRHP Status
CA00170	Lewis Atkins Farmhouse	1901	Frame Vernacular	Eligible
CA00187	Lewis Atkins Farmhouse Detached Kitchen	ca. 1902	Frame Vernacular	Eligible
CA00188	Lewis Atkins Farmhouse Corn Crib	ca. 1900–1910	Frame Vernacular	Eligible
CA00189	Lewis Atkins Farm Smokehouse	ca. 1890–1910	Frame Vernacular	Eligible
CA00190	Lewis Atkins Farm Barn	1902–1910	Frame Vernacular	Eligible
CA00204	Altha Methodist Church	1974	Masonry Vernacular	Not evaluated
CA00208	Chipola Primitive Baptist Church	1870	Other	Not evaluated
CA00211	Robert Lee Norton House	ca. 1904	Queen Anne (Revival) ca. 1880–1910	Listed
CA00214	Altha City Jail	ca. 1902	Masonry Vernacular	Not evaluated
FR01322	1266 Alligator Dr.	ca. 1958	Masonry Vernacular	Not evaluated

Table 2. Historic Buildings that are NRHP Listed, Eligible, or Unevaluated.

Site	Site Name	Year Built	Style	NRHP Status
JA00786	Wille Copeland Residence	ca. 1900	Frame Vernacular	Not evaluated
JA00787	John Chafin Residence	ca. 1920	Frame Vernacular	Not evaluated
JA00788	Lipford Church	ca. 1905	Frame Vernacular	Not evaluated
JA00789	H & M Lipford Building	ca. 1860	Log	Not evaluated
JA00840	Harmon Duncan House #1	ca. 1915	Frame Vernacular	Not evaluated
JA00841	W W Johnson Residence	1940	Frame Vernacular	Not evaluated
JA00842	278/167 Intersection	ca. 1930	Frame Vernacular	Not evaluated
JA00843	Alberta Shumpert Residence	1910	Frame Vernacular	Not evaluated
JA00844	Alberta Shumpert Residence	ca. 1910	Frame Vernacular	Not evaluated
JA00845	C & G Hill Residence	ca. 1880	Frame Vernacular	Not evaluated
JA00846	G Foran Residence	1910	Frame Vernacular	Not evaluated
JA00847	R Foran Residence	ca. 1890	Frame Vernacular	Not evaluated
JA00848	Robert Morris Residence	ca. 1920	Frame Vernacular	Not evaluated
JA00935	Jacqueline Perry Residence	1930	Frame Vernacular	Not evaluated
JA00936	Grant Buckhalter Store	ca. 1910	Frame Vernacular	Not evaluated
JA00937	Grant Buckhalter Residence	1920	Frame Vernacular	Not evaluated
JA00938	Alford Residence	1902	Frame Vernacular	Not evaluated
JA00945	Alonzo Goodwin Residence	1938	Frame Vernacular	Not evaluated
JA00963	Lester Sims Building	ca. 1900	Frame Vernacular	Not evaluated
JA00964	Sam Pitts House	ca. 1900	Frame Vernacular	Not evaluated
JA00966	H L Nesmith Residence	ca. 1884	Frame Vernacular	Not evaluated
JA00967	C W Mears Grocery Store	1934	Frame Vernacular	Not evaluated
JA00969	James Edenafield Residence	1910	Frame Vernacular	Not evaluated
JA00970	Mattie Logan Residence	ca. 1900	Frame Vernacular	Not evaluated
JA00971	Ellie Beauchamp Residence	ca. 1925	Frame Vernacular	Not evaluated
JA00972	T E Gilbert Residence	1925	Bungalow ca. 1905–1930	Not evaluated
JA00973	Lewis Beauchamp Building	1901	Frame Vernacular	Not evaluated
JA00974	John Herring Residence	1935	Frame Vernacular	Not evaluated
JA00975	I F Howard Residence	1908	Frame Vernacular	Not evaluated
JA00976	Ruth Harrison Residence	ca. 1900	Frame Vernacular	Not evaluated
JA00977	Bud Ayers Building	1932	Frame Vernacular	Not evaluated
JA00978	C P Peacock Residence	1898	Log	Not evaluated
JA00979	Hencely Store	1936	Frame Vernacular	Not evaluated
JA01097	Charles Finley Cook Residence	1911	Frame Vernacular	Not evaluated
JA01098	E B Reese Residence	ca. 1885	Frame Vernacular	Not evaluated
JA01100	John McNeil House	ca. 1895	Frame Vernacular	Not evaluated

Table 2. Historic Buildings that are NRHP Listed, Eligible, or Unevaluated.

Site	Site Name	Year Built	Style	NRHP Status
JA01101	Cook's Store	1926	Frame Vernacular	Not evaluated
JA01103	Jim Ayers House	1932	Bungalow ca. 1905–1930	Not evaluated
JA01620	Roberts House	1944	Frame Vernacular	Not evaluated
JA01621	McCormick Road House	1928	Frame Vernacular	Not evaluated
JA01622	Booth and Sims House	1920	Frame Vernacular	Not evaluated
JA01624	Johnson House	1934	Frame Vernacular	Not evaluated
JA01625	Rabbit Run	1920	Frame Vernacular	Not evaluated
JA01626	552 State Road 73	1935	Frame Vernacular	Not evaluated
JA01627	Pledger House	1928	Frame Vernacular	Not evaluated
JA01628	Tatum House	1944	Frame Vernacular	Not evaluated
JA01629	385 State Road 73	1924	Frame Vernacular	Not evaluated
JA01630	Willis House	1928	Frame Vernacular	Not evaluated
JA01631	J. Willis House	1928	Frame Vernacular	Not evaluated
JA01633	180 State Road 73	1925	Frame Vernacular	Not evaluated
LI00014	Gregory House/Torreya State Park	ca. 1849	Greek Revival ca. 1825–1860	Listed
LI00335	Barracks	1935	Frame Vernacular	Not evaluated
LI00336	Shop	1937	Frame Vernacular	Not evaluated
LI00337	Cattle Gap	1936	Vernacular	Not evaluated
WA00511	Zion Hill Primitive Baptist Church	ca. 1945	Other	Not evaluated
WA00565	Tully Residence	ca. 1934	Frame Vernacular	Not evaluated
WA00569	Langston-Carter House	ca. 1903	Other	Not evaluated
WA00771	CRAS Silver Glen Phase II, Wakulla Count	1938	Frame Vernacular	Not evaluated
WA00811	Shell Point C. G. Aux. Bldg.	1920	Frame Vernacular	Not evaluated
WA00839	Happy Landing	ca. 1896	Other	Eligible
WA00876	2104 Surf Road	ca. 1955	Ranch	Eligible
WA01053	4470 Crawfordville Highway	ca. 1958	Frame Vernacular	Eligible
WA01218	Panacea Mineral Springs Pavilion	ca. 1900	Craftsman	Not evaluated
WA01237	2917 Coastal Highway	ca. 1940	Bungalow ca. 1905–1930	Not evaluated
WA01246	1509 Coastal Highway	ca. 1940	Frame Vernacular	Not evaluated
WA01286	47 Alapaha Ave	ca. 1958	Ranch	Not evaluated
WA01295	WA01295	ca. 1960	Frame Vernacular	Not evaluated
WA01296	WA01296	ca. 1960	Ranch	Not evaluated
WA01298	WA01298	ca. 1960	Masonry Vernacular	Not evaluated
WA01299	WA01299	ca. 1964	Masonry Vernacular	Not evaluated
WA01300	WA01300	ca. 1950	Ranch	Not evaluated
WA01301	WA01301	ca. 1950	Frame Vernacular	Not evaluated
WA01302	WA01302	ca. 1958	Masonry Vernacular	Not evaluated
WA01303	WA01303	ca. 1955	Ranch	Not evaluated
WA01304	WA01304	ca. 1960	Frame Vernacular	Not evaluated
WA01305	WA01305	ca. 1960	Frame Vernacular	Not evaluated
WA01306	WA01306	ca. 1950	Frame Vernacular	Not evaluated
WA01307	WA01307	ca. 1950	Masonry Vernacular	Not evaluated
WA01308	WA01308	ca. 1950	Masonry Vernacular	Not evaluated

Table 2. Historic Buildings that are NRHP Listed, Eligible, or Unevaluated.

Site	Site Name	Year Built	Style	NRHP Status
WA01309	WA01309	ca. 1942	Frame Vernacular	Not evaluated
WA01310	WA01310	ca. 1960	Ranch	Not evaluated
WA01311	WA01311	ca. 1950	Frame Vernacular	Not evaluated
WA01312	WA01312	ca. 1942	Frame Vernacular	Not evaluated
WA01315	WA01315	ca. 1969	Commercial	Not evaluated
WA01316	WA01316	ca. 1964	Ranch	Not evaluated
WA01321	WA01321	ca. 1945	Frame Vernacular	Not evaluated
WA01323	WA01323	ca. 1958	Frame Vernacular	Not evaluated
WA01324	WA01324	ca. 1950	Frame Vernacular	Not evaluated
WA01325	WA01325	ca. 1960	Masonry Vernacular	Not evaluated
WA01326	WA01326	ca. 1955	Ranch	Not evaluated
WA01327	WA01327	ca. 1925	Frame Vernacular	Not evaluated
WA01329	WA01329	ca. 1950	Frame Vernacular	Not evaluated
WA01330	WA01330	ca. 1950	Industrial Vernacular	Not evaluated
WA01332	WA01332	ca. 1950	Frame Vernacular	Not evaluated
WA01333	WA01333	ca. 1960	Frame Vernacular	Not evaluated
WA01334	WA01334	ca. 1956	Masonry Vernacular	Not evaluated
WA01335	WA01335	ca. 1968	Masonry Vernacular	Not evaluated
WA01336	WA01336	ca. 1969	Frame Vernacular	Not evaluated
WA01337	WA01337	ca. 1939	Frame Vernacular	Not evaluated
WA01338	WA01338	ca. 1955	Masonry Vernacular	Not evaluated
WA01339	WA01339	ca. 1965	Frame Vernacular	Not evaluated
WA01340	WA01340	ca. 1962	Frame Vernacular	Not evaluated
WA01341	WA01341	ca. 1965	Industrial Vernacular	Not evaluated
WA01342	WA01342	ca. 1969	Frame Vernacular	Not evaluated
WA01344	WA01344	ca. 1960	Ranch	Not evaluated
WA01345	WA01345	ca. 1960	Other	Not evaluated
WA01346	WA01346	ca. 1968	Ranch	Not evaluated
WA01347	WA01347	ca.1960	Ranch	Not evaluated
WA01348	WA01348	ca. 1940	Frame Vernacular	Not evaluated
WA01349	WA01349	ca. 1955	Ranch	Not evaluated
WA01350	WA01350	ca. 1900	Frame Vernacular	Not evaluated
WA01351	WA01351	ca. 1950	Masonry Vernacular	Not evaluated
WA01352	WA01352	ca. 1960	Masonry Vernacular	Not evaluated
WA01353	WA01353	ca. 1964	Ranch	Not evaluated
WA01354	WA01354	ca. 1971	Frame Vernacular	Not evaluated
WA01355	WA01355	ca. 1955	Masonry Vernacular	Not evaluated
WA01356	WA01356	ca. 1960	Masonry Vernacular	Not evaluated
WA01357	WA01357	ca. 1960	Masonry Vernacular	Not evaluated
WA01360	WA01360	ca. 1965	Frame Vernacular	Not evaluated
WA01362	WA01362	ca. 1958		Not evaluated
WA01363	WA01363	ca. 1960	Ranch	Not evaluated
WA01364	WA01364	ca. 1960	Masonry Vernacular	Not evaluated
WA01367	WA01367	ca. 1960	Masonry Vernacular	Not evaluated
WA01369	WA01369	ca. 1958	Ranch	Not evaluated
WA01370	WA01370	ca. 1955	Masonry Vernacular	Not evaluated
WA01372	WA01372	ca. 1955	Minimal Traditional	Not evaluated
WA01373	WA01373	ca. 1950	Ranch	Not evaluated

Table 2. Historic Buildings that are NRHP Listed, Eligible, or Unevaluated.

Site	Site Name	Year Built	Style	NRHP Status
WA01374	WA01374	ca. 1969	Ranch	Not evaluated
WA01375	WA01375	ca. 1960	Masonry Vernacular	Not evaluated
WA01376	WA01376	ca. 1958	Frame Vernacular	Not evaluated
WA01379	WA01379	ca. 1960	Ranch	Not evaluated
WA01380	WA01380	ca. 1945	Frame Vernacular	Not evaluated
WA01381	WA01381	ca. 1960	Masonry Vernacular	Not evaluated
WA01382	WA01382	ca. 1955	Frame Vernacular	Not evaluated
WA01383	WA01383	ca. 1966	Frame Vernacular	Not evaluated
WA01384	WA01384	ca. 1955	Frame Vernacular	Not evaluated
WA01385	WA01385	ca. 1964	Ranch	Not evaluated
WA01386	WA01386	ca. 1958	Masonry Vernacular	Not evaluated
WA01387	WA01387	ca. 1955	Frame Vernacular	Not evaluated
WA01389	WA01389	ca. 1950	Frame Vernacular	Not evaluated
WA01390	WA01390	ca. 1960	Ranch	Not evaluated
WA01391	WA01391	ca. 1940	Frame Vernacular	Not evaluated
WA01392	WA01392	ca. 1968	Masonry Vernacular	Not evaluated
WA01393	WA01393	ca. 1955	Frame Vernacular	Not evaluated
WA01394	WA01394	ca. 1955	Ranch	Not evaluated
WA01395	WA01395	ca. 1969	Frame Vernacular	Not evaluated
WA01396	WA01396	ca. 1964	Ranch	Not evaluated
WA01398	WA01398	ca. 1950	Ranch	Not evaluated
WA01399	WA01399	ca. 1969	Masonry Vernacular	Not evaluated
WA01400	WA01400	ca. 1960	Frame Vernacular	Not evaluated
WA01401	WA01401	ca. 1950	Minimal Traditional	Not evaluated
WA01402	WA01402	ca. 1955	Frame Vernacular	Not evaluated
WA01403	WA01403	ca. 1950	Frame Vernacular	Not evaluated
WA01404	WA01404	ca. 1965	Frame Vernacular	Not evaluated
WA01406	WA01406	ca. 1965	Ranch	Not evaluated
WA01407	WA01407	ca. 1952	Ranch	Not evaluated
WA01408	WA01408	ca. 1950	Frame Vernacular	Not evaluated
WA01409	WA01409	ca. 1950	Ranch	Not evaluated
WA01410	WA01410	ca. 1972	Frame Vernacular	Not evaluated
WA01411	WA01411	ca. 1965	Frame Vernacular	Not evaluated
WA01412	WA01412	ca. 1961	Frame Vernacular	Not evaluated
WA01415	WA01415	ca. 1958	Ranch	Not evaluated
WA01416	WA01416	ca. 1945	Masonry Vernacular	Not evaluated
WA01418	WA01418	ca. 1940	Frame Vernacular	Not evaluated
WA01419	WA01419	ca. 1955	Frame Vernacular	Not evaluated
WA01420	WA01420	ca. 1960	Masonry Vernacular	Not evaluated
WA01421	WA01421	ca. 1940	Frame Vernacular	Not evaluated
WA01425	WA01425	ca. 1960	Ranch	Not evaluated
WA01427	WA01427	ca. 1965	Ranch	Not evaluated
WA01428	WA01428	ca. 1967	Masonry Vernacular	Not evaluated
WA01439	WA01439	ca. 1960	Ranch	Not evaluated
WA01440	WA01440	ca. 1950	Frame Vernacular	Not evaluated
WA01441	WA01441	ca. 1948	Minimal Traditional	Not evaluated
WA01442	WA01442	ca. 1955	Frame Vernacular	Not evaluated
WA01449	WA01449	ca. 1955	Ranch	Not evaluated

Table 2. Historic Buildings that are NRHP Listed, Eligible, or Unevaluated.

Site	Site Name	Year Built	Style	NRHP Status
WA01450	WA01450	ca. 1955	Ranch	Not evaluated
WA01451	WA01451	ca. 1950	Masonry Vernacular	Not evaluated
WA01452	WA01452	ca. 1960	Ranch	Not evaluated
WA01454	WA01454	ca. 1955	Frame Vernacular	Not evaluated
WA01455	WA01455	ca. 1950	Ranch	Not evaluated
WA01457	WA01457	ca. 1945	Frame Vernacular	Not evaluated
WA01458	WA01458	ca. 1955	Frame Vernacular	Not evaluated
WA01459	WA01459	ca. 1966	Frame Vernacular	Not evaluated
WA01461	WA01461	ca. 1955	Frame Vernacular	Not evaluated
WA01462	WA01462	ca. 1963	Ranch	Not evaluated
WA01463	WA01463	ca. 1960	Frame Vernacular	Not evaluated
WA01465	WA01465	ca. 1922	Frame Vernacular	Not evaluated
WA01466	WA01466	ca. 1950	Frame Vernacular	Not evaluated
WA01467	WA01467	ca. 1945	Frame Vernacular	Not evaluated
WA01468	WA01468	ca. 1950	Frame Vernacular	Not evaluated
WA01469	WA01469	ca. 1948	Masonry Vernacular	Not evaluated
WA01473	WA01473	ca. 1950	Frame Vernacular	Not evaluated
WA01474	WA01474	ca. 1958	Frame Vernacular	Not evaluated
WA01475	WA01475	ca. 1966	Ranch	Not evaluated
WA01476	WA01476	ca. 1950	Frame Vernacular	Not evaluated
WA01477	WA01477	ca. 1966	Ranch	Not evaluated
WA01478	WA01478	ca. 1940	Ranch	Not evaluated
WL00888	Jones School; Albert's Temple	ca. 1916	Frame Vernacular	Eligible
WL02492	Eucheeanna Old Schoolhouse	ca. 1912	Frame Vernacular	Not evaluated
WL02707	Eglin AFB, Building 1080	ca. 1956	No style	Eligible
WS00477	Vernon High School	1931–1932	Georgian Revival ca. 1880–present	Eligible
WS00711	3309 Main St. (SR 79)	ca. 1890	Frame Vernacular	Eligible
WS00872	Tiller House	ca. 1914	Frame Vernacular	Eligible
WS00876	J.J. Cox House	1905	Frame Vernacular	Eligible
WS00877	J.J. Cox Store	1945	Masonry Vernacular	Eligible
WS00885	3545 Washington St.	1910	Other	Not evaluated
WS00894	1855 First Ave.	1910	Frame Vernacular	Not evaluated
WS00897	Lester Taylor House	1945	Frame Vernacular	Not evaluated
WS00900	2738 Jefferson St.	1953	Frame Vernacular	Not evaluated
WS01039	May Filling Station	1938	Other	Eligible
WS01154	1916 Mud Hill Rd.	ca. 1964	Masonry Vernacular	Not evaluated
WS01250	Gilberts Mill House	ca. 1850	Frame Vernacular	Eligible

At least one of the 224 of the eligible or unevaluated resources has been demolished (Altha High School, 8CA00148). Examining the stylistic classification and dates of construction for the remaining 223 structures provides some context for identifying potential impacts. The vast majority (n = 127) of these buildings are frame vernacular structures, and all but five of them were built in the twentieth century. Furthermore, nearly all of them are residential buildings, though they include a ca. 1905 church (8JA00788) and at least two schools (8WL00888 and

8WL02492, built ca. 1916 and ca. 1912, respectively). Other frame vernacular buildings include stores, shops, and farm buildings. Aside from frame vernacular, the two most frequent architectural styles represented among these buildings and their associated range of construction dates include ranch (n=39, 1940 to 1966) and masonry vernacular (n=32, 1902-1974). All of the ranch buildings appear to be private residences. Likewise, nearly all of the masonry vernacular buildings are residential structures, but notable exceptions include a ca. 1974 church (8CA00204) and a ca. 1902 city jail (8CA00214).

The remaining architectural styles represented by the FMSF records each account for three or fewer resources: minimal traditional (n = 3, 1948-1955), bungalows (n = 3, 1925-1940); industrial vernacular (n = 2, 1950-1965); log cabins (n = 2, ca. 1898); craftsmen (n = 1, ca. 1900); commercial (n = 1, ca. 1969), Georgian revival (n = 1, ca. 1931); Greek revival (n = 1, ca. 1849); and Queen Anne (n = 1, 1904). Most of these are residential buildings, though they include a few commercial or industrial facilities as well. In addition, seven are recorded as "other", two have an unspecified style (concrete cattle gaps), and one is recorded as "no style". Two of these structures without styles are churches: the ca. 1870 Cipola Primitive Baptist Church (8CA00208) and the ca. 1945 Zion Hill Primitive Baptish Church (8WA00511).

Two structures are listed in the NRHP, but neither structure is in its original location. The Robert Lee Norton House (8CA00211) is a Queen Anne Revival style home built ca. 1904 in Jackson County and listed in the NRHP on August 22, 1996. The owner of the house petitioned to move the house from its original location and was denied by the NRHP. In 2000, the house was moved without authorization from 2045 Church Street, Marianna in Jackson County (outside the study area) to its current location within the study area at 24307 NE Charles Pippin Road, Blountstown in Calhoun County (Creamer 2001). The second NRHP-listed structure is the Gregory House (8LI00014), a Greek Revival style home built ca. 1849 and listed in the NRHP on August 8, 1972. In 1935, the house was dismantled and floated across the Apalachicola River to the east bank and reassembled at its current location within Torreya State Park.

The proposed project would not impact the physical integrity of these recorded structures, nor would it remove their significant historical associations. However, the direct visual, audible, and vibratory effects of IR-096 may impact the setting and feeling of the structures, which are two of the seven aspects of integrity when evaluating NRHP eligibility. The contextual details presented above make it clear that the vast majority of the historic buildings underlying the proposed IR-096 are private residences, and many of them likely continue to serve that function. However, some types of buildings, especially churches, may facilitate religious or community events, some of which may be solemn in nature and could be temporarily disrupted when testing and training within IR-096 is in progress. If such disruptions occur, they could also have the indirect effect of dissuading continued use of these buildings, and cumulative effects such as the deterioration of abandoned buildings.

4.3 CEMETERIES

The FMSF database includes 29 cemeteries within the study area. None of the cemeteries have been evaluated as eligible for listing in the NRHP, and four have been evaluated as ineligible. **Table 4** summarizes the 29 cemeteries in the study area. Of these, most are private or individual cemeteries, but Oak Park (8WA01125) is federally owned, the Torreya State Park Slave Cemetery (8LI00530) is state owned, and the Vernon Cemetery (8WS00464) is city owned. Many of the cemeteries correspond with small rural towns and include Altha, Eucheeanna, Friendship, Medart, Panacea, Rock Bluff, Sink Creek, Sopchoppy, Vernon, and Wausau. It is likely that additional cemeteries are present near these historic communities and throughout the study area but have not been recorded in the FMSF.

Regardless of NRHP eligibility, cemeteries likely have importance to the families, descendants, and communities of the interred. The proposed project may have direct visual, audible, or vibratory effects on cemeteries in ways that might be detrimental to their cultural importance. While such effects would be temporary and relatively infrequent, they could potentially be regarded as disruptive from the perspective of people seeking to use cemeteries as places for quiet reflection and remembrance at the time that such effects are incurred. If such disruptions were to become common occurrences, they could have the indirect effect of dissuading people from continuing to use or visit these cemeteries and further cumulative effects such as physical deterioration of cemeteries that are disused and abandoned.

Table 3. Recorded Cemeteries in the Study Area.

Site	Site Name	Year Established	Ownership	Ethnicity	Status	NRHP Status
CA00203	Richards Cemetery	1879	Private/individual	Unspecified	Maintained but not used	Not evaluated
CA00209	Chipola Primitive Baptist Church Cemetery	1870	Private-corporate-nonprofit	African American, Native American, White	Used	Not evaluated
GD00757	Popular-Poley Branch Cemetery	ca. 1928	Private	White, Non-Hispanic	Used	Not evaluated
JA01682	Sink Creek Cemetery	1909	Private-corporate-nonprofit	White, Non-Hispanic	Used	Not evaluated
JA01722	Styles Cemetery	-	Private-corporate-for profit	Unspecified	Unspecified	Ineligible
LI00530	Torreya State Park Slave Cemetery	ca. 1860	State	African American	Abandoned	Not evaluated
LI00594	Rock Bluff Cemetery	ca. 1855	Private-corporate-for profit	African American, White, Non-Hispanic	Used	Not evaluated

Table 3. Recorded Cemeteries in the Study Area.

Site	Site Name	Year Established	Ownership	Ethnicity	Status	NRHP Status
WA00538	Whaley Cemetery	ca. 1863	Private/individual	White, Non-Hispanic	Maintained but not used	Not evaluated
WA00617	Lake Ellen Baptist Church Cemetery	ca. 1890	Private-unspecified	White, Non-Hispanic	Used	Ineligible
WA00618	Mount Oive Baptist Church Cemetery	ca. 1900	Private-unspecified	African American	Used	Ineligible
WA00718	Pelt Cemetery	ca. 1860	Private/individual	White, Non-Hispanic	Used	Not evaluated
WA01101	Bonnet Pond Cemetery	ca. 1891	Private/individual	White, Non-Hispanic	Used	Not evaluated
WA01102	Buckhorn Cemetery	1895	Private/individual	African American	Unspecified	Not evaluated
WA01111	Grimes Cemetery	ca.1853	Private/individual	White, Non-Hispanic	Used	Not evaluated
WA01112	Gwaltney Cemetery	ca. 1903	Private/individual	White, Non-Hispanic	Unspecified	Not evaluated
WA01116	Hill or Ezell	ca. 1896	Private/individual	African American	Unspecified	Not evaluated
WA01124	Nichols-Revell Cemetery	ca. 1966	Private individual	White, Non-Hispanic	Used	Not evaluated
WA01125	Oak Park Cemetery	ca. 1875	Federal	White, Non-Hispanic	Used	Not evaluated
WA01128	Panacea Cemetery	ca. 1959	Private-corporate-nonprofit	White, Non-Hispanic	Used	Not evaluated
WA01129	Pigott Cemetery	ca. 1852	Private-corporate-nonprofit	White, Non-Hispanic	Used	Not evaluated
WA01131	Posey Cemetery	ca. 1883	Private individual	African American, White, Non-Hispanic	Abandoned	Not evaluated
WA01137	Smith Cemetery (Medart)	ca. 1846	Private individual	African American, White, Non-Hispanic	Abandoned	Not evaluated
WA01151	Yoder Grave Cemetery	ca. 1929	Private individual	Other	Abandoned	Not evaluated
WL01599	Euchee Valley Cemetery	1827	Private individual	Other	Unspecified	Not evaluated
WL02571	Bowers Cemetery	ca. 1815	Private-unspecified	White, Non-Hispanic	Abandoned	Not evaluated
WL02771	St. Paul Hill Cemetery	1829	Unknown	White, Non-Hispanic	Abandoned	Not evaluated
WS00464	Vernon Cemetery	ca. 1880	City	African American,	Used	Not evaluated

Table 3. Recorded Cemeteries in the Study Area.

Site	Site Name	Year Established	Ownership	Ethnicity	Status	NRHP Status
				White, Non-Hispanic		
WS01069	St. Joseph Community Cemetery	ca. 1928	Unknown	African American, Asian, Caribbean, Hispanic	Used	Not evaluated
WS01192	Wausau Memorial Gardens	ca. 1918	Private-corporate-nonprofit	White, Non-Hispanic	Used for Burials	Ineligible

4.4 BRIDGES

The FMSF includes eight bridges within the study area. One has been evaluated as eligible for listing in the NRHP, five as ineligible, and two have not been evaluated. **Table 5** summarizes the three eligible or unevaluated bridges, all of which were built in the twentieth century and are still in use. The eligible bridge, 8LI00338, is constructed of stone and concrete and was originally built by the CCC in Torreya State Park. It is located along a CCC-built road (8LI00565) within the park. The two unevaluated bridges are located along state and county roads, respectively.

The bridges within the study area are unlikely to be impacted by the direct, indirect, or cumulative effects of the proposed project, as there will be no alterations to the design of the bridges or their role in local and regional transportation networks. However, effects to the CCC bridge (8LI00338) may also be considered in the context of Torreya State Park, which contains several other NRHP-listed, eligible, or unevaluated cultural resources that could potentially be linked as a historic district or landscape. As noted above, the intensity of minor effects to individual resources such as the bridge is potentially compounded when those resources are also contributors to a historic district or landscape that derives its significance from the integrity and density of its constituent elements.

Table 5. Historic Bridges that are NRHP Listed, Eligible, or Unevaluated.

Site	Site Name	Year Built	Ownership	Material	Status	NRHP status
FR00877	Panacea	1935	State	Steel	In use	Not evaluated
JA01866	CR-278/Chipola River	1966	County	Concrete	In use	Not evaluated
LI00338	Stone Bridge	ca. 1940	State	Concrete	In use	Eligible

4.5 DISTRICTS AND LANDSCAPES

The FMSF includes three NRHP-eligible districts and one NRHP-eligible rural landscape as summarized in **Table 6**. Historic districts and landscapes may be more sensitive to impacts to

their setting and feeling than other resource types such as individual structures. As noted above, historic districts draw their collective significance from the density of historic elements within them. Likewise, the integrity of a rural historic landscape is predicated on a rural setting and feeling with relatively few incompatible modern elements. Therefore, greater attention to the atmospheric effects for the proposed project are warranted when considering districts and landscapes as compared to individual structures.

Table 6. Districts and Landscapes that are NRHP Listed, Eligible, or Unevaluated.

Site	Site Name	Classification	Component	NRHP status
CA00191	Lewis Atkins	Historic District	Turn of the 20th century farm	Eligible
FR00900	Camp Gordan Johnston	Archaeological District	WW II training facility for amphibious tanks and village warfare	Eligible
WL00387	New Home District	Mixed District	Late 18th to 19th century historic dwellings	Eligible
WS01248	Gilberts Mill Community	Rural Historic Landscape	20th century agricultural farm site of Gilberts family; formerly Davis Mill.	Eligible

Camp Gordan Johnston (8FR00900), is primarily archaeological in nature and is associated with historic military activity; therefore, it may be relatively unaffected by the proposed military activities associated with IR-096 when compared to other districts and landscapes. Similarly, while the NRHP-eligible New Home District (8WL000387) is not historically associated with the military, it is located within Eglin AFB where testing and training activities already occur on a regular basis. The two remaining resources, the Lewis Atkins Historic District (8CA00191) and the Gilberts Mill Community Rural Historic Landscape (8WS01248), are each associated with twentieth-century agriculture and rural industry and therefore may be more susceptible to the effects of the proposed project. Additional information would be needed to identify the relative importance of setting and feeling to resources 8CA00191 and 8WS01248 and to assess whether the anticipated visual, audible, or vibratory effects of IR-096 would be detrimental to their overall integrity.

Last, it should be reiterated here that the presence and spatial distribution of resources mapped in the FMSF GIS database is largely a function of where and when systematic cultural resource surveys have occurred. It is likely that the land underlying IR-096 contains additional potential historic districts or rural historic landscapes that have not been observed and recorded by cultural resource professionals. Many of the small towns or unincorporated communities present in the region (Altha, Eucheeanna, Friendship, Medart, Panacea, Rock Bluff, Sink Creek, Sopchoppy, Vernon, and Wausau) were established over a century ago as summarized in the previous section. Multigenerational residents of those towns would be the best source of information regarding the potential presence of rural properties that have historical or cultural significance to those communities.

4.6 LINEAR RESOURCES

The FMSF includes eight linear resources within the study area, seven of which have been evaluated as ineligible for NRHP listing. The remaining linear resource is 8LI00565 (CCC Road), which has not been evaluated for NRHP eligibility but is within Torreya State Park and connects to the NRHP-eligible CCC-constructed bridge noted above (8LI00338).

The linear resources within the study area are unlikely to be impacted by the direct, indirect, or cumulative effects of the proposed project, as there will be no alterations to their role in local and regional transportation networks. Furthermore, as structures designed primarily to facilitate the movement of people and vehicles, their historic functions are less likely than other types of cultural resources to be affected by the temporary visual, audible, or vibratory effects from the establishment of IR-096. However, effects to the CCC Road (8LI00565) may also be considered in the context of potential districts or landscapes associated with Torreya State Park, which includes an NRHP-listed structure (8LI00014) as well as an eligible bridge (8LI00338), which directly connects to the road. As noted above, the intensity of minor effects to individual resources such as the road is potentially compounded when those resources are also contributors to a historic district or landscape that derives its significance from the integrity and density of its constituent elements.

4.7 SUBMERGED SITES

The FMSF database does not include any submerged archaeological sites (including shipwrecks) within the portion of the study area in the Gulf of Mexico. However, SEARCH examined four shipwreck databases that identified 19 shipwrecks within the study area, which are included in Appendix A. In most cases these databases provide very limited information regarding the attributes of these wrecks. However, since none of them are located along the coast it can be presumed that they are submerged resources and would not be subject to any of the direct, indirect, or cumulative effects of the project.

5 CONCLUSIONS

This cultural resources desktop study is presented as a supplement to the EA for the establishment of a military training route, IR-096, in northwest Florida. The goal of the desktop study is to identify known or likely locations of cultural resources within the study area for IR-096 and to identify those most likely to be affected, including those listed or eligible for listing in the NRHP. The types of cultural resources included in this analysis are archaeological sites, structures, districts, landscapes, cemeteries, bridges, and linear resources. The analysis also considers the possibility of unrecorded shipwrecks within the maritime portion of the study area. The primary sources of information include the FMSF database, shipwreck databases, and historic GLO and USGS maps.

Based on FMSF data alone, the study area encompasses 1,556 previously recorded cultural resources, including 1,030 archaeological sites, 476 historic structures, 29 cemeteries, 13 resource groups (districts, landscapes, and linear resources), and eight bridges. These include a total of three resources that are listed in the NRHP, 41 that have been evaluated as eligible for listing in the NRHP, 575 that have been evaluated as ineligible, and 937 that are unevaluated or for which the NRHP eligibility is unknown. Furthermore, much of the study area has not been systematically surveyed for cultural resources and is likely to contain additional unrecorded and unevaluated resources.

As discussed throughout the document, the direct effects of establishing IR-096 are limited to visual, audible, and vibratory effects that would be perceived from a given cultural resource during active training or testing within IR-096. The significance of most NRHP-listed or eligible resources is based on attributes such as research potential, association with historically important people or events, or distinct artistic, stylistic, or engineering attributes, and for these resources the effects of IR-096 are not likely to be significant. However, there are specific types of cultural resources for which aspects of setting and feeling are more likely to represent important components of historic integrity or that serve other culturally important functions that might be disrupted when IR-096 is in active use, such as:

- Native American mound sites
- Archaeological sites with aboveground ruins that could be incorporated into public spaces for recreational or educational purposes
- Historic districts and landscapes
- Cemeteries that remain in active use
- Other resources that serve ceremonial or religious functions that may be characterized by quiet or solemn settings, such as churches.

In addition to direct visual, audible, or vibratory effects, these resources may be susceptible to indirect or cumulative effects. If the direct effects of the establishment of IR-096 are perceived as disturbances, they could potentially have the indirect effect of dissuading continued use of these cultural resources for their traditional or historical purposes. Cumulative effects arising

from these direct and indirect effects might include the eventual loss of historical integrity as a result of abandonment and deterioration.

SEARCH has not identified clear examples of significant impacts to cultural resources from the proposed IR-096; however, additional information may be needed to support this conclusion. Factors to consider when assessing the severity of these direct effects include the frequency of testing and training missions, the time of day in which missions are scheduled, the public availability and awareness of mission schedules, and the degree to which the visual, auditory, and vibratory effects exceed those that are associated with the ambient noise or existing levels of air traffic within the study area. Potential avenues for further information may include field visits to specific resources; outreach to community leaders and tribal stakeholders; and consultation with the FDHR, including the offices of the State Archaeologist in regard to state-owned lands (e.g., Torreya State Park) and the State Historic Preservation Officer.

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APPENDIX A

INVENTORY OF KNOWN CULTURAL RESOURCES IN THE STUDY AREA

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Archaeological Sites					
Site ID	**Site Name**	**Site Type**	**Temporal Affiliation**	**Survey No.**	**NRHP Eligibility**
8CA00005	Atkin's Landing	Pre-contact mound(s)	Unknown Native American	N/A	Not Evaluated
8CA00008	Ocheesee Landing	Pre-contact midden; post-contact refuse dump	Native American, Seminole–Twentieth Century	N/A	Not Evaluated
8CA00018	Pine Forest	Artifact scatter	Archaic (8500–1000 BCE), Nineteenth Century (1800–1899)	3825	Ineligible
8CA00019	Gully	Lithic scatter/quarry (pre-contact: no ceramics)	Archaic (8500–1000 BCE)	N/A	Not Evaluated
8CA00028	Johnson Pond	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	N/A	Not Evaluated
8CA00029	Clemmons	Lithic scatter/quarry (pre-contact: no ceramics)	Archaic (8500–1000 BCE)	N/A	Not Evaluated
8CA00030	Smoky	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	N/A	Not Evaluated
8CA00031	Jumping Fish	Pre-contact midden(s)	Unknown Native American	N/A	Not Evaluated
8CA00038	Long Slough	Artifact scatter	Unknown Native American	1299	Not Evaluated
8CA00039	Johnson Creek Overlook	Artifact scatter	Unknown Native American	1299	Not Evaluated
8CA00040	Bee Ridge	Artifact scatter	Unknown Native American; American (1821–present)	1299	Not Evaluated
8CA00042	Ocheesee Creek Mouth	Single artifact or isolated find	Unknown Native American	1299	Not Evaluated
8CA00043	Cypress Stump	Artifact scatter	Lower Creek, Ft. Walton (AD 1000–1500)	1299	Not Evaluated
8CA00044	Diving Turtle	Artifact scatter	Deptford (700–300 BCE); Weeden Island (AD 450–1000)	1299	Not Evaluated
8CA00045	Athena	Artifact scatter	Ft. Walton (AD 1000–1500)	1299	Not Evaluated
8CA00046	Caraway Creek Mouth	Artifact scatter	Ft. Walton (AD 1000–1500)	1299	Not Evaluated
8CA00047	Fallen Oak	Artifact scatter	Ft. Walton (AD 1000–1500)	1299	Not Evaluated
8CA00048	Termite Veranda	Artifact scatter	Swift Creek (300 BC–AD 450); Ft. Walton (AD 1000–1500)	1299	Not Evaluated
8CA00049	Crazy Bug	Artifact scatter	Deptford (700–300 BCE)	1299	Not Evaluated
8CA00050	Muddy Boot	Artifact scatter	Ft. Walton (AD 1000–1500)	1299	Not Evaluated
8CA00083	Gully	Campsite (pre-contact)	Paleoindian–Woodland	20193	Insufficient Information
8CA00084	Red Dirt	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8CA00085	Ocheesee South	Habitation (pre-contact)	Ft. Walton (AD 1000–1500)	N/A	Not Evaluated
8CA00086	Up Ocheesee 1	Lithic scatter	Archaic (8500–1000 BCE)	N/A	Not Evaluated

Archaeological Sites					
8CA00087	Up Ocheesee 2	Lithic scatter	Archaic (8500–1000 BCE)	N/A	Not Evaluated
8CA00092	Ring Jaw Island	Lithic scatter/quarry (pre-contact: no ceramics)	Paleoindian–Late Archaic	25467	Not Evaluated
8CA00105	Old Paved Road	Pre-contact lithics only, but not quarry	Unknown Native American; Unknown Historic	1372	Not Evaluated
8CA00145	North Knoll	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated
8CA00146	South Knoll	Artifact scatter	Middle Archaic	N/A	Not Evaluated
8CA00147	South Bluff	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	3825	Not Evaluated
8CA00184	Flowers Creek	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	3825	Not Evaluated
8CA00206	Deep Midden Site	Specialized site for procurement of raw materials	Deptford–Ft. Walton (700 BC–AD 1500)	11332	Not Evaluated
8CA00283	HJ-AZ	Habitation (pre-contact)	Late–Middle Archaic	25468	Not Evaluated
8CA00284	HJ-BA	Pre-contact lithics only, but not quarry	Paleoindian–Late Archaic	25468	Not Evaluated
8CA00285	HJ-BB	Pre-contact lithics only, but not quarry	Early Archaic–Woodland	25468	Not Evaluated
8CA00286	HJ-BC	Pre-contact lithics only, but not quarry	Early–Middle Archaic	25468	Not Evaluated
8CA00287	HJ-BD	Pre-contact lithics only, but not quarry	Paleoindian–Middle Archaic	25468	Not Evaluated
8CA00288	HJ-BE	Pre-contact lithics only, but not quarry	Early Archaic	25468	Not Evaluated
8CA00289	HJ-BF	Pre-contact lithics only, but not quarry	Early Archaic	25468	Not Evaluated
8CA00290	HJ-AZ	Pre-contact lithics only, but not quarry	Early–Middle Archaic	25468	Not Evaluated
8CA00291	HJ-BH	Pre-contact lithics only, but not quarry	Early Archaic	25468	Not Evaluated
8CA00292	HJ-BI	Pre-contact lithics only, but not quarry	Early–Late Archaic	25468	Not Evaluated
8CA00293	HJ-BJ	Pre-contact lithics only, but not quarry	Late Archaic	25468	Not Evaluated

Archaeological Sites					
8CA00294	HJ-BK	Pre-contact lithics only, but not quarry	Late Archaic	25468	Not Evaluated
8CA00299	HJ-BP	Pre-contact lithics only, but not quarry	Late Archaic	25468	Not Evaluated
8CA00306	HJ-BY	Pre-contact lithics only, but not quarry	Early–Middle Archaic	25468	Not Evaluated
8FR00004	Tucker	Pre-contact burial mound(s), pre-contact midded	Deptford– Weeden Island I/II (700 BC–AD 1000)	14730	Not Evaluated
8FR00005	Yent Mound	Pre-contact burial mound(s)	Deptford–Swift Creek (700 BC–AD 450)	3902	fo
8FR00036	NN	Habitation (pre-contact)	Unknown Native American	N/A	Not Evaluated
8FR00038	Lighthouse Point	Pre-contact shell midden	Archaic (8500–1000 BC); Deptford (700–300 BC)	3902	Not Evaluated
8FR00039	NN	Habitation (pre-contact)	Unknown Native American	N/A	Not Evaluated
8FR00040	Hidden Rattler	Habitation (pre-contact); pre-contact midden	Deptford (700–300 BC); Norwood	N/A	Ineligible
8FR00041	NN	Habitation (pre-contact)	Unknown Native American	N/A	Not Evaluated
8FR00042	Whiskey	Pre-contact shell midden; post-contact refuse/dump	Unknown Native American; Twentieth Century (1900–1999)	9924	Not Evaluated
8FR00047	Metcalf Point	Pre-contact shell midden	Weeden Island–Ft. Walton (AD 450–1500)	N/A	Not Evaluated
8FR00051	Hilfiker (South Dunes)	Habitation (pre-contact)	Ft. Walton (AD 1000–1500); Norwood	N/A	Not Evaluated
8FR00819	NN	Pre-contact midden(s)	Weeden Island (AD 450–10000	N/A	Not Evaluated
8FR00826	Franklin County Alligator Point	Artifact scatter	Middle Archaic–Weeden Island	9924	Not Evaluated
8FR00893	Cattle Dipping Vat and Turpentine Shanty	Agriculture/Farm structure; building remains	Twentieth Century (1900–1999)	19224	Ineligible
8FR00894	Late PM Shell Midden	Pre-contact shell midden; artifact scatter	Weeden Island II	13176	Ineligible
8FR00897	The Metcalf Beach Site	Pre-contact midden	Unknown Native American	6075	Potentially Eligible
8FR00904	Burnt Oak	Artifact scatter	Weeden Island II; Ft. Walton (AD 1000–1500)	N/A	Not Evaluated
8FR00905	Eagle Eye	Artifact scatter	Ft. Walton (AD 1000–1500)	N/A	Not Evaluated
8FR00940	Prickly Pear	Campsite (pre-contact); pre-contact shell middeb	Unknown Native American	9710	Not Evaluated
8FR00941	Sunday Reel	Building remains	Unknown Native American; Twentieth Century (1900–1999)	9710	Not Evaluated

Archaeological Sites					
8FR00942	Bonnie Allen	Pre-contact shell midden; post-contact refuse/dump	Unknown Native American; Twentieth Century (1900–1999)	19224	Not Evaluated
8FR00962	Lone Point	Artifact scatter	Deptford (700–300 BC)	13176	Ineligible
8FR00963	NE New Road	Artifact scatter	Weeden Island I	13176	Ineligible
8FR00984	Bald Point State Park #1	Pre-contact lithics only, but not quarry	Unknown Native American	14730	Not Evaluated
8FR00985	Bald Point State Park #2	Artifact scatter	Unknown Native American	14730	Not Evaluated
8FR00986	Bald Point State Park #3	Shell scatter	No information	14730	Not Evaluated
8FR00987	Bald Point State Park #4	Artifact scatter	Nineteenth–twentieth century (1800–1999)	14730	Not Evaluated
8FR00988	Bald Point State Park #5	Artifact scatter	No information	14730	Not Evaluated
8FR00989	Bald Point State Park #7	Artifact scatter	Nineteenth–twentieth century (1800–1999)	14730	Not Evaluated
8FR00990	Bald Point State Park #8	Artifact scatter	No information	14730	Not Evaluated
8FR01374	Gulf Shore	Campsite (pre-contact)	Weeden Island (AD 450–1000)	23350	Insufficient information
8GD00267	NN	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated
8GD00268	NN	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated
8GD00287	Sand Pines	Artifact scatter	Unknown Native American	1299	Not Evaluated
8GD00328	Pitman Creek 1	Campsite (pre-contact); Specialized site for procurement of raw materials	Weeden Island II	N/A	Not Evaluated
8GD00473	Juniper Beach	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8JA00073	Williams Sand Pit	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated
8JA00076	Chipola River 3	Ceramic scatter	Unknown Native American	N/A	Not Evaluated
8JA00077	Chipola River 1	Ceramic scatter	Deptford (700–300 BC)	N/A	Not Evaluated
8JA00078	Chipola River 2	Ceramic scatter	Unknown Native American	N/A	Not Evaluated
8JA00088	McCormick's Pond	Ceramic and lithic scatter	Deptford–Swift Creek (700 BC–AD 450)	144	Not Evaluated
8JA00140	Duck Sink	Ceramic scatter	Weeden Island (AD 450–1000)	144	Not Evaluated
8JA00141	Bench Beach	Ceramic scatter	Deptford (700–300 BC)	144	Not Evaluated
8JA00142	Tupelo Beach	Pre-contact lithics only, but not quarry	Unknown Native American	144	Not Evaluated
8JA00143	Creekhead	Ceramic and lithic scatter	Deptford (700–300 BC)	144	Not Evaluated
8JA00151	Dollar Watch	Ceramic and lithic scatter	Archaic (8500–1000 BCE)	N/A	Not Evaluated

Archaeological Sites					
8JA00152	Dingly	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	N/A	Not Evaluated
8JA00350	Compass Lake #1	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00351	Compass Lake #2	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00352	Compass Lake #3	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	145	Not Evaluated
8JA00353	Compass Lake #4	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00354	Compass Lake #5	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00355	Compass Lake #6	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00356	Compass Lake #7	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00357	Compass Lake #8	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00358	Compass Lake #9	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00359	Compass Lake #10	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00360	Compass Lake #11	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated
8JA00361	Compass Lake #12	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated
8JA00362	Compass Lake #13	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated
8JA00363	Compass Lake #14	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated
8JA00364	Compass Lake #15	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated
8JA00365	Compass Lake #16	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated
8JA00366	Compass Lake #17	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated

Archaeological Sites					
8JA00367	Compass Lake #18	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated
8JA00368	Compass Lake #19	Pre-contact lithics only, but not quarry	Late Archaic	145	Not Evaluated
8JA00369	Compass Lake #20	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00370	Compass Lake #21	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated
8JA00371	Compass Lake #22	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated
8JA00372	Compass Lake #23	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated
8JA00373	Compass Lake #24	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated
8JA00374	Compass Lake #25	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00375	Compass Lake #26	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00376	Compass Lake #27	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE); Deptford (700–300 BCE); Weeden Island (AD 450–1000)	145	Not Evaluated
8JA00377	Compass Lake #28	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)' Weeden Island (AD 450–1000)	145	Not Evaluated
8JA00378	Compass Lake #29	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00379	Compass Lake #30	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00380	Compass Lake #31	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	145	Not Evaluated
8JA00381	Compass Lake #32	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated
8JA00382	Compass Lake #33	Pre-contact lithics only, but not quarry	Unknown Native American	145	Not Evaluated
8JA00419	Secret Streams	Ceramic scatter	Unknown Native American	1299	Not Evaluated
8JA00420	Spider Web	Ceramic scatter	Unknown Native American	1299	Not Evaluated
8JA00421	Roy Casey	Post-contact refuse / dump; ceramic and lithic scatter	Weeden Island II	1299	Not Evaluated

Archaeological Sites					
8JA00422	Sexton	Pre-contact lithics only, but not quarry	Early–Middle Archaic	1141	Not Evaluated
8JA00423	Poole	Pre-contact lithics only, but not quarry	Early–Middle Archaic	1141	Not Evaluated
8JA00425	Rocky Creek Bridge	Pre-contact lithics only, but not quarry	Unknown Native American	1372	Not Evaluated
8JA00429	Chason, H L Site*	Lithic scatter	Paleoindian (10,000–8500 BCE)	N/A	Not Evaluated
8JA00431	Peacock Bridge S 2*	No field investigation--record based on informant	Unknown Native American	N/A	Not Evaluated
8JA00432	Peacock Bridge S*	Pre-contact lithics only, but not quarry	Paleoindian–Archaic (10,000 BC–1000 BC)	N/A	Not Evaluated
8JA00433	Peacock Bridge*	Lithic scatter/quarry (pre-contact: no ceramics)	Paleoindian–Early Archaic (10,000 BC–??); Transitional (1000–700 BC)	N/A	Not Evaluated
8JA00435	Peacock Bridge N*	Lithic scatter/quarry (pre-contact: no ceramics)	Paleoindian–Early Archaic (10,000 BC–??)	N/A	Not Evaluated
8JA00443	Hay Bundle	Specialized site for procurement of raw materials	Middle Archaic	27793	Ineligible
8JA00444	Independence Chapel	Pre-contact lithics only, but not quarry	Unknown Native American	1372	Not Evaluated
8JA00446	Homer Sims 1	Pre-contact lithics only, but not quarry	Unknown Native American	1372	Not Evaluated
8JA00447	Homer Sims 2	Artifact scatter	Unknown Native American	1372	Not Evaluated
8JA00448	Homer Sims 3	Artifact scatter	Archaic (8500–1000 BCE)	1372	Not Evaluated
8JA00449	Durham Bay	Pre-contact lithics only, but not quarry	Unknown Native American	1372	Not Evaluated
8JA00453	Magic Wand	Artifact scatter	Unknown Native American	1372	Not Evaluated
8JA00454	Hasty Pond Church	Pre-contact lithics only, but not quarry	Unknown Native American	1372	Not Evaluated
8JA00470	Bowden	Artifact scatter	Unknown Native American; Nineteenth century (1800–1899)	1372	Not Evaluated
8JA00471	Peacock Borrow Pit	Land-terrestrial	Unknown Native American	4660	Ineligible
8JA00504	Peacock Landing	Pre-contact lithics only, but not quarry	Unknown Native American	1372	Not Evaluated

* No field investigation – record based on informant

Archaeological Sites					
8JA00525	Blue Borrow Pit	Pre-contact lithics only, but not quarry	Unknown Native American	1372	Not Evaluated
8JA00547	Cypress Pig Pond	Pre-contact lithics only, but not quarry	Unknown Native American	1372	Not Evaluated
8JA00550	Road Curve West	Artifact scatter	Weeden Island (AD 450–1000)	1630	Not Evaluated
8JA00551	Red Oak Ravine	Pre-contact burial(s)	Transitional–Deptford (1000–300 BCE); Weeden Island (AD 450–1000)	1630	Eligible
8JA00764	Thunderstorm 1	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8JA00765	Thunderstorm 2	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8JA01123	Dixie Mining Company	Artifact scatter	Middle Archaic; Deptford (700–300 BCE); Weeden Island (AD 450–1000)	2852	Not Evaluated
8JA01124	Rocky Creek Hardaway Field	Artifact scatter	Middle Archaic; Deptford (700–300 BCE); Weeden Island (AD 450–1000)	2852	Not Evaluated
8JA01502	Chipola River Peacock Bridge Shoal 1	Pre-contact lithics only, but not quarry	Paleoindian–Archaic (10,000–1000 BCE); Weeden Island (AD 450–1000)	25468	Not Evaluated
8JA01503	Chipola River Deep Trench	Artifact scatter	Middle Archaic; Weeden Island (AD 450–1000)	N/A	Not Evaluated
8JA01504	Chipola River Island	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8JA01507	Chipola River Peacock Bridge Shoal 2	Inundated land site	Archaic (8500–1000 BCE)	N/A	Not Evaluated
8JA01508	Chipola River Cypress Tree	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000 BCE)	25468	Not Evaluated
8JA01549	Kynesdale S	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8JA01563	Rocky Creek Vicinity Site	Artifact scatter	Unknown Native American; Twentieth Century (1900–1999)	N/A	Not Evaluated
8JA01672	Pumpkin Creek	Single artifact or isolated find	Unknown Native American	N/A	Not Evaluated
8JA01673	Northwest Bell Pond	Single artifact or isolated find	Unknown Native American	N/A	Not Evaluated
8JA01674	Chipola Bluff	Single artifact or isolated find	Deptford (700–300 BCE)	N/A	Not Evaluated
8JA01693	South Rock Creek	Single artifact or isolated find	Unknown Native American	4090	Ineligible
8JA01698	Johnson Shoals	Lithic scatter	Paleoindian–Woodland	25468	Not Evaluated
8JA01721	Overholt #2	Specialized site for procurement of raw materials	Weeden Island II	N/A	Not Evaluated
8JA01759	St. Andrews Tract #2	Pre-contact lithics only, but not quarry	Unknown Native American	6530	Ineligible
8JA01810	FAS #1	Specialized site for procurement of raw materials	Early Archaic, Norwood, Weeden Island II	13985	Ineligible

Archaeological Sites					
8JA01811	FAS #2	Artifact scatter	Norwood; Weeden Island II	13985	Ineligible
8JA01812	FAS #3	Artifact scatter	Norwood; Weeden Island II	13985	Ineligible
8JA01813	FAS #4	Specialized site for procurement of raw materials	Norwood; Weeden Island II	13985	Ineligible
8JA01814	FAS #5	Specialized site for procurement of raw materials	Early Archaic; Deptford (700–300 BCE)	25468	Ineligible
8JA01815	FAS #6	Land-terrestrial	Unknown Native American	13985	Ineligible
8JA01816	FAS #7	Specialized site for procurement of raw materials	Early–Middle Archaic; Deptford (700–300BCE)	25468	Ineligible
8JA01817	FAS #8	Specialized site for procurement of raw materials	Deptford (700–300 BCE)	13985	Ineligible
8JA01818	FAS #9	Artifact scatter	Middle Archaic; Deptford (700–300 BCE)	25468	Ineligible
8JA01819	FAS #10	Land-terrestrial	Norwood; Weeden Island II	13985	Ineligible
8JA01820	FAS #11	Artifact scatter	Early–Middle Archaic; Weeden Island II	25468	Ineligible
8JA01821	FAS #12	Land-terrestrial	Weeden Island II	13985	Ineligible
8JA01822	FAS #13	Specialized site for procurement of raw materials	Early–Middle Archaic; Weeden Island II	25468	Ineligible
8JA01823	FAS #14	Pre-contact lithics only, but not quarry	Early Archaic; Deptford (700–300 BCE)	25468	Ineligible
8JA01824	FAS #15	Specialized site for procurement of raw materials	Archaic (8500–1000 BCE); Norwood; Weeden Island II	13985	Ineligible
8JA01825	FAS #16	Land-terrestrial	Unknown Native American	13985	Ineligible
8JA01826	FAS #17	Specialized site for procurement of raw materials	Early–Middle Archaic; Deptford (700–300 BCE); Norwood; Weeden Island II	19150	Ineligible
8JA01827	Jackson East #1	Specialized site for procurement of raw materials	Early, Late Archaic; Weeden Island (AD 450–1000)	25468	Not Evaluated
8JA01828	Jackson East #2	Specialized site for procurement of raw materials	Archaic (8500–1000 BCE); Santa Rosa–Swift Creek; Weeden Island (AD 450–1000)	25468	Not Evaluated
8JA01829	Jackson East #3	Campsite (pre-contact)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	25468	Not Evaluated
8JA01830	Jackson East #4	Campsite (pre-contact)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	25468	Not Evaluated
8JA01831	Jackson East #5	Campsite (pre-contact)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	25468	Not Evaluated
8JA01832	Jackson East #6	Specialized site for procurement of raw materials	Middle–Late Archaic; Weeden Island (AD 450–1000)	25468	Not Evaluated

Archaeological Sites					
8JA01861	Victory Slough	Artifact scatter	Unknown Native American	25468	Not Evaluated
8JA02030	HJ-AJ	Pre-contact lithics only, but not quarry	Middle Archaic	25468	Not Evaluated
8JA02031	HJ-AK	Pre-contact lithics only, but not quarry	Early Archaic	25468	Not Evaluated
8JA02032	HJ-AM	Pre-contact lithics only, but not quarry	Woodland	25468	Not Evaluated
8JA02033	HJ-AL Dry Creek Shoal	Pre-contact lithics only, but not quarry	Paleoindian–Middle Archaic; Mississippian	25468	Not Evaluated
8JA02034	HJ-AN	Habitation (pre-contact)	Paleoindian (10,000–8500 BCE); Middle Archaic	25468	Not Evaluated
8JA02035	HJ-AO	Habitation (pre-contact)	Paleoindian (10,000–8500 BCE)	25468	Not Evaluated
8JA02036	HJ-AQ	Pre-contact lithics only, but not quarry	Middle Archaic	25468	Not Evaluated
8JA02037	HJ-AR	Pre-contact lithics only, but not quarry	Middle Archaic	25468	Not Evaluated
8JA02038	HJ-AS	Pre-contact lithics only, but not quarry	Early Archaic	25468	Not Evaluated
8JA02039	HJ-AT	Pre-contact lithics only, but not quarry	Early–Middle Archaic	25468	Not Evaluated
8JA02040	HJ-AU Rocky Creek	Pre-contact lithics only, but not quarry	Early–Middle Archaic	25468	Not Evaluated
8JA02041	HJ-AV	Pre-contact lithics only, but not quarry	Unknown Native American	25468	Not Evaluated
8JA02042	HJ-AW	Pre-contact lithics only, but not quarry	Early–Middle Archaic	25468	Not Evaluated
8JA02043	HJ-AX	Pre-contact lithics only, but not quarry	Paleoindian–Middle Archaic;	25468	Not Evaluated
8JA02044	HJ-AY	Pre-contact lithics only, but not quarry	Early Archaic	25468	Not Evaluated
8JA02072	HJ-BZ	Pre-contact lithics only, but not quarry	Early–Middle Archaic	25468	Not Evaluated
8JA02073	HJ-CA	Pre-contact lithics only, but not quarry	Early Archaic	25468	Not Evaluated
8JA02077	Tyler CF1	Campsite (pre-contact)	Paleoindian (10,000–8500 BCE)	25467	Not Evaluated
8JA02078	Tyler DB3	Campsite (pre-contact)	Paleoindian (10,000–8500 BCE)	25467	Not Evaluated

Archaeological Sites					
8LE00107	Stoutamire's Midden	Specialized site for procurement of raw materials	Late Archaic; Deptford–Weeden Island (700 BCE–AD 1000)	5119	Not Evaluated
8LE00552	Jackson Bluff	Artifact scatter	Weeden Island (AD 450–1000); Nineteenth–twentieth century (1800–1999)	N/A	Ineligible
8LE00560	USFS 79-22	Lithic scatter/quarry (pre-contact: no ceramics)	Archaic (8500–1000 BCE)	21825	Ineligible
8LE00561	USFS #79-23 WAK	Artifact scatter	Ft. Walton (AD 1000–1500)	4855	Ineligible
8LE00645	Merritt's Missing Bees	Artifact scatter	Weeden Island (AD 450–1000)	6092	Not Evaluated
8LE00652	USFS 81-50	Clay pit	Archaic (8500–1000 BCE); Nineteenth century (1800–1899)	N/A	Not Evaluated
8LE00796	USFS 83-2 Wakulla	Artifact scatter	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8LE00805	USFS 83-7 Wakulla	Historic earthworks	American–twentieth century (1821–1999)	25325	Insufficient information
8LE00855	USFS 85-10 Wakulla	Artifact scatter	Late Archaic	N/A	Not Evaluated
8LE01114	USFS 86-22 Wakulla	Pre-contact shell midden	Unknown Native American	N/A	Not Evaluated
8LE01519	USFS 89-19 Wakulla	Artifact scatter	Weeden Island (AD 450–1000)	21825	Ineligible
8LE01522	USFS WAK 89-32/Holly Tree	Building remains; post-contact refuse/dump; turpentine camp	Boom Time–World War II (1921–1950)	13949	Ineligible
8LE01539	USFS 89-25 Wakulla	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	1915	Not Evaluated
8LE01540	USFS 89-24 Wakulla	Historic refuse/dump	Twentieth century (1900–1999)	1915	Not Evaluated
8LE01685	USFS WAK 90-36	Artifact scatter	Unknown Native American	2298	Not Evaluated
8LE01686	USFS WAK 90-37	Artifact scatter	Unknown Native American	6779	Ineligible
8LE01694	Gully Road	Homestead; artifact scatter	Unknown Native American; unknown post-contact	2581	Insufficient information
8LE01696	USFS 90-56 WAK	Artifact scatter	Unknown post-contact	2533	Ineligible
8LE01872	USFS WAK 92-01	Single artifact or isolated find	Archaic (8500–1000 BCE)	3074	Not Evaluated
8LE01873	USFS WAK 92-02	Single artifact or isolated find	Archaic (8500–1000 BCE)	3074	Not Evaluated
8LE01874	USFS WAK 92-03	Single artifact or isolated find	Archaic (8500–1000 BCE)	3074	Not Evaluated
8LE01878	USFS WAK 92-03	Single artifact or isolated find	Archaic (8500–1000 BCE)	21269	Ineligible
8LE01879	USFS WAK 92-11	Single artifact or isolated find	Archaic (8500–1000 BCE)	21825	Ineligible
8LE01880	USFS WAK 92-12	Single artifact or isolated find	Archaic (8500–1000 BCE)	21825	Ineligible
8LE02040	USFS #90-23 WAK/ Turkey Flap	Single artifact or isolated find	Unknown Native American	4372	Ineligible
8LE02041	Fingered Brick	Artifact scatter	American–twentieth century (1820–1999)	4373	Ineligible
8LE02042	USFS #93-24 WAK/Cutex	Homestead; artifact scatter	American–twentieth century (1820–1999)	4372	Ineligible

Archaeological Sites					
8LE02119	Brookin's	Land-terrestrial	Paleoindian–Early Archaic	N/A	Not Evaluated
8LE02247	USFS #02-02(H)	Campsite (pre-contact); homestead	Unknown Native American; nineteenth–twentieth century (1800–1999)	7004	Insufficient information
8LE04284	USFS #02-01 Boat Trailer	Homestead	Nineteenth–twentieth century (1800–1999)	7004	Insufficient information
8LE04331	#02-28	Campsite (pre-contact)	Weeden Island (AD 450–1000)	7745	Insufficient information
8LE04933	Deer Stand	Campsite (pre-contact)	Archaic (8500–1000 BCE)	8777	Not Evaluated
8LE04938	Skull & Toad	Campsite (pre-contact)	Unknown Native American	N/A	Not Evaluated
8LE04939	Rock Bluff South	Campsite (pre-contact)	Unknown Native American	8777	Not Evaluated
8LE04940	Hubba Hubbard	Campsite (pre-contact)	Unknown Native American	N/A	Not Evaluated
8LE04941	Groves Chill	Campsite (pre-contact)	Twentieth century (1900–1999)	8777	Not Evaluated
8LE04942	Doorknob Inferno	Homestead	Nineteenth–twentieth century (1800–1999)	23285	Ineligible
8LE04943	Winter's Edge	Campsite (pre-contact)	Weeden Island (AD 450–1000)	23285	Ineligible
8LE04944	Gully Bay South	Campsite (pre-contact)	Unknown Native American	21825	Ineligible
8LE04945	Hubbard North	Campsite (pre-contact)	Unknown Native American	8777	Ineligible
8LE05160	USFS #04-40 WAK	Single artifact or isolated find	Unknown Native American	11138	Insufficient information
8LE05161	USFS #03-12 WAK	Campsite (pre-contact)	Unknown Native American	10476	Insufficient information
8LE05378	Other Creek, USFS 07-14(B)	Land-terrestrial	Unknown Native American; twentieth century (1900–1999)	14494	Insufficient information
8LE05471	#08-06 (H) "Sean's Flask"	Land-terrestrial	Twentieth century (1900–1999)	21825	Ineligible
8LE05786	Bait Convict	Artifact scatter	Unknown Native American	17966	Insufficient information
8LE06458	USFS #20-02(H)WAK	Specialized site for procurement of raw materials	Twentieth century (1900–1999)	26864	Insufficient information
8LI00005	Mound near Rock Bluff Landing	Pre-contact burial mound(s)	Swift Creek–Weeden Island (300 BCE–AD 1000)	N/A	Not Evaluated
8LI00008	Torreya Ranger	Pre-contact midden	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8LI00009	NN	Artifact scatter	Unknown Native American	302	Not Evaluated
8LI00015	Four Branches	Artifact scatter	Swift Creek–Ft. Walton (300 BCE–AD 1500)	533	Not Evaluated
8LI00016	Eden	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00017	Doll's Leg	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00018	Brown Branch	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated

Archaeological Sites					
8LI00019	Goat	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00020	Boykin's Pit	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00021	Still	Artifact scatter	Unknown Native American	533	Not Evaluated
8LI00022	Pipeline	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated
8LI00023	Grant	Artifact scatter	Unknown Native American	533	Not Evaluated
8LI00024	West Branch	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00025	Burton	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00026	Honey Dew	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00027	Forbes Purchase	Single artifact or isolated find	Weeden Island (AD 450–1000)	17291	Ineligible
8LI00028	Sweetwater	Artifact scatter	Swift Creek (300 BCE–AD 450)	533	Not Evaluated
8LI00029	Hogan's Bend	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00030	Drew's Prospect	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00031	Chapel Branch	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00032	Kennedy Creek	Artifact scatter; post-contact refuse/dump	Weeden Island (AD 450–1000); Unknown post-contact	533	Not Evaluated
8LI00033	William Dawson	Artifact scatter	Ft. Walton (AD 1000–1500)	533	Not Evaluated
8LI00034	Upper Sweetwater Creek	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00035	Sweetwater Branch	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00036	Charlie Barrieum	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00037	Gordy Barber	House; artifact scatter	Weeden Island (AD 450–1000); American–twentieth century (1821–1999)	533	Not Evaluated
8LI00038	Hickory Stick	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00039	Porker Ridge	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00040	Graham	Artifact scatter	Weeden Island (AD 450–1000)	533	Not Evaluated
8LI00044	Hill 226	Pre-contact midden(s)	Norwood	534	Not Evaluated
8LI00045	NN	Habitation (pre-contact)	Unknown Native American	534	Not Evaluated
8LI00046	NN	Habitation (pre-contact)	Weeden Island (AD 450–1000)	534	Not Evaluated
8LI00047	Hogpen	Habitation (pre-contact)	Weeden Island (AD 450–1000)	534	Not Evaluated
8LI00048	NN	Habitation (pre-contact)	Weeden Island (AD 450–1000)	534	Not Evaluated
8LI00050	NN	Artifact scatter	Unknown Native American	534	Not Evaluated
8LI00051	Hill 191	Artifact scatter	Weeden Island (AD 450–1000)	534	Not Evaluated
8LI00052	NN	Artifact scatter	Weeden Island (AD 450–1000)	534	Not Evaluated
8LI00053	NN	Artifact scatter	Unknown Native American	N/A	Not Evaluated

Archaeological Sites					
8LI00054	NN	Pre-contact midden(s)	Unknown Native American	534	Not Evaluated
8LI00061	Eagle	Habitation (pre-contact)	Unknown Native American	534	Not Evaluated
8LI00062	Mashman's Meadow	Artifact scatter	Weeden Island (AD 450–1000)	534	Not Evaluated
8LI00063	Anderson	Artifact scatter	Unknown Native American	534	Not Evaluated
8LI00064	Rock of Will	Habitation (pre-contact)	Weeden Island (AD 450–1000)	534	Not Evaluated
8LI00066	Stroh's Beer	Habitation (pre-contact)	Weeden Island (AD 450–1000)	534	Not Evaluated
8LI00073	Old Miles Place	House	American–twentieth century (1821–1999)	N/A	Not Evaluated
8LI00074	Old Phillips Place	House	American–twentieth century (1821–1999)	N/A	Not Evaluated
8LI00075	Hatcher	Habitation (pre-contact)	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8LI00077	Segment 13	Campsite (pre-contact)	Weeden Island (AD 450–1000)	1	Not Evaluated
8LI00137	Hot Pines	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	N/A	Not Evaluated
8LI00157	Watersnake	Ceramic scatter	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8LI00158	Orange Diamond	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated
8LI00159	Torreya Point	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8LI00160	Rock Bluff Landing	Artifact scatter; post-contact refuse/dump	Ft. Walton (AD 1000–1500); American–twentieth century (1821–1999)	N/A	Not Evaluated
8LI00165	Lower Green Houseboat	Pre-contact shell midden(s)	Deptford (700–300 BCE)	N/A	Not Evaluated
8LI00166	Velvet Ant	Pre-contact shell midden(s)	Unknown Native American	N/A	Not Evaluated
8LI00167	Twin Tree	Single artifact or isolated find	Unknown Native American	N/A	Not Evaluated
8LI00168	Hanging Fish	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8LI00169	Cypress Labyrinth	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8LI00187	Sweetwater South	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	N/A	Not Evaluated
8LI00199	Top of the Hill	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8LI00200	Hardened Hill	Artifact scatter	Deptford (700–300 BCE)	N/A	Not Evaluated
8LI00201	Rock Bluff Borrow Pit	Artifact scatter	Swift Creek (300 BCE–AD 450)	N/A	Not Evaluated
8LI00202	Bethel Church	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated
8LI00203	Cedar Tree	Artifact scatter	American–twentieth century (1821–1999)	N/A	Not Evaluated
8LI00204	Cleared Bluff	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated
8LI00205	Majestic Bluff	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated

Archaeological Sites					
8LI00206	Broken Shoe	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated
8LI00308	Tal	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8LI00334	Confederate Gun Pits	Post-contact earthenworks	American Civil War (1861–1865)	19224	Not Evaluated
8LI00339	Cotton Warehouse	Building remains	Statehood and Antebellum (1845–1860)	19224	Not Evaluated
8LI00363	Hogpen Camp Road	Artifact scatter	Early Archaic	N/A	Not Evaluated
8LI00364	West Blue 2	Artifact scatter	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8LI00365	West Blue 1	Artifact scatter	Weeden Island II	N/A	Not Evaluated
8LI00382	P72-1	Single artifact or isolated find	Unknown Native American	4382	Ineligible
8LI00383	P72-2	Artifact scatter	Unknown Native American	4382	Ineligible
8LI00384	P72-3	Single artifact or isolated find	Unknown Native American	4382	Ineligible
8LI00385	P73-2	Single artifact or isolated find	Unknown Native American	4382	Ineligible
8LI00386	P73-3	Artifact scatter	Unknown Native American	4382	Ineligible
8LI00387	P73-4	Single artifact or isolated find	Unknown Native American	4382	Ineligible
8LI00390	P71-2	Artifact scatter	Unknown Native American	4382	Ineligible
8LI00391	P71-4	Artifact scatter	Weeden Island (AD 450–1000)	4382	Ineligible
8LI00392	P72-4	Artifact scatter	Twentieth century (1900–1999)	4382	Ineligible
8LI00393	P73-1	Single artifact or isolated find	Twentieth century (1900–1999)	4382	Ineligible
8LI00397	P72-5	Artifact scatter	Unknown Native American	4382	Ineligible
8LI00398	P74-1/2	Artifact scatter	Twentieth century (1900–1999)	4382	Ineligible
8LI00414	Bradwell Game Farm Historic Site	Building remains; post-contact burials; post-contact earthenworks	Twentieth century (1900–1999)	17001	Eligible
8LI00424	Knoll in Between	Single artifact or isolated find	Unknown Native American	17001	Insufficient information
8LI00459	Killer Horsefly	Single artifact or isolated find	Unknown Native American	6092	Not Evaluated
8LI00460	Dragonfly's Flower	Artifact scatter	Norwood, Weeden Island (AD 450–1000)	6092	Not Evaluated
8LI00461	USFS #99-09 (P)	Campsite (pre-contact)	Unknown Native American	17001	Insufficient information
8LI00462	Outta Shape	Single artifact or isolated find	Unknown Native American	6092	Not Evaluated
8LI00463	Zippy Armadillo	Artifact scatter	Unknown Native American	6092	Not Evaluated
8LI00464	Wandering Jones	Artifact scatter	Weeden Island (AD 450–1000)	6092	Not Evaluated
8LI00470	USFS #00-03(P)	Campsite (pre-contact)	Unknown Native American	14493	Insufficient information
8LI00471	USFS #00-04 (P)	Campsite (pre-contact)	Unknown Native American	6788	Insufficient information
8LI00537	8LI537	Land-terrestrial	Unknown Native American	N/A	Ineligible

Archaeological Sites					
8LI00538	USFS #09-06(P), "Turtle Kingdom"	Land-terrestrial	Unknown Native American	17001	Insufficient information
8LI00539	USFS #09-07(P), "Kris with a K"	Land-terrestrial	Unknown Native American	17001	Insufficient information
8LI00540	USFS #09-08(P), "Brave Cicada"	Land-terrestrial	Unknown Native American	17001	Insufficient information
8LI00541	USFS #09-09(P), "Alec the Destroyer"	Land-terrestrial	Unknown Native American	17001	Insufficient information
8LI00542	USFS #09-15(P), "Hair Band"	Land-terrestrial	Unknown Native American	17001	Insufficient information
8LI00543	USFS #09-16(P), "Wasp or Bee"	Land-terrestrial	Unknown Native American	17001	Insufficient information
8LI00544	USFS #09-17(P), "North and East"	Land-terrestrial	Unknown Native American	17001	Insufficient information
8LI00545	USFS #09-02(P), "Meeting Flake"	Land-terrestrial	Unknown Native American	17001	Insufficient information
8LI00551	Scott's Mill	Building remains	Unknown post-contact	N/A	Not Evaluated
8LI00562	Ab Goodson Mill	Building remains	Twentieth century (1900–1999)	N/A	Not Evaluated
8LI00563	Rock Bluff Black Public School	Building remains; artifact scatter	Twentieth century (1900–1999)	19224	Not Evaluated
8LI00564	CCC Dump	Artifact scatter; post-contact refuse/dump	Depression and New Deal (1930–1940)	19224	Not Evaluated
8WA00001	Marsh Island	Pre-contact burial mound(s)	Weeden Island–Ft. Walton (AD 450–1500)	N/A	Not Evaluated
8WA00002	Surf	Pre-contact shell midden	Weeden Island II	N/A	Not Evaluated
8WA00004	Hall	Pre-contact midden	Weeden Island (AD 450–1000)	11788	Ineligible
8WA00005	Spring Creek	Pre-contact mound(s)	Santa Rosa-Swift Creek	N/A	Not Evaluated
8WA00027	Dickerson Bay	Pre-contact midden	Deptford–Ft. Walton (700 BC–AD 1000)	11788	Potentially eligible
8WA00028	Old Creek Mound	Pre-contact mound(s)	Weeden Island–Ft. Walton (AD 450–1500)	N/A	Not Evaluated
8WA00029	Live Oak Point	Pre-contact shell midden	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8WA00031	Pumphouse	Pre-contact midden	Early Swift Creek	N/A	Not Evaluated
8WA00032	NN	Pre-contact midden	Weeden Island–Ft. Walton (AD 450–1500)	N/A	Not Evaluated
8WA00033	Spring Creek	Pre-contact midden	Weeden Island–Ft. Walton (AD 450–1500)	N/A	Not Evaluated
8WA00034	Ullmore Cove	Pre-contact midden	Norwood, Swift Creek (300 BCE–AD 450; Ft. Walton (AD 1000–1500)	N/A	Not Evaluated

Archaeological Sites					
8WA00043	Oaks	Pre-contact midden	Deptford (700–300 BCE); Weeden Island (AD 450–1000)	21219	Ineligiblw
8WA00051	Strip	Pre-contact midden	Deptford–Ft. Walton (700 BC–AD 1000)	N/A	Not Evaluated
8WA00052	Snow Beach	Pre-contact midden	Swift Creek–Weeden Island (300 BCE–AD 1000)	N/A	Not Evaluated
8WA00056	Simmon's Lodge	Pre-contact midden	Swift Creek–Ft. Walton (300 BCE–AD 1500)	N/A	Not Evaluated
8WA00077	Wallis	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8WA00078	Tradewind	Pre-contact shell midden	Weeden Island–Ft. Walton (AD 450–1500)	9201	Not Evaluated
8WA00081	Fish House	Pre-contact midden	Ft. Walton (AD 1000–1500)	N/A	Not Evaluated
8WA00084	Panacea Mound	Platform mound (pre-contact)	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8WA00090	Old Creek	Pre-contact midden	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8WA00096	Black Dirt	Artifact scatter	Archaic (8500–1000 BCE)	6092	Not Evaluated
8WA00097	Mosquito Bay	Campsite (pre-contact)	Unknown Native American	72	Not Evaluated
8WA00098	Ditch Bay	Artifact scatter	Paleoindian (10,000–8500 BCE); Weeden Island (AD 450–1000)	23286	Not Evaluated
8WA00100	Mahan Midden	Pre-contact shell midden	Unknown Native American	N/A	Not Evaluated
8WA00104	Shell Point	Pre-contact shell midden	Ft. Walton (AD 1000–1500)	N/A	Not Evaluated
8WA00105	South Bridge	Artifact scatter	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	23286	Insufficient information
8WA00109	NN	Single artifact or isolated find	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	72	Not Evaluated
8WA00122	Ross	Pre-contact shell midden	Unknown Native American	N/A	Not Evaluated
8WA00124	Sopchoppy 1	Campsite (pre-contact)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	6092	Not Evaluated
8WA00125	Sopchoppy 2	Artifact scatter	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	72	Not Evaluated
8WA00126	Sopchoppy 3	Lithic scatter/quarry (pre-contact: no ceramics)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	72	Not Evaluated
8WA00127	Sopchoppy 4	Campsite (pre-contact)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	72	Not Evaluated
8WA00128	Sopchoppy 5	Campsite (pre-contact)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	72	Not Evaluated
8WA00129	Sopchoppy 6	Lithic scatter/quarry (pre-contact: no ceramics)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	72	Not Evaluated
8WA00130	Sopchoppy 7	Artifact scatter	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	72	Not Evaluated

Archaeological Sites					
8WA00131	Sopchoppy 8	Campsite (pre-contact)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000); unknown post-contact	19948	Insufficient information
8WA00132	Sopchoppy 9	Campsite (pre-contact)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	72	Not Evaluated
8WA00133	Sopchoppy 10	Lithic scatter/quarry (pre-contact: no ceramics)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	72	Not Evaluated
8WA00134	Sopchoppy 11	Lithic scatter/quarry (pre-contact: no ceramics)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	72	Not Evaluated
8WA00135	Sopchoppy 12	Campsite (pre-contact)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	72	Not Evaluated
8WA00136	Sopchoppy 13	Campsite (pre-contact)	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	72	Not Evaluated
8WA00151	USFS 78-12 WAK	Artifact scatter	Unknown Native American	4370	Insufficient information
8WA00152	Apalachicola 13	Artifact scatter	Woodland	175	Not Evaluated
8WA00153	Apalachicola 14	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	175	Not Evaluated
8WA00155	USFS #78-16 WAK	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	5003	Ineligible
8WA00156	Apalachicola 17	Artifact scatter	Weeden Island (AD 450–1000)	9241	Not Evaluated
8WA00157	Apalachicola 18	Artifact scatter	Paleoindian (10,000–8500 BCE); Weeden Island (AD 450–1000)	25622	Insufficient information
8WA00162	USFS 79-11	Lithic scatter/quarry (pre-contact: no ceramics)	Archaic (8500–1000 BCE)	194	Not Evaluated
8WA00163	USFS 79-12	Lithic scatter/quarry (pre-contact: no ceramics)	Archaic (8500–1000 BCE)	194	Not Evaluated
8WA00167	USFS 79-19	Lithic scatter/quarry (pre-contact: no ceramics)	Archaic (8500–1000 BCE)	23286	Ineligible
8WA00168	USFS 79-20	Artifact scatter	Ft. Walton (AD 1000–1500); twentieth century (1900–1999)	23286	Ineligible
8WA00169	USFS 79-21	Campsite (pre-contact)	Archaic (8500–1000 BCE)	17618	Ineligible
8WA00176	USFS 80-4	Homestead	Twentieth century (1900–1999)	6309	Insufficient information
8WA00177	USFS 80-5	House	Twentieth century (1900–1999)	N/A	Not Evaluated
8WA00179	USFS 80-7	Artifact scatter	Weeden Island (AD 450–1000)	21269	Ineligible
8WA00191	USFS 81-41	Campsite (pre-contact)	Archaic (8500–1000 BCE)	23286	Ineligible

Archaeological Sites					
8WA00193	USFS 81-43 WAK	Habitation (pre-contact)	Late Archaic; Deptford (700–300 BCE); Weeden Island (AD 450–1000)	2382	Eligible
8WA00195	Lady Bug	Artifact scatter	Unknown Native American	3800	Insufficient information
8WA00196	USFS #81-47 WAK	Artifact scatter	Unknown Native American	15934	Insufficient information
8WA00200	Sawmill, USFS WAK 92-3	Lumber mill; artifact scatter	Unknown Native American; American–twentieth century (1821–1999)	9554	Insufficient information
8WA00201	USFS 82-6	Artifact scatter	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8WA00203	USFS 83-9	Post-contact refuse/dump; turpentine camp	American–twentieth century (1821–1999)	19342	Insufficient information
8WA00204	Pope Still	Specialized site for procurement of raw materials; post-contact refuse/dump	Unknown Native American; nineteenth–twentieth century (1800–1999)	15934	Insufficient information
8WA00207	USFS 84-2	Single artifact or isolated find	Middle–Late Archaic	23286	Ineligible
8WA00209	USFS 84-6	Artifact scatter	Unknown Native American	23286	Eligible
8WA00237	Purple Glass	Artifact scatter; naval stores-related	Early Archaic; Seminole–twentieth century (1716–1999)	13543	Potentially eligible
8WA00256	USFS 86-4 WAK	Artifact scatter	Archaic (8500–1000 BCE)	23286	Ineligible
8WA00259	Apiary	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	1678	Not Evaluated
8WA00260	No Name 2	Post-contact refuse/dump	American–twentieth century (1821–1999)	1678	Not Evaluated
8WA00261	RR Debris	Post-contact refuse/dump	Unknown Native American; American–twentieth century (1821–1999)	1678	Not Evaluated
8WA00262	USFS #86-39 WAK	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	9554	Insufficient information
8WA00279	Fish House 2	Pre-contact shell midden	Middle–Late Woodland; Swift Creek–Weeden Island (300 BC–AD 1000)	N/A	Not Evaluated
8WA00280	Fish House Shell Mound	Pre-contact shell midden	Unknown Native American	N/A	Not Evaluated
8WA00281	USFS 86-17 Wakulla	Homestead	Nineteenth–twentieth century (1800–1999)	9554	Insufficient information
8WA00282	USFS 86-18 Wakulla	Campsite (pre-contact)	Weeden Island (AD 450–1000)	23286	Ineligible
8WA00286	Medart Fire Tower	Post-contact refuse/dump	Twentieth century (1900–1999)	N/A	Ineligible
8WA00290	USFS WAK 86-29	Artifact scatter	Twentieth century (1900–1999)	N/A	Not Evaluated
8WA00291	USFS WAK 86-30	Single artifact or isolated find	Twentieth century (1900–1999)	N/A	Not Evaluated

Archaeological Sites					
8WA00294	USFS 87-1 Wakulla	Single artifact or isolated find	Woodland	9554	Insufficient information
8WA00296	USFS 87-5 Wakulla	Artifact scatter	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8WA00298	USFS 87-10 Wakulla	Lithic scatter/quarry (pre-contact: no ceramics)	Archaic (8500–1000 BCE)	6779	Ineligible
8WA00300	Giant Hole	Artifact scatter	Unknown Native American	8689	Ineligible
8WA00371	USFS #89-5 Wakulla	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	1915	Not Evaluated
8WA00374	USFS #89-8 Wakulla	Naval stores-related; post-contact refuse/dump	Twentieth century (1900–1999)	1915	Not Evaluated
8WA00375	USFS #89-9 Wakulla	Post-contact refuse/dump	Depression & New Deal–World War II (1930–1950)	1915	Not Evaluated
8WA00376	USFS #89-10 Wakulla	Lithic scatter/quarry (pre-contact: no ceramics)	Weeden Island (AD 450–1000)	1915	Not Evaluated
8WA00377	USFS WAK 89-11/Bobcat Scratch	Artifact scatter	Weeden Island (AD 450–1000)	1915	Not Evaluated
8WA00378	USFS WAK 89-12/Woodcutter's	Homestead	Twentieth century (1900–1999)	1915	Not Evaluated
8WA00379	USFS WAK 89-13/Overlap	Artifact scatter	Archaic (8500–1000 BCE)	1915	Not Evaluated
8WA00380	USFS WAK 89-14/North Knoll	Artifact scatter	Twentieth century (1900–1999)	6675	Insufficient information
8WA00391	USFS #89-27 WAK	Artifact scatter	Unknown Native American	5003	Insufficient information
8WA00392	USFS WAK 89-28/Old Rec.	Railroad grade segment	Twentieth century (1900–1999)	1915	Not Evaluated
8WA00397	Monkey Creek Hill	Artifact scatter	Unknown Native American	6092	Not Evaluated
8WA00400	USFS WAK 88-08/Chunk-It	Single artifact or isolated find	Unknown Native American; twentieth century (1900–1999)	10468	Insufficient information
8WA00401	USFS WAK 89-06/Bear Paw	Artifact scatter	Norwood; Deptford (700–300 BCE)	1924	Not Evaluated
8WA00415	USFS 85-12 WAL/Bobwhite	Artifact scatter	Weeden Island I	2159	Not Evaluated
8WA00416	USFS #90-14 WAK	Pre-contact lithics only, but not quarry	Unknown Native American	5056	Insufficient information

Archaeological Sites					
8WA00417	USFS 89-51 WAK/Gopher Hole	Artifact scatter	Unknown Native American	23286	Ineligible
8WA00418	USFS WAK/Deer Crossing	Artifact scatter	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	23286	Ineligible
8WA00421	Old 329 Site	Artifact scatter	Unknown Native American; Norwood	6092	Not Evaluated
8WA00447	USFS WAK 84-01	Pre-contact lithics only, but not quarry	Unknown Native American	23286	Ineligible
8WA00453	USFS 91-2(P) WAK	Artifact scatter	Deptford (700–300 BCE)	23286	Ineligible
8WA00458	USFS 91-3 WAK/Dinky Flake Site	Single artifact or isolated find	Archaic (8500–1000 BCE)	2657	Ineligible
8WA00460	USFS WAK 91-13 "Private Island"	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	10468	Insufficient information
8WA00461	USFS WAK 91-14 "Hairy Elbow"	Single artifact or isolated find	Unknown Native American	2657	Insufficient information
8WA00463	USFS WAK 91-06 "Curve Site"	Single artifact or isolated find	Twentieth century (1900–1999)	2657	Ineligible
8WA00464	USFS WAK 91-4 "Little Brown Bottle"	Homestead; artifact scatter	Twentieth century (1900–1999)	2657	Insufficient information
8WA00465	USFS WAK 91-12 "Old Truck Site"	Single artifact or isolated find	Archaic (8500–1000 BCE)	2657	Insufficient information
8WA00466	USFS WAK 91-11 "Yelp Site"	Single artifact or isolated find	Archaic (8500–1000 BCE)	2657	Insufficient information
8WA00467	USFS WAK 91-10 "Misty Site"	Artifact scatter	Middle Archaic; Swift Creek–Weeden Island (300 BCE–AD 1000); Alachua (AD 1250–1600)	23286	Eligible
8WA00468	USFS WAK 91-18/Island Site	Artifact scatter	Archaic (8500–1000 BCE)	2819	Ineligible
8WA00470	FS 31	Artifact scatter	Swift Creek (300 BCE–AD 450)	1507	Not Evaluated
8WA00483	USFS WAK 91-28	Campsite (pre-contact)	Unknown Native American	3009	Insufficient information
8WA00484	USFS WAK 91-29	Single artifact or isolated find	Unknown Native American	3009	Insufficient information
8WA00485	USFS WAK 91-30	Single artifact or isolated find	Unknown Native American	3009	Insufficient information
8WA00486	USFS WAK 91-31	Single artifact or isolated find	Unknown Native American	3009	Insufficient information

Archaeological Sites					
8WA00487	USFS WAK 91-32	Campsite (pre-contact)	Unknown Native American	3009	Insufficient information
8WA00488	USFS WAK 92-04	Campsite (pre-contact)	Unknown Native American	3071	Not Evaluated
8WA00490	USFS WAK 92-06	Campsite (pre-contact)	Unknown Native American	6309	Insufficient information
8WA00491	USFS WAK 92-07	Campsite (pre-contact)	Unknown Native American	3071	Insufficient information
8WA00492	USFS WAK 92-08	Campsite (pre-contact)	Unknown Native American	9554	Insufficient information
8WA00503	USFS WAK 92-20	Single artifact or isolated find	Archaic (8500–1000 BCE)	23286	Ineligible
8WA00508	USFS WAK 92-27	Single artifact or isolated find	Archaic (8500–1000 BCE)	3372	Insufficient information
8WA00516	Dirk	Artifact scatter	Archaic (8500–1000 BCE); Leon-Jefferson	N/A	Insufficient information
8WA00517	USFS WAK 93-03	Single artifact or isolated find	Archaic (8500–1000 BCE)	3389	Insufficient information
8WA00518	USFS WAK 93-04	Single artifact or isolated find	Unknown Native American	3389	Insufficient information
8WA00519	USFS WAK 93-05	Single artifact or isolated find	Unknown Native American	3389	Insufficient information
8WA00520	USFS WAK 93-06	Campsite (pre-contact)	Archaic (8500–1000 BCE)	3389	Insufficient information
8WA00521	USFS WAK 93-07	Single artifact or isolated find	Archaic (8500–1000 BCE)	3389	Insufficient information
8WA00522	USFS WAK 93-08	Single artifact or isolated find	Archaic (8500–1000 BCE)	3389	Insufficient information
8WA00523	USFS WAK 93-09	Single artifact or isolated find	Archaic (8500–1000 BCE)	10468	Insufficient information
8WA00524	USFS WAK 93-10	Single artifact or isolated find	Archaic (8500–1000 BCE)	3389	Insufficient information
8WA00525	USFS WAK 93-11	Single artifact or isolated find	Archaic (8500–1000 BCE)	3389	Insufficient information
8WA00526	USFS WAK 93-12	Single artifact or isolated find	Archaic (8500–1000 BCE)	3389	Insufficient information
8WA00527	USFS WAK 93-13	Single artifact or isolated find	Archaic (8500–1000 BCE)	10468	Insufficient information

Archaeological Sites					
8WA00528	USFS WAK 93-14	Single artifact or isolated find	Unknown Native American	3598	Insufficient information
8WA00529	USFS WAK 93-15	Single artifact or isolated find	Archaic (8500–1000 BCE)	3389	Insufficient information
8WA00530	USFS WAK 93-16	Single artifact or isolated find	Archaic (8500–1000 BCE)	10468	Insufficient information
8WA00531	USFS WAK 93-17	Specialized site for procurement of raw materials	Twentieth century (1900–1999)	3389	Insufficient information
8WA00533	USFS WAK 93-29	Single artifact or isolated find	Unknown Native American	3598	Insufficient information
8WA00535	USFS WAK 93-31	Single artifact or isolated find	Unknown Native American	3598	Insufficient information
8WA00537	USFS WAK 93-33	Specialized site for procurement of raw materials	Unknown Native American; twentieth century (1900–1999)	3598	Insufficient information
8WA00540	Nowhere Knoll	Artifact scatter	Unknown Native American	4370	Insufficient information
8WA00541	Fire-plow	Specialized site for procurement of raw materials	Deptford (700–300 BCE)	N/A	Not Evaluated
8WA00542	USFS WAK 94-02	Single artifact or isolated find	Unknown Native American	23286	Ineligible
8WA00543	USFS WAK 94-3	Single artifact or isolated find	Unknown Native American	15934	Insufficient information
8WA00544	USFS WAK 94-4	Artifact scatter	Unknown Native American	3592	Insufficient information
8WA00545	USFS WAK 94-5	Single artifact or isolated find	Unknown Native American	9554	Insufficient information
8WA00546	Birdfoot	Artifact scatter	Ft. Walton (AD 1000–1500)	N/A	Not Evaluated
8WA00548	NN	Artifact scatter	Unknown Native American	3702	Insufficient information
8WA00557	Langston Carter Site	Post-contact refuse/dump	American–twentieth century (1821–1999)	4520	Ineligible
8WA00621	Lost Creek Tributary	Specialized site for procurement of raw materials	Unknown Native American; nineteenth–twentieth century (1800–1999)	8324	Ineligible
8WA00622	Southern Terminus	Land-terrestrial	Unknown Native American	8324	Ineligible
8WA00632	USFS #97-04 WAK	Land-terrestrial	Middle Archaic	23286	Ineligible
8WA00636	USFS #97-11 WAK	Artifact scatter	Weeden Island (AD 450–1000)	23286	Ineligible
8WA00637	USFS #97-14 WAK	Artifact scatter	Unknown Native American	23286	Ineligible
8WA00639	USFS #97-16 WAK	Single artifact or isolated find	Unknown Native American	23286	Ineligible

Archaeological Sites					
8WA00643	USFS #97-19 WAK	Single artifact or isolated find	Unknown Native American	5003	Insufficient information
8WA00644	USFS #97-20 WAK	Single artifact or isolated find	Unknown Native American	11688	Insufficient information
8WA00645	USFS #97-21 WAK	Single artifact or isolated find	Unknown Native American	11688	Insufficient information
8WA00646	USFS #97-22 WAK	Artifact scatter	Unknown Native American	11688	Insufficient information
8WA00647	USFS #97-23 WAK	Single artifact or isolated find	Unknown Native American	5003	Insufficient information
8WA00650	Ashmore	Artifact scatter; post-contact refuse/dump	Nineteenth–twentieth century (1800–1999)	5254	Insufficient information
8WA00651	Loping Bear	Artifact scatter	Late Archaic; Norwood; Weeden Island II	6822	Eligible
8WA00652	Wrong Corner	Single artifact or isolated find	Unknown Native American	5456	Insufficient information
8WA00653	Holiday Fire	Artifact scatter	Unknown Native American	5456	Insufficient information
8WA00662	Lonely Walk	Single artifact or isolated find	Unknown Native American	6092	Not Evaluated
8WA00664	USFS #72-02 (B) "By the Road"	Artifact scatter	Unknown Native American	6309	Insufficient information
8WA00666	Eye Poker	Artifact scatter	Unknown Native American	6092	Not Evaluated
8WA00668	Tonys' Cool Tool	Campsite (pre-contact)	Unknown Native American	6092	Ineligible
8WA00671	USFS #00-03 (P) "Pallette"	Campsite (pre-contact)	Unknown Native American	6309	Insufficient information
8WA00672	USFS #00-04 (P) "Turtle Plop"	Campsite (pre-contact)	Unknown Native American	6309	Insufficient information
8WA00673	USFS #00-05 (P) "Grunter"	Campsite (pre-contact)	Unknown Native American	6309	Insufficient information
8WA00674	USFS #00-06 (P) "Deer Tree"	Campsite (pre-contact)	Unknown Native American	6309	Insufficient information
8WA00675	USFS #00-07 (P) "Woodpecker Scar"	Campsite (pre-contact)	Unknown Native American	6309	Insufficient information
8WA00676	USFS #00-08 (P) "Ian's Diaper	Campsite (pre-contact)	Unknown Native American	6309	Insufficient information
8WA00677	USFS #00-09 (P) "Gus' Wattle"	Campsite (pre-contact)	Unknown Native American	6309	Insufficient information

Archaeological Sites					
8WA00678	USFS #00-10 (P) "This is a Site"	Campsite (pre-contact)	Unknown Native American	6309	Not Evaluated
8WA00679	USFS #00-11 (P) "Well!"	Campsite (pre-contact)	Unknown Native American	6309	Insufficient information
8WA00680	USFS #00-12 (H) "Ahem!"	Homestead	Weeden Island (AD 450–1000)	6309	Insufficient information
8WA00681	USFS #00-13 (P) "Grape Carpet"	Campsite (pre-contact)	Unknown Native American	6309	Insufficient information
8WA00682	USFS #79-13 WAK	Campsite (pre-contact)	Unknown Native American	6309	Insufficient information
8WA00699	USFS #02-06 (P) WAK	Campsite (pre-contact)	Unknown Native American	6675	Not Evaluated
8WA00700	USFS #02-07 (P) WAK	Campsite (pre-contact)	Unknown Native American	6675	Insufficient information
8WA00701	USFS #02-11 (P) WAK	Campsite (pre-contact)	Unknown Native American	6675	Insufficient information
8WA00702	USFS #02-12 (P) WAK	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	18522	Insufficient information
8WA00706	#02-19 WAK	Post-contact burial(s)	Unknown Native American; nineteenth–twentieth century (1800–1999)	7004	Insufficient information
8WA00709	#02-21 WAK	Campsite (pre-contact)	Unknown Native American	7004	Insufficient information
8WA00719	#02-27 WAK	Land-terrestrial	Weeden Island II	7745	Insufficient information
8WA00723	VFD Site (USFS # 02-05 WAK)	Artifact scatter; homestead; post-contact refuse/dump	American–twentieth century (1821–1999)	8265	Potentially eligible
8WA00724	Panacea Mineral Springs	Building remains	Twentieth century (1900–1999)	23379	Insufficient information
8WA00725	USFS 03-02 WAK	Campsite (pre-contact)	Unknown Native American	8689	Ineligible
8WA00726	USFS 03-02 WAK	Campsite (pre-contact)	Unknown Native American	8689	Ineligible
8WA00731	Heart Attack Bridge	Campsite (pre-contact)	Unknown Native American	8741	Not Evaluated
8WA00733	Looming Deluge	Campsite (pre-contact)	Unknown Native American	9164	Insufficient information
8WA00734	Feral Beagle	Campsite (pre-contact)	Unknown Native American	9164	Insufficient information
8WA00735	Grimes Gator	Campsite (pre-contact)	Unknown Native American	9164	Insufficient information

Archaeological Sites					
8WA00737	USFS#03-35 WAK	Campsite (pre-contact)	Unknown Native American	9241	Not Evaluated
8WA00738	USFS#03-36 WAK	Campsite (pre-contact)	Unknown Native American	9241	Not Evaluated
8WA00739	USFS#03-37 WAK	Campsite (pre-contact)	Unknown Native American	9241	Not Evaluated
8WA00740	USFS#03-38 WAK	Campsite (pre-contact)	Unknown Native American	9241	Not Evaluated
8WA00747	USFS#04-02(H)WAK	Homestead	Twentieth century (1900–1999)	13606	Ineligible
8WA00749	USFS#04-04(H)WAK	Campsite (pre-contact)	Unknown Native American	9554	Insufficient information
8WA00750	USFS#04-05(H)WAK	Campsite (pre-contact)	Unknown Native American	9554	Insufficient information
8WA00751	USFS#04	Land-terrestrial	Unknown Native American	9554	Insufficient information
8WA00763	Big Pond East	Campsite (pre-contact)	Unknown Native American	10039	Not Evaluated
8WA00764	Big Pond Bottle Dump	Artifact scatter; post-contact refuse/dump	Twentieth century (1900–1999)	10039	Not Evaluated
8WA00766	Simmons Point	Pre-contact shell midden	Unknown Native American	10039	Not Evaluated
8WA00767	Pocket of Sherds	Campsite (pre-contact)	Deptford (700–300 BCE); Norwood	10039	Not Evaluated
8WA00768	South of Sink	Artifact scatter; post-contact refuse/dump	Late Archaic; Deptford (700–300 BCE); Weeden Island (AD 450–1000)	20570	Ineligible
8WA00769	Silver Glen Midden	Pre-contact shell midden	Deptford–Weeden Island (700 BCE–AD 1000)	10039	Not Evaluated
8WA00773	Deer Stand Battle Dump	Post-contact refuse/dump	Twentieth century (1900–1999)	10039	Not Evaluated
8WA00774	Central Scatter	Artifact scatter; post-contact refuse/dump	Twentieth century (1900–1999)	10039	Not Evaluated
8WA00779	USFS #04-25 WAK	Single artifact or isolated find	Deptford (700–300 BCE); Weeden Island (AD 450–1000)	10476	Insufficient information
8WA00780	USFS #04-35 WAK	Single artifact or isolated find	Unknown Native American; nineteenth–twentieth century (1800–1999)	11138	Insufficient information
8WA00796	USFS #04-58(P) WAK "Believe Your Eyes"	Campsite (pre-contact)	Unknown Native American	10468	Insufficient information
8WA00798	USFS #04-59(P) WAK "Right Ventricle"	Campsite (pre-contact)	Unknown Native American	10468	Insufficient information
8WA00799	USFS #04-60(P) WAK "Headless Skink"	Campsite (pre-contact)	Unknown Native American	10468	Insufficient information
8WA00800	USFS #04-61(P) WAK "No Cigar"	Campsite (pre-contact)	Unknown Native American	10468	Insufficient information

Archaeological Sites					
8WA00801	USFS #04-62(P) WAK "Very Stinky"	Campsite (pre-contact)	Unknown Native American	10468	Insufficient information
8WA00802	USFS #04-64(P) WAK "Postponed Delivery"	Campsite (pre-contact)	Unknown Native American	10468	Insufficient information
8WA00803	USFS #04-66(P) WAK "Gadget Tree"	Campsite (pre-contact)	Unknown Native American	10468	Insufficient information
8WA00804	USFS #04-67(P) WAK "Lofty Thermals"	Campsite (pre-contact)	Unknown Native American	10468	Insufficient information
8WA00806	#-04-68(P) WAK "Cat & Mole"	Campsite (pre-contact)	Unknown Native American	12431	Ineligible
8WA00812	Nichols 1	Land-terrestrial	Weeden Island (AD 450–1000)	11788	Potentially eligible
8WA00830	Skeeter Hammock	Specialized site for procurement of raw materials	Weeden Island (AD 450–1000)	14494	Insufficient information
8WA00844	USFS #05-29 (P) "Biting Fence"	Land-terrestrial	Unknown Native American	15524	Insufficient information
8WA00846	#08-04 (P) "Burned Petals"	Land-terrestrial	Unknown Native American	23286	Insufficient information
8WA00848	USFS #08-10(B) "Fascinating Fay"	Post-contact refuse/dump	Unknown Native American; American–twentieth century (1821–1999)	16697	Insufficient information
8WA00849	USFS #09-16(P), "Field Day"	Land-terrestrial	Unknown Native American	16712	Insufficient information
8WA00850	USFS #09-24(P) "Dead Dumbledore"	Land-terrestrial	Unknown Native American	17006	Insufficient information
8WA00852	Yucca Seed Pods	Land-terrestrial	Unknown Native American	17618	Insufficient information
8WA00855	Thumb	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	18061	Insufficient information
8WA00856	USFS #80-09 WAK	Artifact scatter	Twentieth century (1900–1999)	18061	Insufficient information
8WA00857	Antolina-Estafania	Homestead	Deptford (700–300 BCE); Norwood	18061	Insufficient information
8WA00858	Alford's New Heart	Artifact scatter	Unknown Native American	18061	Insufficient information
8WA00882	Surf Road 3	Artifact scatter	Deptford (700–300 BCE)	20570	Ineligible
8WA00883	WEI North Rise	Artifact scatter	Unknown Native American	20508	Ineligible

Archaeological Sites					
8WA00884	WEI South Sink West	Campsite (pre-contact)	Weeden Island (AD 450–1000)	20508	Ineligible
8WA00885	WEI South Sink South	Campsite (pre-contact)	Unknown Native American	20508	Ineligible
8WA00887	WEI Lone Sherd	Campsite (pre-contact)	Weeden Island (AD 450–1000)	20508	Ineligible
8WA01055	Surf Road 4	Campsite (pre-contact)	Swift Creek (300 BCE–AD 450)	21219	Ineligible
8WA01056	Surf Road 5	Campsite (pre-contact)	Unknown Native American	21219	Ineligible
8WA01065	Ashmore East	Land-terrestrial	Nineteenth–twentieth century (1800–1999)	21728	Ineligible
8WA01202	USFS #08-09(P) WAK	Campsite (pre-contact)	Unknown Native American	23286	Ineligible
8WA01224	USFS #86-05(P) WAK "Thumb"	Land-terrestrial	Unknown Native American	23286	Not Evaluated
8WA01225	USFS #86-06(P) WAK "Igloo Chimney"	Land-terrestrial	Unknown Native American	23286	Not Evaluated
8WA01226	USFS #86-03(P) WAK "Shark Fin"	Land-terrestrial	Unknown Native American	23286	Not Evaluated
8WA01260	Coastal Highway Scatter	Campsite (pre-contact)	Unknown Native American	25353	Ineligible
8WA01261	USFS #04-63(H) WAK	Homestead	Nineteenth–twentieth century (1800–1999)	25305	Insufficient information
8WA01262	USFS #18-09(H) WAK	Homestead	Unknown Native American; nineteenth–twentieth century (1800–1999)	26106	Insufficient information
8WA01267	USFS #10-19(P) WAK	Campsite (pre-contact)	Unknown Native American	26106	Ineligible
8WA01279	Woolley Bully	Post-contact refuse/dump	Twentieth century (1900–1999)	26768	Ineligible
8WL00043	Morrison Spring	Habitation (pre-contact)	Archaic (8500–1000 BCE); Ft. Walton (AD 1000–1500); twentieth century (1900–1999)	14681	Insufficient information
8WL00056	Red Bay	Pre-contact midden(s)	Santa Rosa–Swift Creek	N/A	Not Evaluated
8WL00081	Broome	Pre-contact midden(s); post-contact refuse/dump	Santa Rosa–Swift Creek; Weeden Island (AD 450–1000); twentieth century (1900–1999)	4776	Potentially eligible
8WL00088	Neal Mound	Pre-contact mound(s)	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8WL00107	Sandy Creek Campsite	Campsite (pre-contact)	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8WL00111	RL 28	Artifact scatter	Deptford (700–300 BCE)	13620	Insufficient information
8WL00112	RL 29	Artifact scatter	Deptford (700–300 BCE); Norwood; Weeden Island (AD 450–1000)	16994	Ineligible
8WL00113	RL 30	Artifact scatter	Deptford (700–300 BCE)	11677	Ineligible
8WL00121	NWR 1	Artifact scatter	Weeden Island (AD 450–1000); unknown post-contact	14101	Ineligible

Archaeological Sites					
8WL00122	NWR 2	Artifact scatter; post-contact refuse/dump	Weeden Island (AD 450–1000); nineteenth–twentieth century (1800–1999)	18182	Ineligible
8WL00127	NWR 8	Post-contact refuse/dump	Nineteenth–twentieth century (1800–1999)	4017	Not Evaluated
8WL00201	X182A	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated
8WL00228	IF5	Single artifact or isolated find	Unknown Native American	N/A	Not Evaluated
8WL00229	X191B	Campsite (pre-contact)	Woodland; American–twentieth century (1821–1999)	6890	Ineligible
8WL00230	X191D	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated
8WL00231	X191H	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated
8WL00232	X204A	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8WL00309	X 201A	Artifact scatter	Unknown Native American	4017	Not Evaluated
8WL00310	X 201B	Single artifact or isolated find	Unknown Native American	4017	Not Evaluated
8WL00311	X 201C	Single artifact or isolated find	Unknown Native American	4017	Not Evaluated
8WL00318	X 201D	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	4017	Not Evaluated
8WL00319	X 201G	Artifact scatter	Unknown Native American	4017	Not Evaluated
8WL00320	X 201H	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	4017	Not Evaluated
8WL00321	George Grainey Place	Post-contact refuse/dump	Nineteenth–twentieth century (1800–1999)	4017	Not Evaluated
8WL00322	X 201J	Artifact scatter	Paleoindian–Early Archaic; Weeden Island (AD 450–1000); nineteenth–twentieth century (1800–1999)	7206	Ineligible
8WL00323	X 201K	Bridge remains	Nineteenth–twentieth century (1800–1999)	4017	Not Evaluated
8WL00327	X 207A	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	4017	Not Evaluated
8WL00331	X 162C	Lithic scatter/quarry (pre-contact: no ceramics)	Archaic (8500–1000 BCE)	4017	Not Evaluated
8WL00357	188A	Post-contact refuse/dump	Unknown post-contact	4017	Not Evaluated
8WL00375	X 162A	Single artifact or isolated find	Unknown post-contact	4017	Not Evaluated
8WL00376	X 162B	Post-contact refuse/dump	Unknown post-contact	4017	Not Evaluated
8WL00377	X 182B	Single artifact or isolated find	Unknown post-contact	4017	Not Evaluated
8WL00381	X 118A	Single artifact or isolated find	Unknown Native American	4017	Not Evaluated

Archaeological Sites					
8WL00383	X 201F	Single artifact or isolated find	Unknown Native American; unknown post-contact	4017	Not Evaluated
8WL00883	Douglass Crossroads	Artifact scatter	Unknown Native American	N/A	Not Evaluated
8WL00889	German Mill	Grist mill	Nineteenth–twentieth century (1800–1999)	3533	Not Evaluated
8WL00893	Bay Branch	Single artifact or isolated find	Weeden Island II	3642	Ineligible
8WL00899	Ray Hill 1	Specialized site for procurement of raw materials	Early Archaic	N/A	Not Evaluated
8WL00900	Ray Hill 2	Specialized site for procurement of raw materials	Early Archaic	N/A	Not Evaluated
8WL00901	Ray Hill 3	Artifact scatter	Early Archaic	N/A	Not Evaluated
8WL00902	Ray Hill 4	Specialized site for procurement of raw materials	Middle Archaic	N/A	Not Evaluated
8WL00903	Ray Hill 5	Specialized site for procurement of raw materials	Archaic (8500–1000 BCE)	N/A	Not Evaluated
8WL00904	Ray Hill 6	Artifact scatter	Archaic (8500–1000 BCE)	N/A	Not Evaluated
8WL00914	P41-1	Single artifact or isolated find	Unknown post-contact	N/A	Not Evaluated
8WL01054	X-299-A	Specialized site for procurement of raw materials	Archaic (8500–1000 BCE); Deptford (700–300 BCE); Weeden Island–Ft. Walton (AD 450–1500)	6898	Eligible
8WL01055	X-299-B	Artifact scatter	Early Archaic; Weeden Island (AD 450–1000)	6898	Ineligible
8WL01056	X-299-C	Artifact scatter	Unknown Native American	4357	Ineligible
8WL01057	X-299-D	Post-contact refuse/dump	Twentieth century (1900–1999)	4357	Ineligible
8WL01058	X-299-F	Artifact scatter	Weeden Island (AD 450–1000)	4357	Ineligible
8WL01059	X-299-G	Artifact scatter	Unknown Native American	4357	Ineligible
8WL01068	X-297-A	Artifact scatter	Unknown Native American	4523	Ineligible
8WL01088	X-298A	Artifact scatter	Unknown Native American; American–twentieth century (1821–1999)	4545	Ineligible
8WL01089	X-297-B	Artifact scatter	Woodland; Deptford (700–300 BCE)	4523	Ineligible
8WL01090	X-129-C/D/H	Artifact scatter	Weeden Island (AD 450–1000)	6898	Eligible
8WL01093	X-298-C	Artifact scatter	Weeden Island (AD 450–1000)	4545	Ineligible
8WL01094	X-298-D, E, F, G	Artifact scatter	Weeden Island (AD 450–1000)	4629	Ineligible
8WL01095	X-298-I	Artifact scatter; post-contact refuse/dump	Unknown Native American; American–twentieth century (1821–1999)	4629	Ineligible
8WL01143	X-352-A	Artifact scatter	Unknown Native American; twentieth century (1900–1999)	4629	Ineligible

Archaeological Sites					
8WL01144	X-352-B	Artifact scatter	Weeden Island (AD 450–1000)	4629	Ineligible
8WL01145	X-352-C/D	Artifact scatter	Weeden Island (AD 450–1000); twentieth century (1900–1999)	4629	Ineligible
8WL01146	X-352-E	Artifact scatter	Woodland	4629	Ineligible
8WL01147	X-352-G	Artifact scatter	Paleoindian–Late Archaic (10,000–1000 BCE)	7021	Eligible
8WL01148	X-352-H	Artifact scatter	Woodland	4629	Ineligible
8WL01149	X-352-I/J	Artifact scatter	Late Archaic	4629	Ineligible
8WL01150	X-352-K/L	Artifact scatter	Middle Archaic	7021	Eligible
8WL01151	X-352-M	Artifact scatter	Paleoindian–Late Archaic (10,000–1000 BCE)	7021	Eligible
8WL01152	X-352-O	Artifact scatter	Unknown Native American	4629	Ineligible
8WL01153	X-352-R	Post-contact road segment	Nineteenth–twentieth century (1800–1999)	4629	Ineligible
8WL01154	X-352-T	Artifact scatter	Late Archaic–Woodland; Weeden Island (AD 450–1000)	7021	Ineligible
8WL01155	X-352-U	Artifact scatter	Weeden Island–Ft. Walton (AD 450–1500)	4629	Ineligible
8WL01156	X-352-V	Artifact scatter	Twentieth century (1900–1999)	4629	Ineligible
8WL01157	X-352-X	Artifact scatter	Weeden Island (AD 450–1000)	4629	Ineligible
8WL01158	X-352-Y	Artifact scatter	Twentieth century (1900–1999)	4629	Ineligible
8WL01159	X-352-S	Artifact scatter	Weeden Island (AD 450–1000)	4629	Ineligible
8WL01187	X-356-O	Artifact scatter	Weeden Island (AD 450–1000)	4629	Ineligible
8WL01213	X-375-G	Artifact scatter	Weeden Island (AD 450–1000)	5352	Ineligible
8WL01217	X-375-K	Artifact scatter	Unknown Native American	5352	Ineligible
8WL01218	X-375-B	Specialized site for procurement of raw materials	Mississippian; Weeden Island (AD 450–1000)	27086	Ineligible
8WL01219	X-375-D	Artifact scatter	Unknown Native American	5352	Ineligible
8WL01220	X-375-M	Artifact scatter	Weeden Island (AD 450–1000)	7021	Ineligible
8WL01222	X-375-E	Artifact scatter	Unknown Native American	5352	Ineligible
8WL01223	X-375-J	Artifact scatter	Deptford (700–300 BCE)	6896	Potentially eligible
8WL01227	X-375-L	Artifact scatter	Unknown Native American	5352	Ineligible
8WL01228	X-375-O	Artifact scatter	Weeden Island (AD 450–1000)	5352	Ineligible
8WL01229	X-375-T	Artifact scatter	Paleoindian–Early Archaic; Weeden Island (AD 450–1000)	5352	Ineligible
8WL01230	X-375-R	Artifact scatter	Unknown Native American	5352	Ineligible

Archaeological Sites					
8WL01231	X-375-Z	Artifact scatter	Weeden Island (AD 450–1000)	5352	Potentially eligible
8WL01232	X-375-AA	Artifact scatter	Unknown Native American	5352	Ineligible
8WL01260	X-396-B	Pre-contact lithics only, but not quarry	Unknown Native American	5284	Ineligible
8WL01346	Washout Site	Artifact scatter	Weeden Island II	14177	Ineligible
8WL01378	X-415-A	Artifact scatter	Unknown Native American	5502	Ineligible
8WL01379	X-415-C	Pre-contact lithics only, but not quarry	Unknown Native American	5502	Ineligible
8WL01380	X-415-H	Pre-contact lithics only, but not quarry	Archaic (8500–1000 BCE)	5502	Ineligible
8WL01381	X-415-G	Artifact scatter	Unknown Native American; twentieth century (1800–1999)	19530	Insufficient information
8WL01382	X-415-B	Artifact scatter	Unknown Native American	5786	Insufficient information
8WL01409	X436DD	Pre-contact lithics only, but not quarry	Unknown Native American	6950	Ineligible
8WL01446	X-437-A	Pre-contact lithics only, but not quarry	Unknown Native American	5501	Ineligible
8WL01452	X-428-A	Artifact scatter	Unknown Native American; nineteenth–twentieth century (1800–1999)	5630	Ineligible
8WL01453	X-427-B	Artifact scatter	Unknown Native American	5628	Ineligible
8WL01455	X-428-B	Artifact scatter	Unknown Native American	5630	Ineligible
8WL01456	X-428-C	Artifact scatter	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	5630	Ineligible
8WL01462	X-427-F	Artifact scatter	Unknown Native American	5628	Ineligible
8WL01464	X-428-D	Artifact scatter	Early Swift Creek; Weeden Island (AD 450–1000); American–twentieth century (1821–1999)	5630	Ineligible
8WL01467	X436N	Artifact scatter	Unknown Native American	6950	Ineligible
8WL01474	X-433-F/G	Campsite (pre-contact)	Woodland	6857	Potentially eligible
8WL01479	X436A	Campsite (pre-contact)	Deptford (700–300 BCE); Weeden Island (AD 450–1000)	6950	Insufficient information
8WL01489	X433A/K	Campsite (pre-contact)	Weeden Island (AD 450–1000); American–twentieth century (1821–1999)	6857	Ineligible

Archaeological Sites					
8WL01490	X436D	Artifact scatter	Weeden Island (AD 450–1000)	6950	Ineligible
8WL01491	X436W	Artifact scatter	Weeden Island (AD 450–1000)	6950	Ineligible
8WL01494	X452B	Homestead	Nineteenth–twentieth century (1800–1999)	6879	Potentially eligible
8WL01495	X436M	Artifact scatter; homestead	Unknown Native American; nineteenth century (1800–1899)	6950	Insufficient information
8WL01497	X436HH	Artifact scatter	Unknown Native American; nineteenth–twentieth century (1800–1999)	6950	Ineligible
8WL01498	X436AA	Artifact scatter	Santa Rosa-Swift Creek; Weeden Island (AD 450–1000)	6950	Insufficient information
8WL01499	X452D	Post-contact refuse/dump	Twentieth century (1900–1999)	6879	Potentially eligible
8WL01545	X473J	Campsite (pre-contact)	Unknown Native American	6949	Ineligible
8WL01557	Black Branch School	Habitation (pre-contact); post-contact refuse/dump	Weeden Island (AD 450–1000); American–twentieth century (1821–1999)	5931	Not Evaluated
8WL01560	Rock Hill Site	Campsite (pre-contact)	Unknown Native American	5931	Not Evaluated
8WL01571	Morrison Spring 1	Habitation (pre-contact)	Weeden Island (AD 450–1000)	13699	Ineligible
8WL01574	McLeod's Mill	Mill	Statehood and Antebellum (1845–1860)	5931	Not Evaluated
8WL01577	Spencer's Mill	Mill	Statehood and Antebellum (1845–1860)	5931	Not Evaluated
8WL01581	Euchee Valley Church	Church foundation	Nineteenth century American (1821–1899)	5931	Not Evaluated
8WL01582	Eucheeanna	Post-contact town	Nineteenth century American (1821–1899)	5931	Not Evaluated
8WL01587	Anderson/Wilson House Site	Farmstead	Nineteenth century American (1821–1899)	5931	Not Evaluated
8WL01588	Wilson Grist Mill	Mill	Nineteenth century American (1821–1899)	5931	Not Evaluated
8WL01593	Morrison Spring 2	Artifact scatter	Archaic (8500–1000 BCE)	14681	Ineligible
8WL01596	McDonald House Site	Farmstead	Early Archaic; Weeden Island (AD 450–1000); Statehood and Antebellum (1845–1860)	5931	Not Evaluated
8WL01598	Camp Creek Trestle	Railroad grade	Boom Times–Depression and New Deal (1921–1940)	5931	Not Evaluated
8WL01600	Cone (Blount) House Site	Farmstead	Statehood and Antebellum (1845–1860)	5931	Not Evaluated
8WL01601	Campbell Road 1	Campsite (pre-contact)	Unknown Native American	5931	Not Evaluated
8WL01602	Campbell Road 2	Campsite (pre-contact)	Unknown Native American	5931	Not Evaluated
8WL01603	Folks Creek 1	Campsite (pre-contact)	Unknown Native American	5931	Not Evaluated
8WL01604	Goose Branch 1	Campsite (pre-contact)	Unknown Native American	5931	Not Evaluated

Archaeological Sites					
8WL01610	Red Hill Road #1	Campsite (pre-contact)	Unknown Native American	5931	Not Evaluated
8WL01611	Manning #1	Campsite (pre-contact)	Late Archaic; Weeden Island (AD 450–1000)	5931	Not Evaluated
8WL01612	Manning #2	Campsite (pre-contact)	Unknown Native American	5931	Not Evaluated
8WL01613	Manning #3	Campsite (pre-contact)	Unknown Native American	5931	Not Evaluated
8WL01614	Red Hill Road #2	Pre-contact burial(s)	Mississippian	5931	Not Evaluated
8WL01615	Red Hill Road #3	Campsite (pre-contact)	Unknown Native American	5931	Not Evaluated
8WL01617	Southwide Baptist Church Pit	Campsite (pre-contact)	Unknown Native American	5931	Not Evaluated
8WL01620	Mocassin Forks Rd 1	Campsite (pre-contact)	Paleoindian (10,000–8500 BCE)	5931	Not Evaluated
8WL01621	McLendon Site	Farmstead	Statehood and Antebellum (1845–1860)	5931	Not Evaluated
8WL01622	McDonald House Site #2	Farmstead	Nineteenth century American–twentieth century (1821–1999)	5931	Not Evaluated
8WL01624	X473C	Campsite (pre-contact)	Unknown Native American	6949	Ineligible
8WL01628	Red Bay 2	Artifact scatter	Unknown Native American	5931	Not Evaluated
8WL01632	Foreman 3	Campsite (pre-contact)	Archaic (8500–1000 BCE)	5931	Not Evaluated
8WL01637	Pleasant Ridge Pit	Campsite (pre-contact)	Middle–Late Archaic	5931	Not Evaluated
8WL01638	Casino Site	Ceramic scatter	Weeden Island–Ft. Walton (AD 450–1500)	5931	Not Evaluated
8WL01648	X473G	Homestead; artifact scatter	Nineteenth century American–twentieth century (1821–1999)	25559	Ineligible
8WL01649	X473K/L	Campsite (pre-contact)	Deptford (700–300 BCE)	6949	Ineligible
8WL01655	X 437 B	Campsite (pre-contact)	Weeden Island (AD 450–1000)	6949	Ineligible
8WL01670	X-452-E	Building remains	Twentieth century (1900–1999)	6879	Potentially eligible
8WL01671	X-452-H	Building remains	Twentieth century (1900–1999)	6879	Potentially eligible
8WL01672	X-436-G	Artifact scatter	Unknown Native American	6950	Ineligible
8WL01673	X-436-J	Artifact scatter	Weeden Island (AD 450–1000)	6950	Insufficient information
8WL01674	X-436-K	Building remains	Swift Creek; Nineteenth century American–twentieth century (1821–1999)	6950	Insufficient information
8WL01675	X-436-I/P	Building remains	Weeden Island (AD 450–1000); Nineteenth century American–twentieth century (1821–1999)	6950	Insufficient information
8WL01676	X-436-T	Artifact scatter	Nineteenth century American–twentieth century (1821–1999)	6950	Ineligible

Archaeological Sites					
8WL01677	X-436-GG/LL	Artifact scatter; building remains	Archaic (8500–1000 BCE); nineteenth century American–twentieth century (1821–1999)	6950	Insufficient information
8WL01678	X-436-II/JJ	Artifact scatter	Late Archaic–Early Woodland	6950	Insufficient information
8WL01679	X-436-QQ	Artifact scatter	Weeden Island (AD 450–1000)	6950	Insufficient information
8WL01681	X-433-C	Homestead	Nineteenth century American–twentieth century (1821–1999)	20357	Potentially eligible
8WL01685	X-433-Q/R	Homestead	Weeden Island (AD 450–1000); nineteenth century American–twentieth century (1821–1999)	6857	Potentially eligible
8WL01686	X-433-S	Artifact scatter	Nineteenth century American–twentieth century (1821–1999)	6857	Ineligible
8WL01708	X542B	Pre-contact lithics only, but not quarry	Unknown Native American	6929	Ineligible
8WL01715	X452A	Building remains	Nineteenth century American (1821–1899)	6879	Potentially eligible
8WL01718	X539D	Campsite (pre-contact)	Unknown Native American	6928	Ineligible
8WL01719	X539G	Campsite (pre-contact)	Unknown Native American	6928	Ineligible
8WL01720	X539B	Artifact scatter	Unknown Native American	6928	Ineligible
8WL01721	X539C	Campsite (pre-contact)	Unknown Native American	6928	Ineligible
8WL01723	X539A	Artifact scatter	Unknown Native American; nineteenth century American–twentieth century (1821–1999)	6928	Potentially eligible
8WL01745	X547A	Campsite (pre-contact)	Santa Rosa-Swift Creek	6929	Ineligible
8WL01762	X563C	Artifact scatter	Unknown Native American	6931	Ineligible
8WL01768	X-565-F	Artifact scatter; homestead; post-contact well	Unknown Native American; nineteenth century American–twentieth century (1821–1999)	7204	Potentially eligible
8WL01769	X-565-K	Artifact scatter; building remains	Unknown Native American; nineteenth century American–twentieth century (1821–1999)	7204	Potentially eligible
8WL01773	X-565-I	Pre-contact lithics only, but not quarry	Unknown Native American	7204	Ineligible

Archaeological Sites					
8WL01776	X-563-H	Campsite (pre-contact)	Santa Rosa-Swift Creek; Weeden Island (AD 450–1000)	6931	Ineligible
8WL01777	X-565-B	Homestead; naval stores-related	Nineteenth century American–twentieth century (1821–1999)	19242	Insufficient information
8WL01778	X-565-J	Homestead	Nineteenth century American–twentieth century (1821–1999)	7204	Potentially eligible
8WL01782	X-563-E	Pre-contact lithics only, but not quarry	Unknown Native American	6931	Ineligible
8WL01783	X-563-A	Campsite (pre-contact)	Deptford (700–300 BCE)	6931	Insufficient information
8WL01784	X-563-B	Artifact scatter	Unknown Native American	6931	Ineligible
8WL01785	X-563-I&G	Campsite (pre-contact)	Weeden Island–Ft. Walton (AD 450–1500)	6931	Insufficient information
8WL01789	X-563-K	Pre-contact lithics only, but not quarry	Unknown Native American	6931	Ineligible
8WL01826	X-590-C	Artifact scatter	Unknown Native American; nineteenth century American–twentieth century (1821–1999)	7138	Ineligible
8WL01827	X-590-E	Pre-contact lithics only, but not quarry	Early Archaic	7138	Potentially eligible
8WL01828	X-590-F	Homestead	Nineteenth century American–twentieth century (1821–1999)	7138	Potentially eligible
8WL01849	X-603-G	Artifact scatter	Unknown Native American	7811	Ineligible
8WL01854	X-603-O	Artifact scatter	Weeden Island (AD 450–1000)	7811	Ineligible
8WL01855	X-603-H/P	Pre-contact lithics only, but not quarry	Unknown Native American	7811	Ineligible
8WL01856	X-603-E	Artifact scatter	Weeden Island (AD 450–1000)	7811	Ineligible
8WL01858	X-603-Q	Artifact scatter	Weeden Island (AD 450–1000)	7811	Ineligible
8WL01859	X-603-K	Pre-contact lithics only, but not quarry	Unknown Native American	7811	Ineligible
8WL01862	X-603-U	Artifact scatter	Unknown Native American	7811	Ineligible
8WL01864	X-603-B	Pre-contact lithics only, but not quarry	Unknown Native American	7811	Ineligible
8WL01865	X-603-C	Artifact scatter	Unknown Native American	7811	Ineligible
8WL01866	X-603-T	Artifact scatter	Unknown Native American	7811	Ineligible

Archaeological Sites					
8WL01885	Bruce Creek Landing Site	Ceramic scatter	Unknown Native American	8392	Not Evaluated
8WL01886	None	Pre-contact lithics only, but not quarry	Unknown Native American	8392	Not Evaluated
8WL01887	None	Campsite (pre-contact)	Late Archaic	8392	Not Evaluated
8WL01889	Sam Story's Burial Site	Post-contact burial(s)	Nineteenth century American–twentieth century (1821–1999)	8392	Not Evaluated
8WL01890	Sam Story Landing Site	Pre-contact midden(s)	Weeden Island–Ft. Walton (1821–1999)	8392	Not Evaluated
8WL01903	None	Pre-contact lithics only, but not quarry	Unknown Native American	8392	Not Evaluated
8WL01904	None	Artifact scatter	Unknown Native American	8392	Not Evaluated
8WL01905	None	Single artifact or isolated find	Unknown Native American	8392	Not Evaluated
8WL01906	None	Single artifact or isolated find	Unknown Native American	8392	Not Evaluated
8WL01911	Mountain Sink Site	Artifact scatter	Unknown Native American	8392	Not Evaluated
8WL01912	Sam Story's Memorial Headstone Site	Post-contact burial(s)	Nineteenth century American (1821–1899)	8392	Not Evaluated
8WL01921	None	Pre-contact lithics only, but not quarry	Unknown Native American	8392	Not Evaluated
8WL01922	None	Campsite (pre-contact)	Twentieth century (1900–1999)	8392	Not Evaluated
8WL01923	None	Artifact scatter	Unknown Native American	21338	Insufficient information
8WL01981	X-617-C	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	14318	Ineligible
8WL01982	X-617-G	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	14318	Ineligible
8WL01999	Knox Hill Academy	Other	Nineteenth century American–twentieth century (1821–1999)	N/A	Not Evaluated
8WL02004	X-618-D/H	Artifact scatter	Unknown Native American	12375	Ineligible
8WL02005	X-618-C	Artifact scatter	Weeden Island (AD 450–1000)	12375	Ineligible
8WL02006	X-618-A	Artifact scatter	Unknown Native American	12375	Ineligible
8WL02019	X-618-E	Artifact scatter	Late Archaic; Weeden Island (AD 450–1000)	17461	Ineligible
8WL02024	X-618-J/L	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	12375	Ineligible
8WL02025	X-617-E/F	Artifact scatter	Early–Middle Archaic; Woodland; Weeden Island (AD 450–1000)	17461	Ineligible
8WL02033	X-734-A	Campsite (pre-contact)	Unknown Native American	11677	Ineligible

Archaeological Sites					
8WL02034	X-743-A	Pre-contact lithics only, but not quarry	Unknown Native American	11363	Ineligible
8WL02035	X-743-B	Pre-contact lithics only, but not quarry	Unknown Native American	11363	Ineligible
8WL02036	X-743-D	Artifact scatter	Unknown Native American	11363	Ineligible
8WL02055	X-672-G	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American; twentieth century (1900–1999)	13235	Ineligible
8WL02101	Temp B	Post-contact refuse/dump	Nineteenth century American–twentieth century (1821–1999)	20201	Not Evaluated
8WL02102	Temp C	Single artifact or isolated find	Unknown Native American	20201	Not Evaluated
8WL02103	Temp D	Lithic scatter/quarry (pre-contact: no ceramics)	Paleoindian (10,000–8500 BCE); Deptford (700–300 BCE); Santa Rosa; Weeden Island (AD 450–1000)	20201	Not Evaluated
8WL02104	Temp E/F/G	Lithic scatter/quarry (pre-contact: no ceramics)	Deptford (700–300 BCE); Weeden Island (AD 450–1000)	20201	Not Evaluated
8WL02105	Temp H	Lithic scatter/quarry (pre-contact: no ceramics)	Weeden Island (AD 450–1000)	20201	Not Evaluated
8WL02123	X-672-A	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American; twentieth century (1900–1999)	13235	Ineligible
8WL02124	X-672-I/J	Homestead	Twentieth century (1900–1999)	13235	Potentially eligible
8WL02125	X-672-E	Building remains	Twentieth century (1900–1999)	13235	Potentially eligible
8WL02130	X-812-A	Lithic scatter/quarry (pre-contact: no ceramics)	Early Archaic	13386	Potentially eligible
8WL02131	X-812-B	Ceramic scatter	Weeden Island (AD 450–1000)	13386	Ineligible
8WL02132	X-812-G	Artifact scatter	Swift Creek–Weeden Island (300 BCE–AD 1000)	13386	Ineligible
8WL02134	X-805-M	Lithic scatter/quarry (pre-contact: no ceramics)	Unknown Native American	13445	Ineligible
8WL02148	X-811-B	Artifact scatter	Nineteenth century American–twentieth century (1821–1999)	13240	Ineligible
8WL02149	X-805-H/I	Artifact scatter	Woodland	13445	Potentially eligible
8WL02158	X-805-Q	Artifact scatter	Twentieth century (1900–1999)	13445	Ineligible
8WL02184	Sparkleberry	Artifact scatter	Unknown Native American	13699	Ineligible

Archaeological Sites					
8WL02208	Temp B	Artifact scatter	Weeden Island (AD 450–1000)	14142	Ineligible
8WL02209	Temp C	Campsite (pre-contact)	Weeden Island (AD 450–1000)	14142	Ineligible
8WL02210	Temp D	Artifact scatter	Weeden Island (AD 450–1000)	14142	Ineligible
8WL02411	X-1020-D	Artifact scatter	Unknown Native American	16765	Ineligible
8WL02413	X-992-D/E	Artifact scatter	Weeden Island (AD 450–1000)	16994	Ineligible
8WL02414	X-992-F	Artifact scatter	Deptford (700–300 BCE); Weeden Island (AD 450–1000); twentieth century (1900–1999)	16994	Eligible
8WL02415	X-992-H/I/J	Campsite (pre-contact)	Early Woodland; Weeden Island (AD 450–1000)	16994	Eligible
8WL02416	X-992-L	Artifact scatter	Weeden Island (AD 450–1000)	16994	Ineligible
8WL02417	X-992-N	Artifact scatter	Unknown Native American	16994	Ineligible
8WL02418	X-992-B/O	Campsite (pre-contact)	Santa Rosa-Swift Creek	16994	Eligible
8WL02419	X-992-P	Homestead; naval stores-related	Twentieth century (1900–1999)	25559	Eligible
8WL02421	X-992-R	Artifact scatter	Weeden Island (AD 450–1000)	16994	Ineligible
8WL02432	Eglin C-62 Boatstone Site	Lithic scatter/quarry (pre-contact: no ceramics)	Paleoindian–Early Archaic; twentieth century (1900–1999)	17461	Ineligible
8WL02493	Cosson Homestead	Homestead	Twentieth century (1900–1999)	N/A	Not Evaluated
8WL02506	X-1085-B	Artifact scatter	Weeden Island (AD 450–1000)	18243	Ineligible
8WL02507	X-1085-C	Artifact scatter; naval stores-related	Twentieth century (1900–1999)	18243	Ineligible
8WL02508	X-1070-A	Military-related	World War II & Aftermath (1941–1950)	18159	Ineligible
8WL02513	X-1071-A	Post-contact refuse/dump	Twentieth century (1900–1999)	18611	Ineligible
8WL02514	X-1071-D	Post-contact refuse/dump	Twentieth century (1900–1999)	18611	Ineligible
8WL02538	X-1092-C	Artifact scatter	Unknown Native American	19242	Ineligible
8WL02539	X-1092-D	Artifact scatter	Unknown Native American	19242	Ineligible
8WL02540	X-1092-E	Pre-contact lithics only, but not quarry	Deptford (700–300 BCE)	19242	Ineligible
8WL02541	X-1092-F	Artifact scatter	Deptford (700–300 BCE); Santa Rosa-Swift Creek	19242	Ineligible
8WL02572	Bowers Homestead	Post-contact burial(s); artifact scatter	Nineteenth century American–twentieth century (1821–1999)	N/A	Not Evaluated
8WL02609	X-1179-C	Post-contact refuse/dump	Twentieth century (1900–1999)	19530	Ineligible
8WL02672	X-1231-B	Artifact scatter	Twentieth century (1900–1999)	21270	Ineligible
8WL02673	X-1231-D	Homestead	Unknown Native American; twentieth century (1900–1999)	21270	Ineligible

Archaeological Sites					
8WL02713	X-1286-A	Artifact scatter; post-contact refuse/dump	Weeden Island (AD 450–1000); twentieth century (1900–1999)	22596	Ineligible
8WL02719	X-1269-B	Homestead	Nineteenth century American–twentieth century (1821–1999)	25559	Eligible
8WL02720	X-1269-E	Campsite (pre-contact)	Unknown Native American	22958	Ineligible
8WL02733	X-1271-A	Artifact scatter	Unknown Native American	22855	Ineligible
8WL02734	X-1271-B	Campsite (pre-contact)	Weeden Island (AD 450–1000)	22855	Insufficient information
8WL02747	X-1269-H	Homestead	Nineteenth century American–twentieth century (1821–1999)	25559	Eligible
8WL02760	X-1278-A	Post-contact refuse/dump	Unknown Native American; twentieth century (1900–1999)	22857	Ineligible
8WL02761	X-1276-B	Post-contact refuse/dump	Nineteenth century American–twentieth century (1821–1999)	23046	Not Evaluated
8WL02769	X-1270-A	Artifact scatter	Unknown Native American	24275	Ineligible
8WL02909	EK3	Specialized site for procurement of raw materials	Mississippian	27086	Ineligible
8WL02910	RS1	Specialized site for procurement of raw materials	Mississippian	27086	Insufficient information
8WL02974	FS-1 Survey Area 1305	Habitation (pre-contact)	Unknown Native American	N/A	Not Evaluated
8WL02978	Dewberry 1	Homestead	Unknown Native American; twentieth century (1900–1999)	N/A	Not Evaluated
8WL03143	Mansfield 1	Campsite (pre-contact)	Middle–Late Archaic; Weeden Island (AD 450–1000)	27981	Ineligible
8WL03144	Mansfield 2	Farmstead	Twentieth century (1900–1999)	27981	Ineligible
8WS00007	Rhoulac Mound	Pre-contact burial mound(s)	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8WS00014	Orange Hill 1	Ceramic scatter	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8WS00015	Orange Hill 2	Lithic scatter/quarry (pre-contact: no ceramics)	Archaic (8500–1000 BCE)	N/A	Not Evaluated
8WS00022	Knife Blade	Habitation (pre-contact)	Weeden Island (AD 450–1000)	N/A	Not Evaluated
8WS00023	Burnt Sock Landing	Campsite (pre-contact)	Late Archaic; Deptford (700–300 BCE); Norwood; Weeden Island (AD 450–1000)	18384	Not Evaluated
8WS00029	Holmes Creek South	Ceramic scatter	Unknown Native American	282	Not Evaluated
8WS00030	Chapel Branch	Ceramic scatter	Unknown Native American	282	Not Evaluated
8WS00036	Bear Hammock	Pre-contact burial mound(s)	Unknown Native American	N/A	Not Evaluated
8WS00037	Mount Hammock	Pre-contact burial mound(s)	Unknown Native American	N/A	Not Evaluated

Archaeological Sites					
8WS00038	Hog Farm	Pre-contact lithics only, but not quarry	Middle Archaic	4382	Ineligible
8WS00039	EH&A Washington 4	Single artifact or isolated find	Archaic (8500–1000 BCE)	4382	Ineligible
8WS00040	EH&A Washington 1	Artifact scatter	Unknown Native American	4382	Ineligible
8WS00041	EH&A Washington 2	Single artifact or isolated find	Unknown Native American	4382	Ineligible
8WS00042	EH&A Washington 3	Pre-contact lithics only, but not quarry	Middle Archaic	17291	Ineligible
8WS00043	Burnt Sock North	Artifact scatter	Archaic (8500–1000 BCE); Weeden Island (AD 450–1000)	18384	Not Evaluated
8WS00072[1]	Lockey's Landing	Other	American Acquisition/Territorial Development (1821–1845)	N/A	Not Evaluated
8WS00081	William's Friend	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Not Evaluated
8WS00383	P44-1/P-149-1	Artifact scatter	Twentieth century (1900–1999)	4382	Ineligible
8WS00384	X82F-1	Artifact scatter	Unknown Native American	4382	Ineligible
8WS00385	P48-1	Single artifact or isolated find	Twentieth century (1900–1999)	4382	Ineligible
8WS00386	P48-2	Artifact scatter	Unknown Native American	4382	Ineligible
8WS00387	P49-2	Artifact scatter	Twentieth century (1900–1999)	4382	Ineligible
8WS00388	P49-3	Single artifact or isolated find	Twentieth century (1900–1999)	4382	Ineligible
8WS00389	P49-4	Artifact scatter	Unknown Native American	4382	Ineligible
8WS00390	P50-1	Single artifact or isolated find	Late Archaic	4382	Ineligible
8WS00391	P51-1	Artifact scatter	Twentieth century (1900–1999)	4382	Ineligible
8WS00392	P51-2	Artifact scatter	Twentieth century (1900–1999)	4382	Ineligible
8WS00393	X92F-1	Single artifact or isolated find	Nineteenth century American (1821–1899)	4382	Ineligible
8WS00394	P52-1	Artifact scatter	Twentieth century (1900–1999)	4382	Ineligible
8WS00395	P54-1	Single artifact or isolated find	Unknown Native American	4382	Ineligible
8WS00396	P54-2	Single artifact or isolated find	Unknown Native American	4382	Ineligible
8WS00397	P54-5	Artifact scatter	Unknown Native American	4382	Ineligible
8WS00398	P54-7	Artifact scatter	Twentieth century (1900–1999)	4382	Ineligible
8WS00399	P54-8	Artifact scatter	Twentieth century (1900–1999)	4382	Ineligible
8WS00400	P54-9	Artifact scatter	Twentieth century (1900–1999)	4382	Ineligible
8WS00404	X85F-1	Artifact scatter	Unknown Native American	4382	Ineligible
8WS00405	P49-1	Artifact scatter	Twentieth century (1900–1999)	4382	Ineligible

[1] No field investigation – reported by remote sensing.

Archaeological Sites					
8WS00408	P148-1	Artifact scatter	Unknown Native American	4382	Ineligible
8WS00409	P145-1	Artifact scatter	Nineteenth century American–twentieth century (1821–1999)	17291	Ineligible
8WS00411	P54-4	Single artifact or isolated find	Twentieth century (1900–1999)	4382	Ineligible
8WS00413	Transfer Print Ware	Artifact scatter	Unknown Native American; nineteenth century American (1821–1899)	N/A	Ineligible
8WS00414	Lakeview Methodist Church Cemetery Site	Artifact scatter	Unknown Native American	N/A	Ineligible
8WS00504	C4-01	Pre-contact lithics only, but not quarry	Unknown Native American	6295	Ineligible
8WS00505	C9-02	Campsite (pre-contact)	Unknown Native American	6295	Ineligible
8WS00506	C9-03	Campsite (pre-contact)	Unknown Native American	6295	Ineligible
8WS00507	C10-01	Campsite (pre-contact)	Unknown Native American; nineteenth century American (1821–1899)	6295	Ineligible
8WS00508	ARC5-01	Campsite (pre-contact)	Early Archaic; Santa Rosa; Ft. Walton (AD 1000–1500)	6295	Insufficient information
8WS00592	Wausau Tower	Campsite (pre-contact)	Middle Archaic	7201	Ineligible
8WS00696	WS-25-01	Artifact scatter	Unknown Native American; Spanish Second Period–nineteenth century American–twentieth century (1783–1999)	7162	Ineligible
8WS00697	WS-35-01	Pre-contact lithics only, but not quarry	Unknown Native American	7162	Ineligible
8WS00698	WS-36-01	Artifact scatter	Nineteenth century American–twentieth century (1821–1999)	7162	Ineligible
8WS00699	WS-38-01	Artifact scatter	Nineteenth century American–twentieth century (1821–1999)	7162	Ineligible
8WS00751	WS-25-02	Artifact scatter	Nineteenth century American–twentieth century (1821–1999)	7162	Ineligible
8WS00752	WS-28-01	Artifact scatter	Nineteenth century American–twentieth century (1821–1999)	7162	Ineligible
8WS00753	WS-28-02	Artifact scatter	Nineteenth century American–twentieth century (1821–1999)	7162	Ineligible
8WS00754	WS-28-03	Artifact scatter	Unknown Native American; nineteenth century American–twentieth century (1821–1999)	7162	Ineligible

Archaeological Sites					
8WS00755	WS-31-03	Artifact scatter	Weeden Island (AD 450–1000); nineteenth century American–twentieth century (1821–1999)	7162	Ineligible
8WS00756	WS-34-01	Pre-contact lithics only, but not quarry	Unknown Native American	7162	Ineligible
8WS00757	WS-36-02	Artifact scatter	Twentieth century (1900–1999)	7162	Ineligible
8WS00768	None	Artifact scatter	Unknown Native American	8392	Not Evaluated
8WS00769	None	Artifact scatter	Woodland	8392	Not Evaluated
8WS00770	None	Artifact scatter	Unknown Native American	8392	Not Evaluated
8WS00771	None	Artifact scatter	Unknown Native American	8392	Not Evaluated
8WS00772	None	Pre-contact lithics only, but not quarry	Unknown Native American	8392	Not Evaluated
8WS00780	None	Bridge remains	Nineteenth century American–twentieth century (1821–1999)	8392	Not Evaluated
8WS01064	8WS01064	Pre-contact lithics only, but not quarry	Unknown Native American	N/A	Ineligible
8WS01065	8WS01065	Artifact scatter	Weeden Island (AD 450–1000)	N/A	Ineligible
8WS01071	Cotton Landing	Specialized site for procurement of raw materials	Weeden Island (AD 450–1000); nineteenth century American–twentieth century (1821–1999)	22736	Ineligible
8WS01072	Cotton Landing 2	Campsite (pre-contact)	Archaic–Woodland	18384	Not Evaluated
8WS01073	Cotton Landing 3	Campsite (pre-contact)	Archaic (8500–1000 BCE)	18384	Not Evaluated
8WS01074	Cotton Landing 4	Campsite (pre-contact)	Archaic (8500–1000 BCE)	18384	Not Evaluated
8WS01075	Cotton Slough	Campsite (pre-contact)	Unknown Native American	18384	Not Evaluated
8WS01076	Cotton-Eyed Bluff	Campsite (pre-contact)	Unknown Native American	18384	Not Evaluated
8WS01077	Haddock 1	Campsite (pre-contact)	Archaic (8500–1000 BCE)	18384	Not Evaluated
8WS01078	Haddock 2	Campsite (pre-contact)	Archaic (8500–1000 BCE)	18384	Not Evaluated
8WS01079	Haddock 3	Campsite (pre-contact)	Archaic (8500–1000 BCE)	18384	Not Evaluated
8WS01080	Haddock 4	Campsite (pre-contact)	Archaic (8500–1000 BCE)	18384	Not Evaluated
8WS01081	Piney Branch 1	Campsite (pre-contact)	Unknown Native American	18384	Not Evaluated
8WS01082	Piney Branch 2	Campsite (pre-contact)	Unknown Native American	18384	Not Evaluated
8WS01083	Burnt Sock 1	Campsite (pre-contact)	Archaic (8500–1000 BCE)	18384	Not Evaluated
8WS01084	Burnt Sock 2	Campsite (pre-contact)	Unknown Native American	18384	Not Evaluated
8WS01085	Burnt Sock 3	Campsite (pre-contact)	Unknown Native American	18384	Not Evaluated
8WS01086	Cypress Springs	Campsite (pre-contact)	Unknown Native American	20332	Not Evaluated

Archaeological Sites					
8WS01087	Hightower 1	Artifact scatter	Twentieth century (1900–1999)	18384	Not Evaluated
8WS01088	Hightower 2	Campsite (pre-contact)	Woodland; Weeden Island (AD 450–1000); twentieth century (1900–1999)	18384	Not Evaluated
8WS01089	Hightower 3	Campsite (pre-contact)	Early Archaic–Woodland	18384	Not Evaluated
8WS01090	Hightower 4	Campsite (pre-contact)	Woodland	18384	Not Evaluated
8WS01091	Hightower 5	Campsite (pre-contact)	Archaic–Woodland	18384	Not Evaluated
8WS01092	Hightower 6	Campsite (pre-contact)	Woodland; Weeden Island (AD 450–1000)	18384	Not Evaluated
8WS01093	Hightower 7	Campsite (pre-contact)	Archaic–Woodland; Deptford (700–300 BCE)	18384	Not Evaluated
8WS01096	Glover 1	Campsite (pre-contact)	Woodland	18384	Not Evaluated
8WS01097	Glover 2	Campsite (pre-contact)	Archaic–Woodland	18384	Not Evaluated
8WS01098	Glover 3	Campsite (pre-contact)	Archaic–Woodland	18384	Not Evaluated
8WS01099	Glover 4	Campsite (pre-contact); agriculture/farm structure	Archaic–Woodland; twentieth century (1900–1999)	18384	Not Evaluated
8WS01100	Chapel Branch 1	Campsite (pre-contact)	Woodland	18384	Not Evaluated
8WS01101	Shakey Joe 1	Campsite (pre-contact)	Late Archaic; Weeden Island (AD 450–1000)	18384	Not Evaluated
8WS01102	Shakey Joe 2	Campsite (pre-contact)	Weeden Island (AD 450–1000)	18384	Not Evaluated
8WS01103	NN	Campsite (pre-contact)	Weeden Island (AD 450–1000)	18384	Not Evaluated
8WS01104	NN	Campsite (pre-contact)	Unknown Native American	18384	Not Evaluated
8WS01105	NN	Campsite (pre-contact)	Unknown Native American	18384	Not Evaluated
8WS01106	NN	Post-contact refuse/dump	Twentieth century (1900–1999)	18384	Not Evaluated
8WS01107	Yawn Homestead	Homestead	Nineteenth century American–twentieth century (1821–1999)	18384	Not Evaluated
8WS01108	Bell Homestead	Building remains; homestead	Nineteenth century American–twentieth century (1821–1999)	18384	Not Evaluated
8WS01109	Spurling Landing 2	Campsite (pre-contact)	Unknown Native American	18384	Not Evaluated
8WS01110	Reedy Creek 1	Campsite (pre-contact)	Unknown Native American	18384	Not Evaluated
8WS01111	Reedy Creek 2	Campsite (pre-contact)	Unknown Native American	18384	Not Evaluated
8WS01112	Spurling Landing 3	Campsite (pre-contact)	Archaic (8500–1000 BCE)	18384	Not Evaluated
8WS01113	Henry Sheffield Homestead	Homestead	Nineteenth century American–twentieth century (1821–1999)	27656	Insufficient information
8WS01114	Holmes Plantation 3	Campsite (pre-contact)	Unknown Native American	27656	Insufficient information
8WS01115	NN	Campsite (pre-contact)	Unknown Native American	27656	Insufficient information
8WS01117	Hightower 8	Artifact scatter	Unknown Native American	18384	Not Evaluated

Archaeological Sites					
8WS01118	William's Branch 1	Artifact scatter	Unknown Native American	18384	Not Evaluated
8WS01119	William's Branch 2	Artifact scatter	Deptford (700–300 BCE)	18384	Not Evaluated
8WS01120	Hightower 9	Artifact scatter	Unknown Native American	18384	Not Evaluated
8WS01121	Hightower 10	Artifact scatter	Nineteenth century American–twentieth century (1821–1999)	18384	Not Evaluated
8WS01122	Potter 1833	Artifact scatter	Nineteenth century American–twentieth century (1821–1999)	18384	Not Evaluated
8WS01123	Newsome Homestead	Artifact scatter	Nineteenth century American–twentieth century (1821–1999)	18384	Not Evaluated
8WS01124	Ward Place 1	Artifact scatter	Weeden Island (AD 450–1000)	18384	Not Evaluated
8WS01125	Ward Place 2	Artifact scatter	Archaic (8500–1000 BCE)	18384	Not Evaluated
8WS01126	Ward Place 3	Artifact scatter	Nineteenth century American–twentieth century (1821–1999)	18384	Not Evaluated
8WS01132	Holiday Ranch 1	Artifact scatter	Archaic (8500–1000 BCE)	18384	Not Evaluated
8WS01133	Holiday Ranch 2	Artifact scatter	Unknown Native American	18384	Not Evaluated
8WS01134	By the fish camp	Artifact scatter	Unknown Native American	18384	Not Evaluated
8WS01139	Cypress Springs Road 1	Campsite (pre-contact)	Unknown Native American	20332	Not Evaluated
8WS01140	Cypress Springs Road 2	Campsite (pre-contact)	Unknown Native American	20332	Not Evaluated
8WS01141	Sapp House Site	Post-contact refuse/dump	Twentieth century (1900–1999)	21060	Ineligible
8WS01251	Pike Field	Artifact scatter	Middle Woodland	27191	Insufficient information
8WS01252	Little Pond Hill	Artifact scatter	Unknown Native American	27191	Insufficient information

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8CA00148[2]	Altha High School	Unknown	1922	Not Evaluated
8CA00170	Lewis Atkins Farm House	Frame Vernacular	1901	Eligible
8CA00187	Lewis Atkins Farm House Detached Kitchen	Frame Vernacular	ca. 1902	Eligible
8CA00188	Lewis Atkins Farm House Corn Crib	Frame Vernacular	ca. 1900–1910	Eligible
8CA00189	Lewis Atkins Farm Smokehouse	Frame Vernacular	ca. 1890–1910	Eligible
8CA00190	Lewis Atkins Farm Barn	Frame Vernacular	1902–1910	Eligible
8CA00204	Altha Methodist Church	Masonry Vernacular	1974	Not Evaluated
8CA00208	Chipola Primitive Baptist Church	Other	1870	Not Evaluated
8CA00211	Robert Lee Norton House	Queen Anne (Revival) ca. 1880–1910	ca. 1904	Listed
8CA00214	Altha City Jail	Masonry Vernacular	ca. 1902	Insufficient Information
8CA00267	15320 Chipola Street NW	Masonry Vernacular	ca. 1957	Ineligible
8CA00268	15434 Chipola Street NW	Frame Vernacular	ca. 1964	Ineligible
8CA00269	15496 Chipola Street NW	Frame Vernacular	ca. 1950	Ineligible
8CA00270	15520 Chipola Street NW	Unspecified	ca. 1967	Ineligible
8CA00271	15542 Chipola Street NW	Frame Vernacular	ca. 1960	Ineligible
8CA00272	Altha First Baptist Church	Neo-Classical Revival ca. 1880–1940	ca. 1985	Ineligible
8CA00273	15873 Broad Street NE	Frame Vernacular	ca. 1950	Ineligible
8CA00274	15598 Broad Street NE	Frame Vernacular	ca.1954	Ineligible
8FR01320	1254 Alligator Dr	Frame Vernacular	1962	Ineligible
8FR01321	1260 Alligator Dr	Masonry Vernacular	ca. 1965	Ineligible
8FR01322	1266 Alligator Dr	Masonry Vernacular	ca. 1958	Insufficient Information
8FR01323	1270 Alligator Dr	Frame Vernacular	ca. 1962	Ineligible
8JA00786	Willie Copeland Residence	Frame Vernacular	ca. 1900	Not Evaluated
8JA00787	John Chafin Residence	Frame Vernacular	ca. 1920	Not Evaluated
8JA00788	Lipford Church	Frame Vernacular	ca. 1905	Not Evaluated

[2] Destroyed

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8JA00789	H & M Linford Building	Log	ca. 1860	Not Evaluated
8JA00840	Harmon Duncan House #1	Frame Vernacular	ca. 1915	Not Evaluated
8JA00841	W W Johnson Residence	Frame Vernacular	1940	Not Evaluated
8JA00842	278/167 Intersection	Frame Vernacular	ca. 1930	Not Evaluated
8JA00843	Alberta Shumpert Residence	Frame Vernacular	1910	Not Evaluated
8JA00844	Alberta Shumpert Residence	Frame Vernacular	ca. 1910	Not Evaluated
8JA00845	C & G Hill Residence	Frame Vernacular	ca. 1880	Not Evaluated
8JA00846	G Foran Residence	Frame Vernacular	1910	Not Evaluated
8JA00847	R Foran Residence	Frame Vernacular	ca. 1890	Not Evaluated
8JA00848	Robert Morris Residence	Frame Vernacular	ca. 1920	Not Evaluated
8JA00935	Jacqueline Perry Residence	Frame Vernacular	1930	Not Evaluated
8JA00936	Grant Buckhalter Store	Frame Vernacular	ca. 1910	Not Evaluated
8JA00937	Grant Buckhalter Residence	Frame Vernacular	1920	Not Evaluated
8JA00938	Alford Residence	Frame Vernacular	1902	Not Evaluated
8JA00945	Alonzo Goodwin Residence	Frame Vernacular	1938	Not Evaluated
8JA00963	Lester Sims Building	Frame Vernacular	ca. 1900	Not Evaluated
8JA00964	Sam Pitts House	Frame Vernacular	ca. 1900	Not Evaluated
8JA00966	H L Nesmith Residence	Frame Vernacular	ca. 1884	Not Evaluated
8JA00967	C W Mears Grocery Store	Frame Vernacular	1934	Not Evaluated
8JA00969	James Edenafield Residence	Frame Vernacular	1910	Not Evaluated
8JA00970	Mattie Logan Residence	Frame Vernacular	ca. 1900	Not Evaluated
8JA00971	Ellie Beauchamp Residence	Frame Vernacular	ca. 1925	Not Evaluated
8JA00972	T E Gilbert Residence	Bungalow ca. 1905–1930	1925	Not Evaluated
8JA00973	Lewis Beauchamp Building	Frame Vernacular	1901	Not Evaluated
8JA00974	John Herring Residence	Frame Vernacular	1935	Not Evaluated
8JA00975	I F Howard Residence	Frame Vernacular	1908	Not Evaluated
8JA00976	Ruth Harrison Residence	Frame Vernacular	ca. 1900	Not Evaluated
8JA00977	Bud Ayers Building	Frame Vernacular	1932	Not Evaluated

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8JA00978	C P Peacock Residence	Log	1898	Not Evaluated
8JA00979	Hencely Store	Frame Vernacular	1936	Not Evaluated
8JA00980	E. B. and Mae Hencely House	Frame Vernacular	ca. 1920	Ineligible
8JA01096	W. C. Howard Residence	Frame Vernacular	ca. 1931	Ineligible
8JA01097	Charles Finley Cook Residence	Frame Vernacular	1911	Not Evaluated
8JA01098	E B Reese Residence	Frame Vernacular	ca. 1885	Not Evaluated
8JA01100	John McNeil House	Frame Vernacular	ca. 1895	Not Evaluated
8JA01101	Cook's Store	Frame Vernacular	1926	Not Evaluated
8JA01103	Jim Ayers House	Bungalow ca. 1905–1930	1932	Not Evaluated
8JA01620	Roberts House	Frame Vernacular	1944	Not Evaluated
8JA01621	McCormick Road House	Frame Vernacular	1928	Not Evaluated
8JA01622	Booth and Sims House	Frame Vernacular	1920	Not Evaluated
8JA01624	Johnson House	Frame Vernacular	1934	Not Evaluated
8JA01625	Rabbit Run	Frame Vernacular	1920	Not Evaluated
8JA01626	552 State Road 73	Frame Vernacular	1935	Not Evaluated
8JA01627	Pledger House	Frame Vernacular	1928	Not Evaluated
8JA01628	Tatum House	Frame Vernacular	1944	Not Evaluated
8JA01629	385 State Road 73	Frame Vernacular	1924	Not Evaluated
8JA01630	Willis House	Frame Vernacular	1928	Not Evaluated
8JA01631	J. Willis House	Frame Vernacular	1928	Not Evaluated
8JA01633	180 State Road 73	Frame Vernacular	1925	Not Evaluated
8JA01679	Hencely Dairy Building	Frame Vernacular	ca. 1940	Ineligible
8JA01680	Rooks House	Frame Vernacular	ca. 1939	Ineligible
8JA01681	Thomas Rooks House	Frame Vernacular	ca. 1915	Ineligible
8JA01683	Marvin B. Duncan House	Masonry Vernacular	ca. 1939	Ineligible
8JA01684	848 State Road 71	Frame Vernacular	ca. 1940	Ineligible
8JA01685	Harmon Duncan House #2	Frame Vernacular	ca. 1935	Ineligible
8LI00014	Gregory House/Torreya State Park	Greek Revival ca. 1825–1860	ca. 1849	Listed

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8LI00335	Barracks	Frame Vernacular	1935	Not Evaluated
8LI00336	Shop	Frame Vernacular	1937	Not Evaluated
8LI00337	Cattle Gap	Vernacular	1936	Not Evaluated
8WA00511	Zion Hill Primitive Baptist Church	Other	ca. 1945	Not Evaluated
8WA00563	3061 US 98	Frame Vernacular	ca. 1935	Ineligible
8WA00564	3102 US 98	Frame Vernacular	ca. 1940	Ineligible
8WA00565	Tully Residence	Frame Vernacular	ca. 1934	Insufficient Information
8WA00566	Mike's Paint and Body Shop	Frame Vernacular	ca. 1933	Ineligible
8WA00567	Durrence House	Frame Vernacular	ca. 1915	Ineligible
8WA00568	4716 Crawfordville Highway	Frame Vernacular	1950	Ineligible
8WA00569	Langston-Carter House	Other	ca. 1903	Eligible
8WA00570	4567 +/- Crawfordville Highway	Frame Vernacular	ca. 1925	Ineligible
8WA00571	3899 +/- Crawfordville Highway	Frame Vernacular	1925	Ineligible
8WA00572	3910 +/- Crawfordville Highway	Frame Vernacular	ca. 1925	Ineligible
8WA00573	3893 +/- Crawfordville Highway	Frame Vernacular	ca. 1925	Ineligible
8WA00624	Railroad Marker (No Number)	Monument/marker	ca. 1895	Ineligible
8WA00771	CRAS Silver Glen Phase II, Wakulla Count	Frame Vernacular	1938	Not Evaluated
8WA00811	Shell Point C. G. Aux. Bldg.	Frame Vernacular	1920	Not Evaluated
8WA00817	3976 Crawfordville Highway	Ranch	ca. 1950	Ineligible
8WA00818	4041 Crawfordville Highway	Frame Vernacular	1955	Ineligible
8WA00819	Lake Ellen Baptist Church	Masonry Vernacular	ca. 1946	Ineligible
8WA00839	Happy Landing	Other	ca. 1896	Eligible
8WA00874	2138 Surf Road	Ranch	1966	Ineligible
8WA00875	2138 Surf Road Garage	Masonry Vernacular	1966	Ineligible
8WA00876	2104 Surf Road	Ranch	ca. 1955	Eligible
8WA00877	2088 Surf Road	Frame Vernacular	ca. 1964	Ineligible
8WA00878	2080 Surf Road	Other	ca. 1964	Ineligible

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WA00879	2038 Surf Road	Other	ca. 1967	Ineligible
8WA00927	2331 Surf Road	Ranch	1962	Ineligible
8WA00928	2365 Surf Road	Ranch	1964	Ineligible
8WA00929	2393 Surf Road	Ranch	1964	Ineligible
8WA00930	2399 Surf Road	Masonry Vernacular	1965	Ineligible
8WA00931	2423 Surf Road	Ranch	1966	Ineligible
8WA00932	2433 Surf Road	Frame Vernacular	1967	Ineligible
8WA00933	2481 Surf Road	Ranch	1960	Ineligible
8WA00934	2489 Surf Road	Masonry Vernacular	1965	Ineligible
8WA00935	2509 Surf Road	Frame Vernacular	1968	Ineligible
8WA00936	2526 Surf Road	Masonry Vernacular	ca. 1950	Ineligible
8WA00937	2543 Surf Road	Frame Vernacular	ca. 1950	Ineligible
8WA00938	2551 Surf Road	Ranch	1950	Ineligible
8WA00939	2561 Surf Road	Frame Vernacular	1955	Ineligible
8WA00940	2566 Surf Road	Frame Vernacular	ca. 1958	Ineligible
8WA00941	2569 Surf Road	Ranch	1955	Ineligible
8WA00942	2570 Surf Road	Mid-Century Modern ca. 1940s–early 1960s	ca. 1961	Ineligible
8WA00943	2577 Surf Road	Ranch	ca. 1955	Ineligible
8WA00944	Garage near 2587 Surf Road	Frame Vernacular	ca. 1960	Ineligible
8WA00945	2587 Surf Road	Ranch	ca. 1960	Ineligible
8WA00946	2619 Surf Road – Building 1	Masonry Vernacular	1950	Ineligible
8WA00947	2619 Surf Road – Building 2	Frame Vernacular	ca. 1965	Ineligible
8WA00948	2627 Surf Road	Frame Vernacular	1958	Ineligible
8WA00949	2661 Surf Road	Masonry Vernacular	1954	Ineligible
8WA00950	2669 Surf Road	Ranch	1950	Ineligible
8WA00951	2675 Surf Road	Ranch	1960	Ineligible
8WA00952	2697 Surf Road	Masonry Vernacular	1966	Ineligible
8WA00953	2723 Surf Road	Ranch	1958	Ineligible

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WA00954	2731 Surf Road	Ranch	1958	Ineligible
8WA00955	2749 Surf Road	Frame Vernacular	1956	Ineligible
8WA00956	2761 Surf Road	Ranch	1962	Ineligible
8WA00957	2769 Surf Road	Ranch	ca. 1958	Ineligible
8WA00958	2797 Surf Road	Masonry Vernacular	1960	Ineligible
8WA00959	2814 Surf Road	Masonry Vernacular	1967	Ineligible
8WA00960	52 & 54 A Coastal Highway	Masonry Vernacular	1953	Ineligible
8WA00961	54 B Coastal Highway – Motel	Frame Vernacular	1963	Ineligible
8WA00962	54 B Coastal Highway – House	Mid-Century Modern ca. 1940s–early 1960s	ca. 1956	Ineligible
8WA01045	3709 Crawfordville Highway	Masonry Vernacular	ca. 1955	Ineligible
8WA01046	3918 Crawfordville Highway	Frame Vernacular	ca. 1960	Ineligible
8WA01047	3924 Crawfordville Highway	Frame Vernacular	ca. 1950	Ineligible
8WA01048	3930 Crawfordville Highway	Frame Vernacular	ca. 1945	Ineligible
8WA01049	4036 Crawfordville Highway	Ranch	ca. 1960	Ineligible
8WA01050	Mount Olive Baptist Church	Masonry Vernacular	ca. 1960	Ineligible
8WA01051	4140 Crawfordville Highway	Ranch	ca. 1960	Ineligible
8WA01052	4204 Crawfordville Highway	Masonry Vernacular	ca. 1958	Ineligible
8WA01053	4470 Crawfordville Highway	Frame Vernacular	ca. 1958	Eligible
8WA01054	4603 Crawfordville Highway	Masonry Vernacular	ca. 1950	Ineligible
8WA01060	4613 Crawfordville Hwy – 1	Other	ca. 1962	Ineligible
8WA01061	4613 Crawfordville Hwy – 2	Other	ca. 1962	Ineligible
8WA01204	24 Bay Drive	Masonry Vernacular	1961	Ineligible
8WA01207	1305 Coastal Highway	Frame Vernacular	1950	Ineligible
8WA01208	1315–1321 Coastal Highway	Commercial	ca. 1950	Ineligible
8WA01209	1373 Coastal Highway	Masonry Vernacular	ca. 1965	Ineligible
8WA01210	1379 Coastal Highway	Masonry Vernacular	ca. 1955	Ineligible
8WA01211	34 Clark Drive	Bungalow ca. 1905–1930	ca. 1940	Ineligible
8WA01212	1383 Coastal Highway	Frame Vernacular	ca. 1950	Ineligible

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WA01213	1394 Coastal Highway	Ranch	ca. 1958	Ineligible
8WA01214	1411 Coastal Highway	Frame Vernacular	ca. 1900	Ineligible
8WA01215	1414 Coastal Highway – Bldg 1	Frame Vernacular	ca. 1900	Ineligible
8WA01216	1414 Coastal Highway – Bldg 2	Frame Vernacular	ca. 1953	Ineligible
8WA01217	1506 Coastal Highway	Masonry Vernacular	ca. 1970	Ineligible
8WA01218	Panacea Mineral Springs Pavilion	Craftsman	ca. 1900	Not Evaluated
8WA01236	3017 Coastal Highway	Ranch	ca. 1955	Ineligible
8WA01237	2917 Coastal Highway	Bungalow ca. 1905–1930	ca. 1940	Insufficient Information
8WA01238	2887 Coastal Highway	Other	ca. 1960	Ineligible
8WA01239	2837 Coastal Highway	Frame Vernacular	ca. 1950	Ineligible
8WA01240	2663 Coastal Highway	Commercial	ca. 1950	Ineligible
8WA01241	2515 Coastal Highway	Frame Vernacular	ca. 1950	Ineligible
8WA01242	2495 Coastal Highway	Masonry Vernacular	1964	Ineligible
8WA01243	1629 Coastal Highway	Industrial Vernacular	1970	Ineligible
8WA01244	Panacea Motel – Building 1	Masonry Vernacular	1945	Ineligible
8WA01245	Panacea Motel – Building 2	Masonry Vernacular	1945	Ineligible
8WA01246	1509 Coastal Highway	Frame Vernacular	ca. 1940	Insufficient Information
8WA01247	1230 Coastal Highway	Other	ca. 1970	Ineligible
8WA01248	1222 Coastal Highway	Ranch	ca. 1973	Ineligible
8WA01249	1208 Coastal Highway	Commercial	ca. 1953	Ineligible
8WA01250	1194 Coastal Highway	Masonry Vernacular	ca. 1958	Ineligible
8WA01251	1170 Coastal Highway	Frame Vernacular	ca. 1969	Ineligible
8WA01252	1114 Coastal Highway	Frame Vernacular	ca. 1950	Ineligible
8WA01253	1100 Coastal Highway	Masonry Vernacular	ca. 1950	Ineligible
8WA01254	460 Coastal Highway	Commercial	ca. 1970	Ineligible
8WA01255	First Baptist Church of Ochlockonee Bay	Masonry Vernacular	1968	Ineligible

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WA01256	108 Coastal Highway	Masonry Vernacular	1969	Ineligible
8WA01257	8 Wakulla Circle	Other	ca. 1973	Ineligible
8WA01258	86 Coastal Highway	Masonry Vernacular	1972	Ineligible
8WA01286	47 Alapaha Ave	Ranch	ca. 1958	Not Evaluated
8WA01295	WA01295	Frame Vernacular	ca. 1960	Not Evaluated
8WA01296	WA01296	Ranch	ca. 1960	Not Evaluated
8WA01298	WA01298	Masonry Vernacular	ca. 1960	Not Evaluated
8WA01299	WA01299	Masonry Vernacular	ca. 1964	Not Evaluated
8WA01300	WA01300	Ranch	ca. 1950	Not Evaluated
8WA01301	WA01301	Frame Vernacular	ca. 1950	Not Evaluated
8WA01302	WA01302	Masonry Vernacular	ca. 1958	Not Evaluated
8WA01303	WA01303	Ranch	ca. 1955	Not Evaluated
8WA01304	WA01304	Frame Vernacular	ca. 1960	Not Evaluated
8WA01305	WA01305	Frame Vernacular	ca. 1960	Not Evaluated
8WA01306	WA01306	Frame Vernacular	ca. 1950	Not Evaluated
8WA01307	WA01307	Masonry Vernacular	ca. 1950	Not Evaluated
8WA01308	WA01308	Masonry Vernacular	ca. 1950	Not Evaluated
8WA01309	WA01309	Frame Vernacular	ca. 1942	Not Evaluated
8WA01310	WA01310	Ranch	ca. 1960	Not Evaluated
8WA01311	WA01311	Frame Vernacular	ca. 1950	Not Evaluated
8WA01312	WA01312	Frame Vernacular	ca. 1942	Not Evaluated
8WA01315	WA01315	Commercial	ca. 1969	Not Evaluated
8WA01316	WA01316	Ranch	ca. 1964	Not Evaluated
8WA01321	WA01321	Frame Vernacular	ca. 1945	Not Evaluated
8WA01323	WA01323	Frame Vernacular	ca. 1958	Not Evaluated
8WA01324	WA01324	Frame Vernacular	ca. 1950	Not Evaluated
8WA01325	WA01325	Masonry Vernacular	ca. 1960	Not Evaluated
8WA01326	WA01326	Ranch	ca. 1955	Not Evaluated

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WA01327	WA01327	Frame Vernacular	ca. 1925	Not Evaluated
8WA01329	WA01329	Frame Vernacular	ca. 1950	Not Evaluated
8WA01330	WA01330	Industrial Vernacular	ca. 1950	Not Evaluated
8WA01332	WA01332	Frame Vernacular	ca. 1950	Not Evaluated
8WA01333	WA01333	Frame Vernacular	ca. 1960	Not Evaluated
8WA01334	WA01334	Masonry Vernacular	ca. 1956	Not Evaluated
8WA01335	WA01335	Masonry Vernacular	ca. 1968	Not Evaluated
8WA01336	WA01336	Frame Vernacular	ca. 1969	Not Evaluated
8WA01337	WA01337	Frame Vernacular	ca. 1939	Not Evaluated
8WA01338	WA01338	Masonry Vernacular	ca. 1955	Not Evaluated
8WA01339	WA01339	Frame Vernacular	ca. 1965	Not Evaluated
8WA01340	WA01340	Frame Vernacular	ca. 1962	Not Evaluated
8WA01341	WA01341	Industrial Vernacular	ca. 1965	Not Evaluated
8WA01342	WA01342	Frame Vernacular	ca. 1969	Not Evaluated
8WA01344	WA01344	Ranch	ca. 1960	Not Evaluated
8WA01345	WA01345	Other	ca. 1960	Not Evaluated
8WA01346	WA01346	Ranch	ca. 1968	Not Evaluated
8WA01347	WA01347	Ranch	ca. 1960	Not Evaluated
8WA01348	WA01348	Frame Vernacular	ca. 1940	Not Evaluated
8WA01349	WA01349	Ranch	ca. 1955	Not Evaluated
8WA01350	WA01350	Frame Vernacular	ca. 1900	Not Evaluated
8WA01351	WA01351	Masonry Vernacular	ca. 1950	Not Evaluated
8WA01352	WA01352	Masonry Vernacular	ca. 1960	Not Evaluated
8WA01353	WA01353	Ranch	ca. 1964	Not Evaluated
8WA01354	WA01354	Frame Vernacular	ca. 1971	Not Evaluated
8WA01355	WA01355	Masonry Vernacular	ca. 1955	Not Evaluated
8WA01356	WA01356	Masonry Vernacular	ca. 1960	Not Evaluated
8WA01357	WA01357	Masonry Vernacular	ca. 1960	Not Evaluated

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WA01360	WA01360	Frame Vernacular	ca. 1965	Not Evaluated
8WA01362	WA01362		ca. 1958	Not Evaluated
8WA01363	WA01363	Ranch	ca. 1950	Not Evaluated
8WA01364	WA01364	Masonry Vernacular	ca. 1960	Not Evaluated
8WA01367	WA01367	Masonry Vernacular	ca. 1960	Not Evaluated
8WA01369	WA01369	Ranch	ca. 1958	Not Evaluated
8WA01370	WA01370	Masonry Vernacular	ca. 1955	Not Evaluated
8WA01372	WA01372	Minimal Traditional	ca. 1955	Not Evaluated
8WA01373	WA01373	Ranch	ca. 1955	Not Evaluated
8WA01374	WA01374	Ranch	ca. 1969	Not Evaluated
8WA01375	WA01375	Masonry Vernacular	ca. 1960	Not Evaluated
8WA01376	WA01376	Frame Vernacular	ca. 1958	Not Evaluated
8WA01379	WA01379	Ranch	ca. 1960	Not Evaluated
8WA01380	WA01380	Frame Vernacular	ca. 1945	Not Evaluated
8WA01381	WA01381	Masonry Vernacular	ca. 1960	Not Evaluated
8WA01382	WA01382	Frame Vernacular	ca. 1955	Not Evaluated
8WA01383	WA01383	Frame Vernacular	ca. 1966	Not Evaluated
8WA01384	WA01384	Frame Vernacular	ca. 1955	Not Evaluated
8WA01385	WA01385	Ranch	ca. 1964	Not Evaluated
8WA01386	WA01386	Masonry Vernacular	ca. 1958	Not Evaluated
8WA01387	WA01387	Frame Vernacular	ca. 1955	Not Evaluated
8WA01388	WA01388	Ranch	ca. 1950	Not Evaluated
8WA01389	WA01389	Frame Vernacular	ca. 1950	Not Evaluated
8WA01390	WA01390	Ranch	ca. 1960	Not Evaluated
8WA01391	WA01391	Frame Vernacular	ca. 1940	Not Evaluated
8WA01392	WA01392	Masonry Vernacular	ca. 1968	Not Evaluated
8WA01393	WA01393	Frame Vernacular	ca. 1955	Not Evaluated
8WA01394	WA01394	Ranch	ca. 1955	Not Evaluated

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WA01395	WA01395	Frame Vernacular	ca. 1969	Not Evaluated
8WA01396	WA01396	Ranch	ca. 1964	Not Evaluated
8WA01398	WA01398	Ranch	ca. 1950	Not Evaluated
8WA01399	WA01399	Masonry Vernacular	ca. 1969	Not Evaluated
8WA01400	WA01400	Frame Vernacular	ca. 1960	Not Evaluated
8WA01401	WA01401	Minimal Traditional	ca. 1950	Not Evaluated
8WA01402	WA01402	Frame Vernacular	ca. 1955	Not Evaluated
8WA01403	WA01403	Frame Vernacular	ca. 1950	Not Evaluated
8WA01404	WA01404	Frame Vernacular	ca. 1965	Not Evaluated
8WA01406	WA01406	Ranch	ca. 1965	Not Evaluated
8WA01407	WA01407	Ranch	ca. 1952	Not Evaluated
8WA01408	WA01408	Frame Vernacular	ca. 1950	Not Evaluated
8WA01409	WA01409	Ranch	ca. 1950	Not Evaluated
8WA01410	WA01410	Frame Vernacular	ca. 1972	Not Evaluated
8WA01411	WA01411	Frame Vernacular	ca. 1965	Not Evaluated
8WA01412	WA01412	Frame Vernacular	ca. 1961	Not Evaluated
8WA01415	WA01415	Ranch	ca. 1958	Not Evaluated
8WA01416	WA01416	Masonry Vernacular	ca. 1945	Not Evaluated
8WA01418	WA01418	Frame Vernacular	ca. 1940	Not Evaluated
8WA01419	WA01419	Frame Vernacular	ca. 1955	Not Evaluated
8WA01420	WA01420	Masonry Vernacular	ca. 1960	Not Evaluated
8WA01421	WA01421	Frame Vernacular	ca. 1940	Not Evaluated
8WA01425	WA01425	Ranch	ca. 1960	Not Evaluated
8WA01427	WA01427	Ranch	ca. 1965	Not Evaluated
8WA01428	WA01428	Masonry Vernacular	ca. 1967	Not Evaluated
8WA01439	WA01439	Ranch	ca. 1960	Not Evaluated
8WA01440	WA01440	Frame Vernacular	ca. 1950	Not Evaluated
8WA01441	WA01441	Minimal Traditional	ca. 1948	Not Evaluated

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WA01442	WA01442	Frame Vernacular	ca. 1955	Not Evaluated
8WA01449	WA01449	Ranch	ca. 1955	Not Evaluated
8WA01450	WA01450	Ranch	ca. 1955	Not Evaluated
8WA01451	WA01451	Masonry Vernacular	ca. 1950	Not Evaluated
8WA01452	WA01452	Ranch	ca. 1960	Not Evaluated
8WA01454	WA01454	Frame Vernacular	ca. 1955	Not Evaluated
8WA01455	WA01455	Ranch	ca. 1950	Not Evaluated
8WA01457	WA01457	Frame Vernacular	ca. 1945	Not Evaluated
8WA01458	WA01458	Frame Vernacular	ca. 1955	Not Evaluated
8WA01459	WA01459	Frame Vernacular	ca. 1966	Not Evaluated
8WA01461	WA01461	Frame Vernacular	ca. 1955	Not Evaluated
8WA01462	WA01462	Ranch	ca. 1963	Not Evaluated
8WA01463	WA01463	Frame Vernacular	ca. 1960	Not Evaluated
8WA01465	WA01465	Frame Vernacular	ca. 1922	Not Evaluated
8WA01466	WA01466	Frame Vernacular	ca. 1950	Not Evaluated
8WA01467	WA01467	Frame Vernacular	ca. 1945	Not Evaluated
8WA01468	WA01468	Frame Vernacular	ca. 1950	Not Evaluated
8WA01469	WA01469	Masonry Vernacular	ca. 1948	Not Evaluated
8WA01473	WA01473	Frame Vernacular	ca. 1950	Not Evaluated
8WA01474	WA01474	Frame Vernacular	ca. 1958	Not Evaluated
8WA01475	WA01475	Ranch	ca. 1966	Not Evaluated
8WA01476	WA01476	Frame Vernacular	ca. 1950	Not Evaluated
8WA01477	WA01477	Ranch	ca. 1966	Not Evaluated
8WA01478	WA01478	Ranch	ca. 1940	Not Evaluated
8WL00886	Bruener House	Frame Vernacular	ca. 1950	Ineligible
8WL00887	Bruener's Store	Ranch	ca. 1925	Ineligible
8WL00888	Jones School; Albert's Temple	Frame Vernacular	ca. 1916	Eligible
8WL01348	Historic Barn	Other	ca. 1940	Ineligible

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WL02187	Rock Hill Fire Lookout Tower Building 1083	No style	1965	Ineligible
8WL2187	Building 8755	Other	1957	Ineligible
8WL02492	Eucheeanna Old Schoolhouse	Frame Vernacular	ca. 1912	Not Evaluated
8WL02687	4434 US Hwy 331 S	Masonry Vernacular	ca. 1946	Ineligible
8WL02688	4534 US Hwy 331 S	Masonry Vernacular	ca. 1964	Ineligible
8WL02689	4616 US Hwy 331 S	Ranch	ca. 1953	Ineligible
8WL02690	4736 US Hwy 331 S	Ranch	ca. 1966	Ineligible
8WL02691	5315 US Hwy 331 S	Frame Vernacular	ca. 1964	Ineligible
8WL02692	5927 US Hwy 331 S	Ranch	ca. 1964	Ineligible
8WL02693	6167 US Hwy 331 S	Frame Vernacular	ca. 1937	Ineligible
8WL02694	6192 US Hwy 331 S	Frame Vernacular	1900	Ineligible
8WL02707	Eglin AFB, Building 1080	No style	ca. 1956	Eligible
8WL02979	2924 Co Rd 81 S	Frame Vernacular	ca. 1958	Ineligible
8WL02980	2974 Co Rd 81 Building 1	Frame Vernacular	ca. 1960	Ineligible
8WL02981	2974 Co Rd 81 Building 2	Frame Vernacular	ca. 1960	Ineligible
8WL02982	3044 St Hwy 81 Building 1	Masonry Vernacular	ca. 1966	Ineligible
8WL02983	3044 St Hwy 81 Building 2	Masonry Vernacular	ca. 1970	Ineligible
8WL02984	3007 St Hwy 81	Ranch	ca. 1968	Ineligible
8WL02985	4686 St Hwy 81 Building 1	Masonry Vernacular	ca. 1963	Ineligible
8WL02986	4686 St Hwy 81 Building 2	Masonry Vernacular	ca. 1968	Ineligible
8WL02987	4686 St Hwy 81 Building 3	Masonry Vernacular	ca. 1970	Ineligible
8WS00477	Vernon High School	Georgian Revival ca. 1880–present	1931–1932	Eligible
8WS00705	3208 SR 79	Bungalow ca. 1905–1930	1950	Ineligible
8WS00706	3211 SR 79	Craftsman	1900	Ineligible
8WS00707	Signs by Stacy	Frame Vernacular	1900	Ineligible
8WS00708	3190 SR 79	Craftsman	1941	Ineligible
8WS00709	3311 SR 79	Other	1820	Ineligible
8WS00710	3112 Main St (SR 79)	Frame Vernacular	1920	Ineligible

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WS00711	3309 Main St (SR 79)	Frame Vernacular	ca. 1890	Eligible
8WS00712	3306 Main St (SR 79)	Frame Vernacular	1883	Ineligible
8WS00713	NFA	Frame Vernacular	1918	Ineligible
8WS00714	3019 Main St (SR 79)	Frame Vernacular	1989	Ineligible
8WS00715	NFA	Frame Vernacular	1925	Ineligible
8WS00721	3720 Clayton Rd and SR 79	Bungalow ca. 1905–1930	1910	Ineligible
8WS00722	2236 SR 79	Ranch	1951	Ineligible
8WS00723	2244 SR 79	Bungalow ca. 1905–1930	1930	Ineligible
8WS00724	2611 SR 79	Frame Vernacular	ca. 1903	Ineligible
8WS00725	2700 SR 79	Frame Vernacular	ca. 1944	Ineligible
8WS00726	2824 Hwy 79	Other	ca. 1951	Ineligible
8WS00727	2828 SR 79	Other	ca. 1946	Ineligible
8WS00728	2985 SR 79	Frame Vernacular	ca. 1938	Ineligible
8WS00729	Brock's Sundry Shop and Garage	Masonry Vernacular	ca. 1941	Ineligible
8WS00730	Harrison Heat, Air & Refrigeration	Masonry Vernacular	1950	Ineligible
8WS00731	Viv's Beauty Salon	Masonry Vernacular	ca. 1946	Ineligible
8WS00732	3029 State Road 79	Frame Vernacular	ca. 1941	Ineligible
8WS00733	3067 State Road 79	Masonry Vernacular	ca. 1948	Ineligible
8WS00734	Dixie Dandy	Masonry Vernacular	ca. 1942	Ineligible
8WS00735	The Lord's Cupboard	Masonry Vernacular	ca. 1951	Ineligible
8WS00736	3528 SR 79	Frame Vernacular	ca. 1950	Ineligible
8WS00863	3866 Highway 77	Frame Vernacular	ca.1960	Ineligible
8WS00864	3801 Highway 77	Frame Vernacular	1955	Ineligible
8WS00865	3801 Hwy 77	Frame Vernacular	1940	Ineligible
8WS00866	3115 Highway 77	Frame Vernacular	1950	Ineligible
8WS00867	2920 Highway 77	Frame Vernacular	1940	Ineligible
8WS00872	Tiller House	Frame Vernacular	ca. 1914	Eligible
8WS00873	3509 Washington St	Ranch	ca. 1951	Ineligible

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Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WS00874	3510 Washington St	Frame Vernacular	1920	Ineligible
8WS00875	Wausau United Methodist Church	Masonry Vernacular	ca. 1973	Ineligible
8WS00876	J.J. Cox House	Frame Vernacular	1905	Eligible
8WS00877	J.J. Cox Store	Masonry Vernacular	1945	Eligible
8WS00878	A. D. Taylor Store	Masonry Vernacular	ca. 1937	Ineligible
8WS00879	A. D. Taylor House	Frame Vernacular	ca. 1937	Ineligible
8WS00880	3536 Washington St	Frame Vernacular	ca. 1945	Ineligible
8WS00881	3536 Washington St	Frame Vernacular	1950	Ineligible
8WS00882	Phillips House	Bungalow ca. 1905–1930	ca. 1931	Ineligible
8WS00883	3540 Washington St	Frame Vernacular	ca. 1945	Ineligible
8WS00884	Wausau Masonic Lodge No. 39	Masonry Vernacular	1930	Ineligible
8WS00885	3545 Washington St	Other	1910	Potentially Eligible
8WS00886	3456 Washington St	Frame Vernacular	ca. 1953	Ineligible
8WS00887	3569 Washington St	Frame Vernacular	ca. 1958	Ineligible
8WS00888	1856 Third Ave	Frame Vernacular	ca. 1941	Ineligible
8WS00889	1891 Fourth Ave	Frame Vernacular	ca. 1946	Ineligible
8WS00890	Cricket and Wigglers Bait and Tackle	Frame Vernacular	1955	Ineligible
8WS00891	Hilton House	Frame Vernacular	ca. 1916	Ineligible
8WS00892	3587 Washington St	Frame Vernacular	ca. 1945	Ineligible
8WS00893	3598 Washington St	Frame Vernacular	Unknown	Ineligible
8WS00894	1855 First Ave	Frame Vernacular	1910	Potentially Eligible
8WS00895	Carmichael House	Unknown	ca. 1941	Ineligible
8WS00896	1633 Second Ave	Masonry Vernacular	1926	Ineligible
8WS00897	Lester Taylor house	Frame Vernacular	1945	Potentially Eligible
8WS00898	2749 Jackson St	Frame Vernacular	1940	Ineligible
8WS00899	2724 Jefferson St	Frame Vernacular	1945	Ineligible
8WS00900	2738 Jefferson St	Frame Vernacular	1953	Potentially Eligible
8WS00901	2747 Jefferson St	Frame Vernacular	ca. 1950	Ineligible

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WS00902	2287 Pioneer Rd	Frame Vernacular	1940	Ineligible
8WS00903	3560 Pioneer Rd	Frame Vernacular	1935	Insufficient information
8WS01032	3292 Court Ave	Masonry Vernacular	1956	Ineligible
8WS01033	3295 Court Ave	Frame Vernacular	1943	Ineligible
8WS01034	2848 Church Street	Bungalow ca. 1905–1930	1925	Ineligible
8WS01035	Bobbie's Antiques	Masonry Vernacular	1951	Ineligible
8WS01036	Vernon F&AM Lodge	Masonry Vernacular	1945	Ineligible
8WS01037	3709 Roche Avenue	Masonry Vernacular	1950	Ineligible
8WS01038	3714 Roche Avenue	Masonry Vernacular	1941	Ineligible
8WS01039	May Filling Station	Other	1938	Eligible
8WS01040	3717 Roche Avenue	Frame Vernacular	1940	Ineligible
8WS01041	3718 Roche Avenue	Masonry Vernacular	1954	Ineligible
8WS01042	3719 Roche Avenue	Frame Vernacular	1941	Ineligible
8WS01043	3721 Roche Avenue	Frame Vernacular	1941	Ineligible
8WS01044	3722 Roche Avenue	Frame Vernacular	1941	Ineligible
8WS01045	3003 Main Street	Masonry Vernacular	1955	Ineligible
8WS01046	2855 Church Street	Frame Vernacular	1955	Ineligible
8WS01047	2857 Church Street	Frame Vernacular	1941	Ineligible
8WS01048	2860 Church Street	Frame Vernacular	1925	Ineligible
8WS01049	Cook-Haskins House	Frame Vernacular	1951	Ineligible
8WS01050	2867 Church Street	Frame Vernacular	1942	Ineligible
8WS01051	2878 Church Street	Frame Vernacular	1941	Ineligible
8WS01052	2780 McFatter Street	Frame Vernacular	1920	Ineligible
8WS01053	3285 McFatter Street	Frame Vernacular	1950	Ineligible
8WS01055	Hightower House	Frame Vernacular	1880	Ineligible
8WS01068	3720 Clayton Rd	Frame Vernacular	1926	Ineligible
8WS01142	2532 State Road 77	Frame Vernacular	ca. 1961	Ineligible

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WS01143	2932 SR 77	Masonry Vernacular	ca. 1960	Ineligible
8WS01145	3955 SR 77	Bungalow ca. 1905–1930	ca. 1935	Ineligible
8WS01149	2090 Pioneer Rd	Ranch	ca. 1970	Ineligible
8WS01150	2074 Pioneer Rd	Ranch	1964	Ineligible
8WS01151	3172 Highway 77	Frame Vernacular	ca. 1940	Ineligible
8WS01152	3211 Highway 77	Frame Vernacular	ca. 1948	Ineligible
8WS01153	3235 Highway 77	Ranch	ca. 1969	Ineligible
8WS01154	1916 Mud Hill Rd	Masonry Vernacular	ca. 1964	Not Evaluated
8WS01156	3954 Highway 77	Frame Vernacular	ca. 1960	Ineligible
8WS01157	3437 Washington St	Ranch	ca. 1969	Ineligible
8WS01158	3475 Washington St	Masonry Vernacular	ca. 1964	Ineligible
8WS01159	3487 Washington St	Ranch	ca. 1965	Ineligible
8WS01160	Wausau Baptist Church	Masonry Vernacular	ca. 1965	Ineligible
8WS01161	3501 Washington St	Frame Vernacular	ca. 1954	Ineligible
8WS01162	1822 Glen Ave	Masonry Vernacular	ca. 1965	Ineligible
8WS01163	1816 Glen Ave	Frame Vernacular	ca. 1953	Ineligible
8WS01164	3540 Highway 77	Frame Vernacular	ca. 1935	Ineligible
8WS01165	3565 Washington St	Frame Vernacular	ca. 1946	Ineligible
8WS01166	3572 Washington St	Frame Vernacular	ca. 1964	Ineligible
8WS01167	3582 Washington St	Ranch	ca. 1957	Ineligible
8WS01168	1904 Fourth Ave	Ranch	ca. 1967	Ineligible
8WS01169	1897 Fourth Ave	Frame Vernacular	ca. 1970	Ineligible
8WS01170	1863 Fifth Ave	Other	ca. 1970	Ineligible
8WS01171	1845 Third Ave	Frame Vernacular	ca. 1963	Ineligible
8WS01172	2770 Jackson St	Bungalow ca. 1905–1930	ca. 1946	Ineligible
8WS01173	3656 Washington St	Frame Vernacular	ca. 1954	Ineligible
8WS01174	1897 Mud Hill Rd	Ranch	ca. 1970	Ineligible
8WS01175	3663 Highway 77	Ranch	ca. 1961	Ineligible

Historic Structures				
Site ID	**Site Name**	**Style**	**Year Built**	**NRHP Eligibility**
8WS01176	3669 Highway 77	Masonry vernacular	ca. 1968	Ineligible
8WS01177	3703 Highway 77	Frame Vernacular	ca. 1968	Ineligible
8WS01207	1993 Sixth Ave	Frame Vernacular	1972	Ineligible
8WS01208	475 Washington St – Building 2	Other	ca. 1964	Ineligible
8WS01249	2986 Orange Hill Rd	Frame Vernacular	1964	Ineligible
8WS01250	Gilberts Mill House	Frame Vernacular	ca. 1850	Eligible

Historic Bridges				
Site ID	**Site Name**	**Year Built**	**Survey No.**	**NRHP Eligibility**
8FR00877	Panacea	1935	3801	Not Evaluated
8GD01005[3]	Ocklawaha Creek Bridge	1941	18635	Ineligible
8JA01866	CR-278/Chipola River	1966	N/A	Not Evaluated
8LI00338	Stone Bridge	ca. 1940	19224	Eligible
8WA00720	#02-29 WAK	1942	7745	Ineligible
8WA00824	#07-06 WAK	1952	13606	Ineligible
8WS00478	Holmes Creek Bridge	ca. 1937	14779	Ineligible
8WS01247	CR 278 over Piney Branch	ca. 1940	25368	Ineligible

[3] Bridge was destroyed.

Historic Cemeteries				
Site ID	**Site Name**	**Year Established**	**Survey No.**	**NRHP Eligibility**
8CA00203	Richards Cemetery	1879	N/A	Not Evaluated
8CA00209	Chipola Primitive Baptist Church Cemetery	1870	N/A	Not Evaluated
8GD00757	Popular-Poley Branch Cemetery	ca. 1928	N/A	Not Evaluated
8JA01682	Sink Creek Cemetery	1909	4090	Not Evaluated
8JA01722	Styles Cemetery	1900s	4660	Ineligible
8LI00530	Torreya State Park Slave Cemetery	ca. 1860	N/A	Not Evaluated
8LI00594	Rock Bluff Cemetery	ca. 1855	N/A	Not Evaluated
8WA00538	Whaley Cemetery	ca. 1863	N/A	Not Evaluated
8WA00617	Lake Ellen Baptist Church Cemetery	ca. 1890	21515	Ineligible
8WA00618	Mount Olive Baptist Church Cemetery	ca. 1900	21515	Ineligible
8WA00718	Pelt Cemetery	ca. 1860	N/A	Not Evaluated
8WA01101	Bonnet Pond Cemetery	ca. 1891	N/A	Not Evaluated
8WA01102	Buckhorn Cemetery	1895	N/A	Not Evaluated
8WA01111	Grimes Cemetery	ca. 1853	N/A	Not Evaluated
8WA01112	Gwaltney Cemetery	ca. 1903	N/A	Not Evaluated
8WA01116	Hill or Ezell	ca. 1896	N/A	Not Evaluated
8WA01124	Nichols-Revell Cemetery	ca. 1966	N/A	Not Evaluated
8WA01125	Oak Park Cemetery	ca. 1875	26106	Insufficient information
8WA01128	Panacea Cemetery	ca. 1959	N/A	Not Evaluated
8WA01129	Pigott Cemetery	ca. 1852	N/A	Not Evaluated
8WA01131	Posey Cemetery	ca. 1883	N/A	Not Evaluated
8WA01137	Smith Cemetery (Medart)	ca. 1846	N/A	Not Evaluated
8WA01151	Yoder Grave Cemetery	ca. 1929	N/A	Not Evaluated
8WL01599	Euchee Valley Cemetery	1827	5931	Not Evaluated
8WL02571	Bowers Cemetery	ca. 1815	N/A	Not Evaluated
8WL02771	St. Paul Hill Cemetery	1829	24263	Not Evaluated
8WS00464	Vernon Cemetery	ca. 1880	13692	Potentially Eligible
8WS01069	St. Joseph Community Cemetery	ca. 1928	N/A	Not Evaluated
8WS01192	Wausau Memorial Gardens	ca. 1918	21919	Ineligible

Resource Groups (Districts, Landscapes, and Linear Resources)				
Site ID	**Site Name/Type**	**Years of Significance**	**Survey No.**	**NRHP Eligibility**
8CA00191	Lewis Atkins/Historical district	Twentieth century (1900–1999)	3825	Eligible
8CA00308	Marianna & Blountstown RR/Linear Resource	Twentieth century (1900–1999)	25854	Ineligible
8FR00900	Camp Gordon Johnston/Archaeological District	World War II & Aftermath (1940–1950)	23350	Eligible
8LI00565	CCC Road and Bridges/Linear Resource	Depression and New Deal (1930–1940)	19224	Not Evaluated
8LI00566	Federal Road/Linear Resource	Twentieth century (1900–1999)	19224	Not Evaluated
8LI00567	CCC Road/Linear Resource	Depression and New Deal (1930–1940)	19224	Not Evaluated
8WA00865	Georgia, Florida & Alabama RR/Linear Resource	1893–1948	19189	Eligible
8WA00963	The Oaks Motel & Restaurant/Building Complex	Modern (post–1950)	21219	Ineligible
8WL00387	New Home District/Mixed District	Late 1800s–early 19003	25559	Eligible
8WL01607	Hughes Ditch #2/Linear Resource	Nineteenth century American (1821–1999)	5931	Not Evaluated
8WS00455	B+C Railroad Grade/Linear Resource	1903–1939	24450	Ineligible
8WS00463	The Ekanachattee Trail/Linear Resource	British, 1763-1783	26725	Ineligible
8WS01248	Gilberts Mill Community/Rural Historic Landscape	Twentieth century (1900–1999)	26725	Eligible

NRHP-Listed Resources			
Site ID	**Site Name/Type**	**Address**	**Date Listed**
8CA00211[4]	Robert Lee Norton House/Private Residence	24307 NE Charles Pippin Road, Blountstown, FL	8/22/1996
8FR00005	Yent Mound/Pre-contact burial mound	Address restricted, St. Teresa, FL	5/24/1973
8LI000014	Gregory House - Torreya State Park/Museum	13 mi NE of Bristol, FL	8/14/1972

[4] On 9/20/2001, the house was moved from Jackson County to Calhoun County. This move had been formerly rejected by the NRHP, and the move was deemed not approved.

Shipwrecks			
Map ID	**Vessel Name**	**Year Lost**	**Source (Record ID)**
1	Francille	1976	AWOIS (3073); GMWD (260054); ENC
2	Hendry Barge No. 20		AWOIS (6963); GMWD (258780); ENC
3	Marker 24 Barge		BOEM (2020)
4	Unknown	1967	AWOIS (497); GMWD (18937, 258429); ENC
5	Unknown		ENC (NOAA charted)
6	Unknown		ENC (NOAA charted)
7	Unknown		ENC (NOAA charted)
8	Unknown		ENC (NOAA charted)
9	Unknown		ENC (NOAA charted)
10	Unknown		ENC (NOAA charted)
11	Unknown		ENC (NOAA charted)

APPENDIX B

MAP OF SELECTED CULTURAL RESOURCES IN THE STUDY AREA

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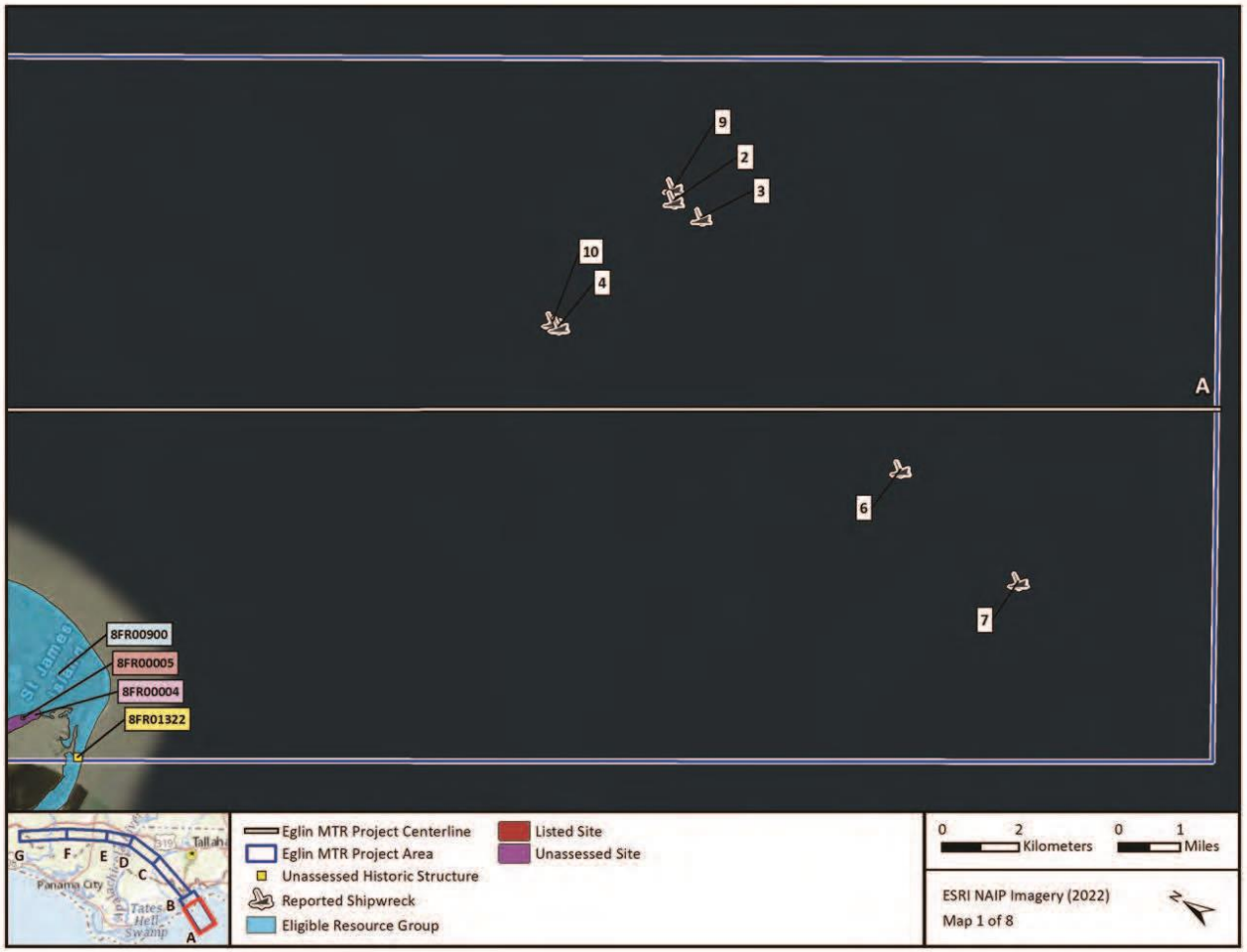
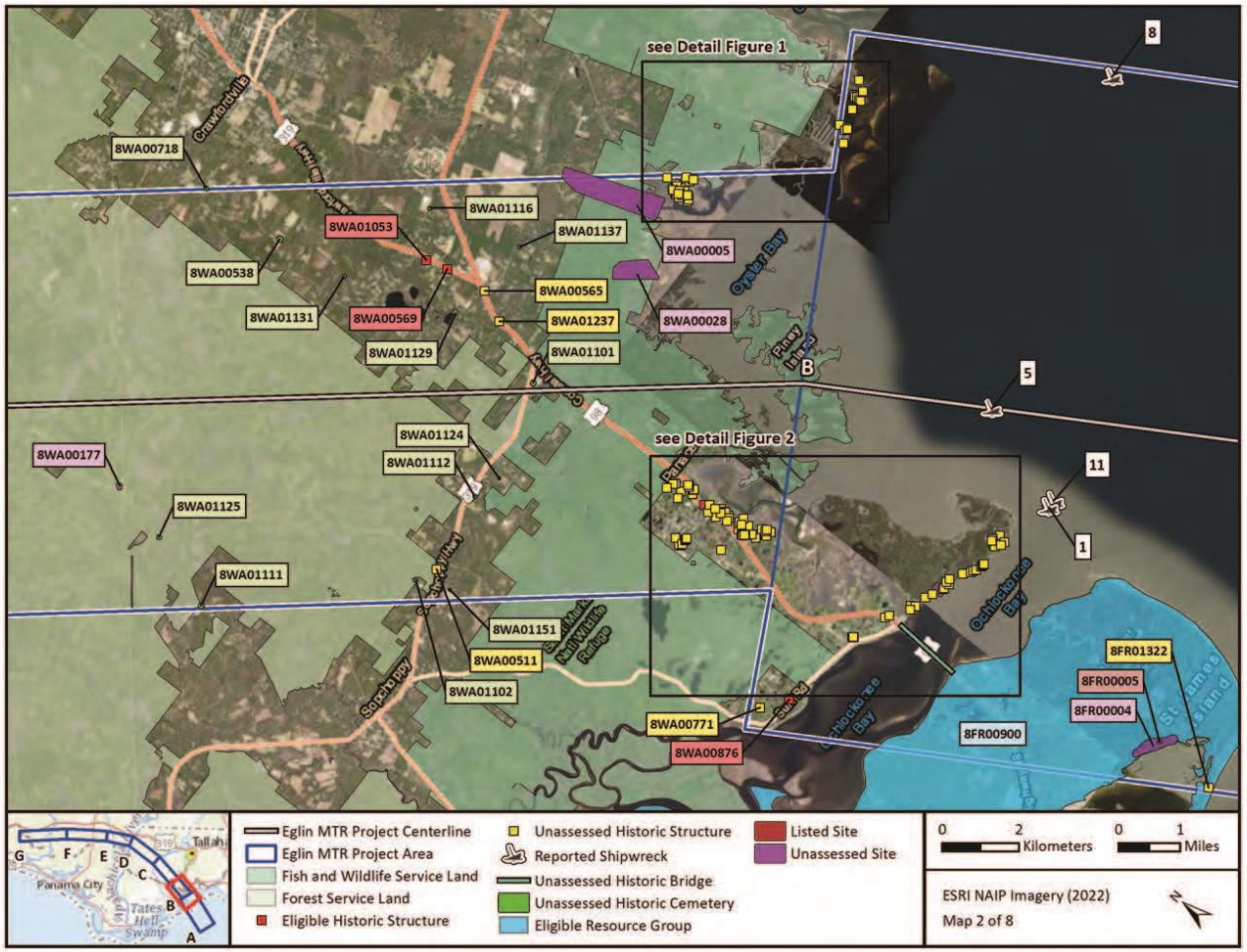

9
2
3
10
4
A
6
7
8FR00900
8FR00005
8FR00004
8FR01322
St James Island
G
F
E
D
C
B
A
Tallahassee
Panama City
Tates Hell Swamp
Eglin MTR Project Centerline
Eglin MTR Project Area
Unassessed Historic Structure
Reported Shipwreck
Eligible Resource Group
Listed Site
Unassessed Site
0 2 Kilometers
0 1 Miles
ESRI NAIP Imagery (2022)
Map 1 of 8

B-1


see Detail Figure 1
see Detail Figure 2
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8WA00565
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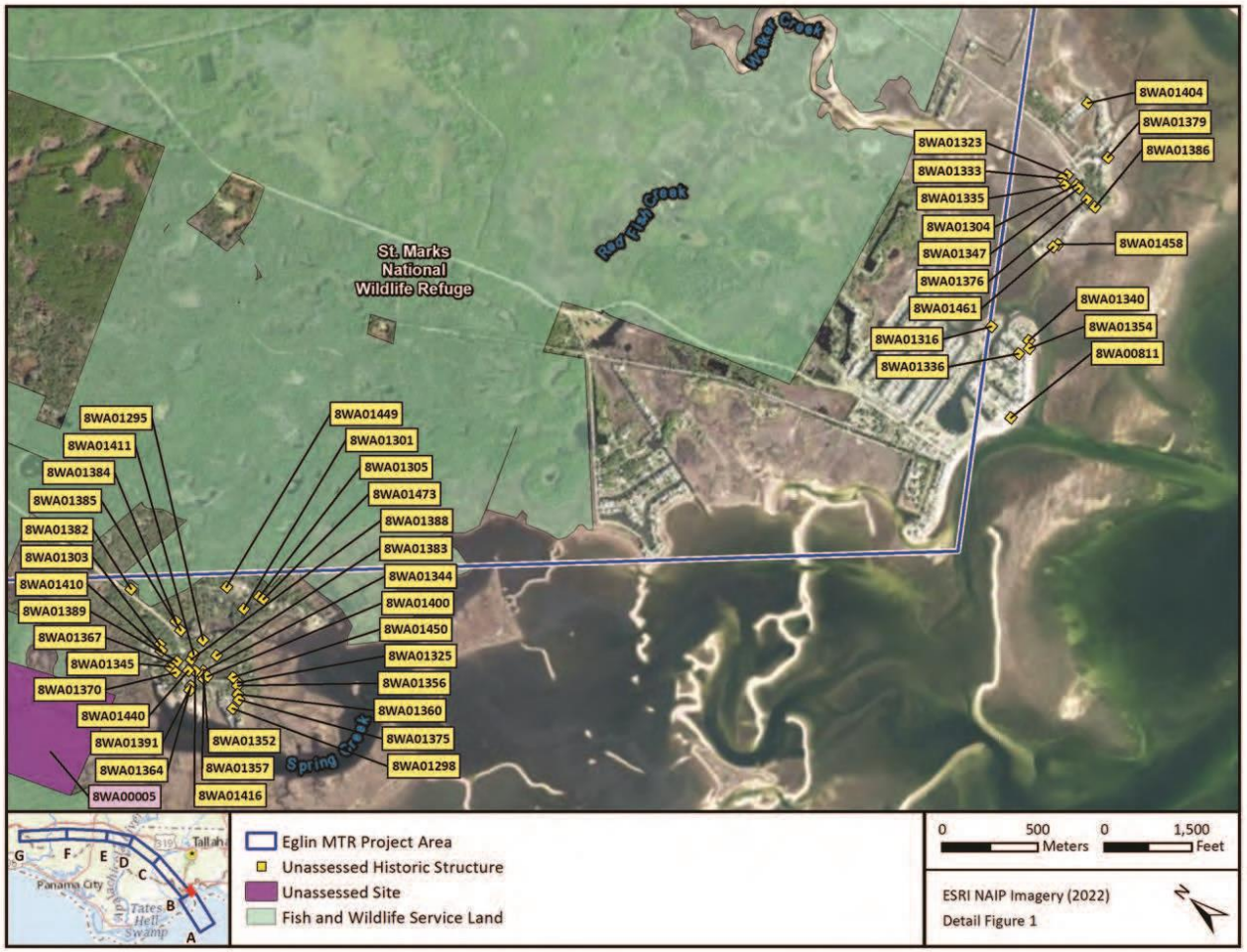
8WA00569
8WA01237
8WA00028
8WA01129
8WA01101
8WA00177
8WA01124
8WA01112
8WA01125
8WA01111
8WA01151
8WA00511
8WA01102
8WA00771
8WA00876
8FR01322
8FR00005
8FR00004
8FR00900
Eglin MTR Project Centerline
Eglin MTR Project Area
Fish and Wildlife Service Land
Forest Service Land
Eligible Historic Structure
Unassessed Historic Structure
Reported Shipwreck
Unassessed Historic Bridge
Unassessed Historic Cemetery
Eligible Resource Group
Listed Site
Unassessed Site
0 2 Kilometers
0 1 Miles
ESRI NAIP Imagery (2022)
Map 2 of 8

B-2


St. Marks
National
Wildlife Refuge
Wakulla Creek
Ray Fish Creek
Spring Creek
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8WA01379
8WA01386
8WA01323
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8WA01335
8WA01304
8WA01347
8WA01458
8WA01376
8WA01461
8WA01340
8WA01354
8WA01316
8WA01336
8WA00811
8WA01295
8WA01411
8WA01384
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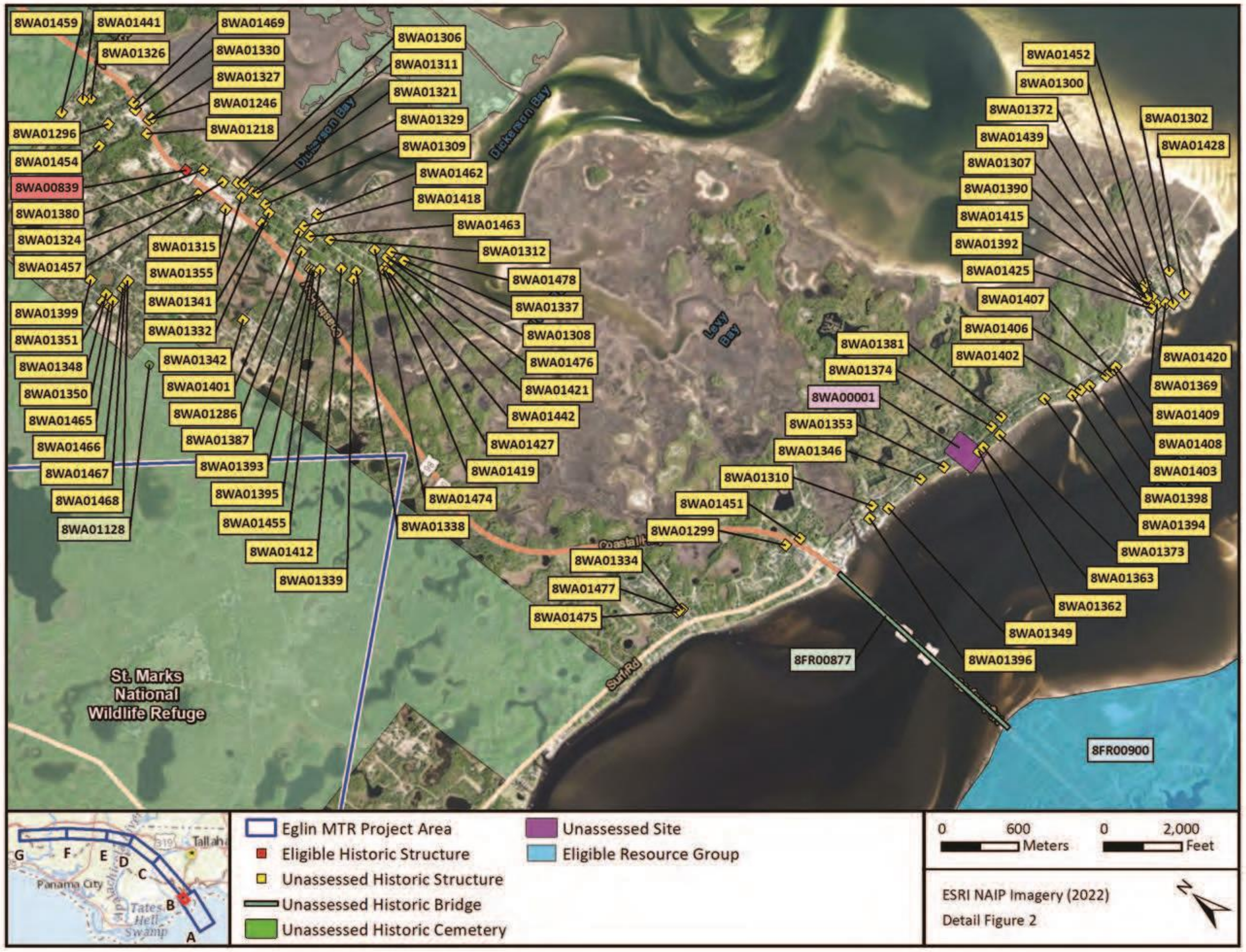
8WA01301
8WA01305
8WA01473
8WA01388
8WA01383
8WA01344
8WA01400
8WA01450
8WA01325
8WA01356
8WA01360
8WA01375
8WA01298
8WA01352
8WA01357
8WA01416
Tallahassee
Panama City
Tates Hell Swamp
A
B
C
D
E
F
G
Eglin MTR Project Area
Unassessed Historic Structure
Unassessed Site
Fish and Wildlife Service Land
0
500
Meters
0
1,500
Feet
ESRI NAIP Imagery (2022)
Detail Figure 1
N

B-3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8WA01329
8WA01309
8WA01462
8WA01418
8WA01463
8WA01312
8WA01478
8WA01337
8WA01308
8WA01476
8WA01421
8WA01442
8WA01427
8WA01419
8WA01474
8WA01338
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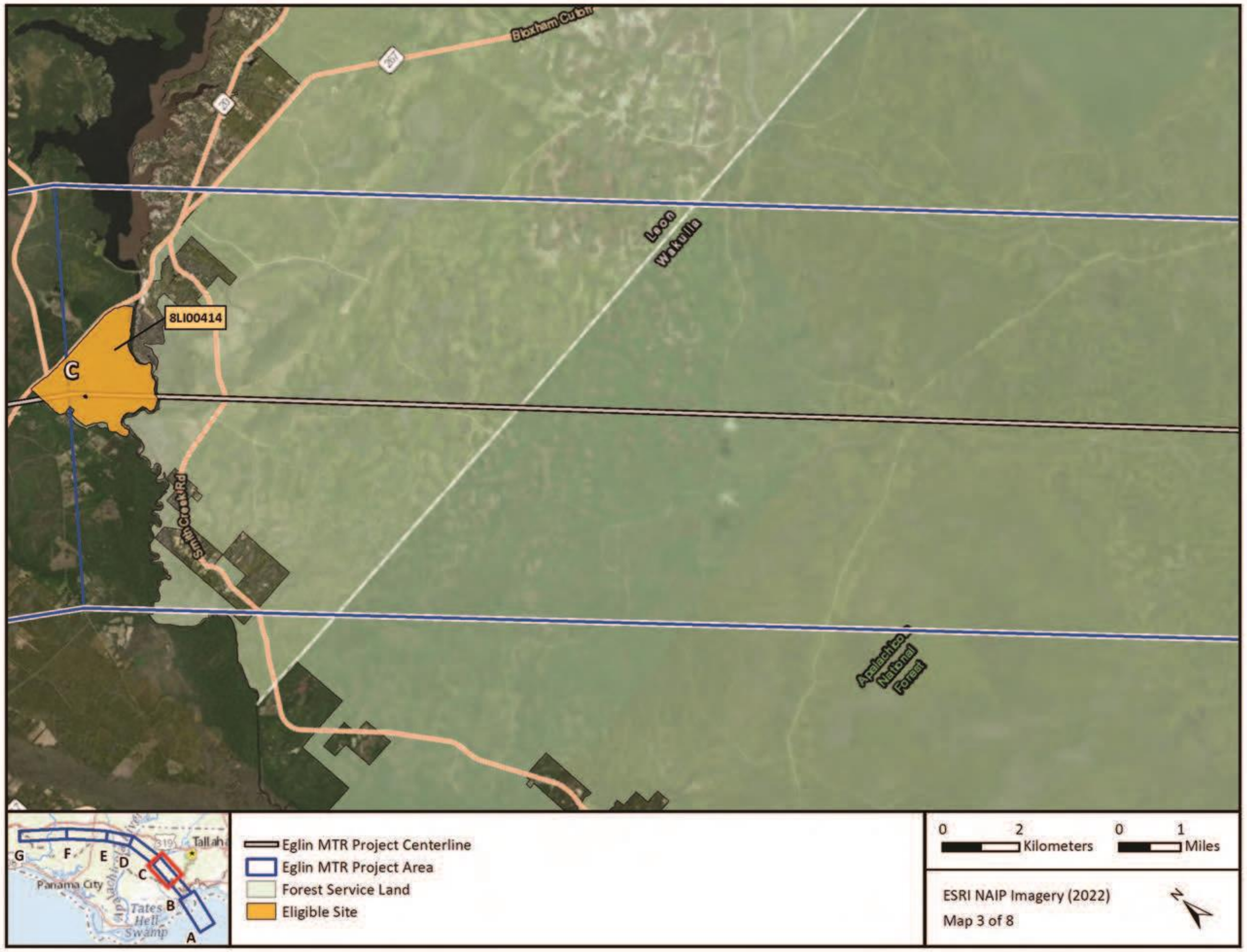
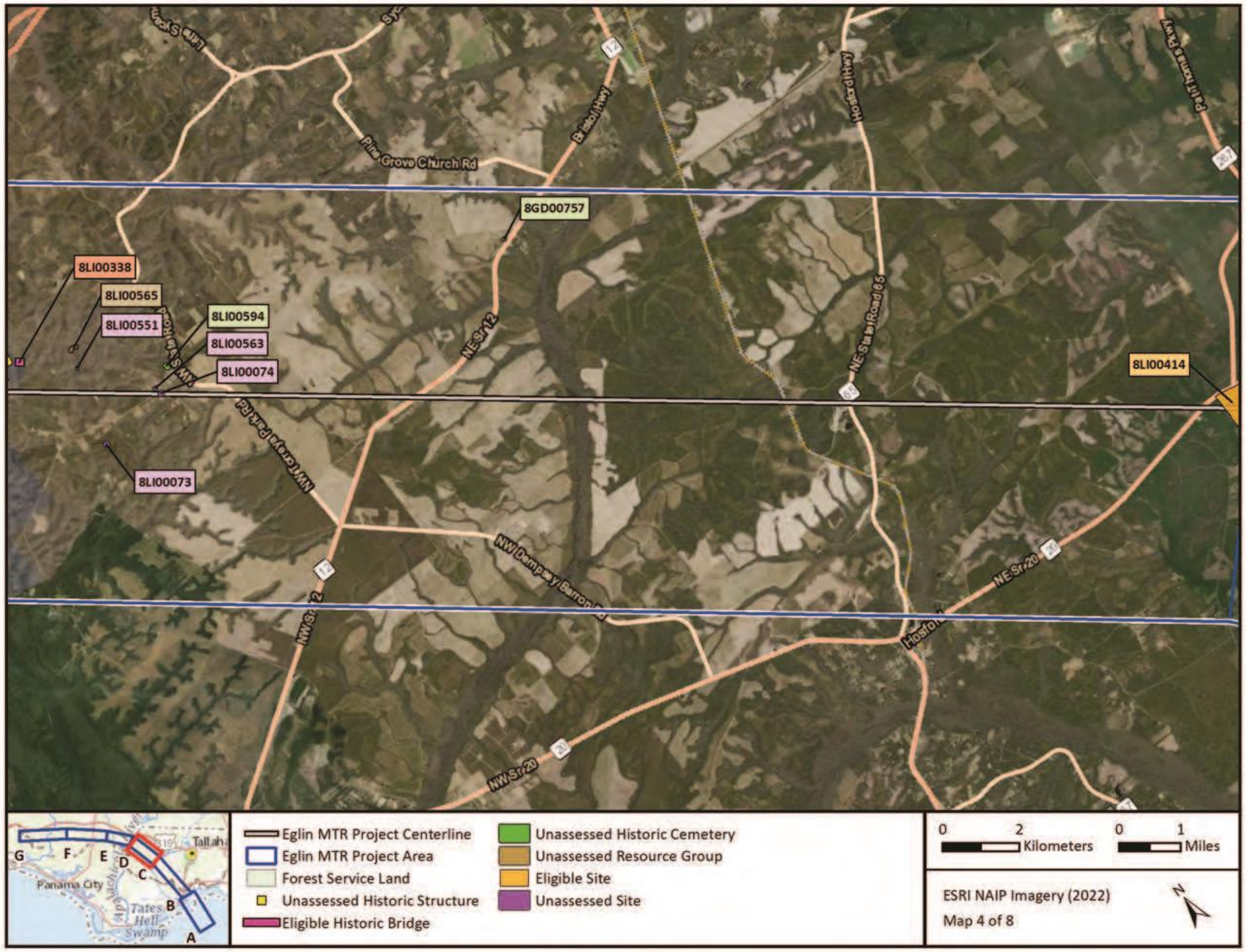
8WA01475
8WA01299
8WA01451
8WA01310
8WA01346
8WA01353
8WA00001
8WA01374
8WA01381
8FR00877
8WA01452
8WA01300
8WA01372
8WA01439
8WA01307
8WA01390
8WA01415
8WA01392
8WA01425
8WA01407
8WA01406
8WA01402
8WA01302
8WA01428
8WA01420
8WA01369
8WA01409
8WA01408
8WA01403
8WA01398
8WA01394
8WA01373
8WA01363
8WA01362
8WA01349
8WA01396
8FR00900
Dickerson Bay
Levy Bay
Coastal Hwy
Surf Rd
St. Marks National Wildlife Refuge
G
F
E
D
C
B
A
Panama City
Tallah
Tates Hell Swamp
Eglin MTR Project Area
Eligible Historic Structure
Unassessed Historic Structure
Unassessed Historic Bridge
Unassessed Historic Cemetery
Unassessed Site
Eligible Resource Group
0 600 Meters
0 2,000 Feet
ESRI NAIP Imagery (2022)
Detail Figure 2
N

B-4


8LI00414
C
Leon
Wakulla
Smith Creek Rd
Apalachicola National Forest
G
F
E
D
C
B
A
Panama City
Tates Hell Swamp
Eglin MTR Project Centerline
Eglin MTR Project Area
Forest Service Land
Eligible Site
0 2 Kilometers
0 1 Miles
ESRI NAIP Imagery (2022)
Map 3 of 8
N

B-5



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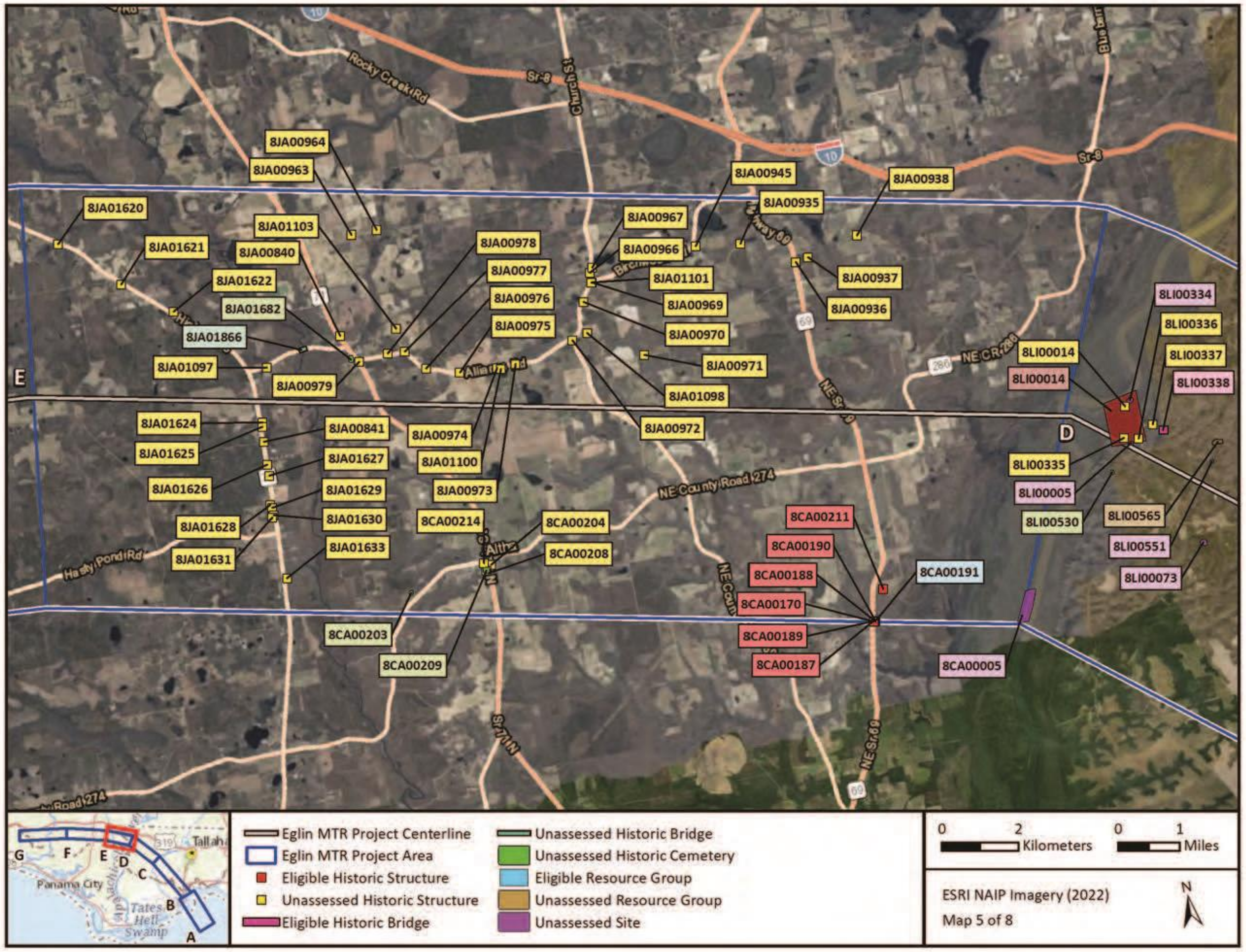
8LI00338
8LI00565
8LI00551
8LI00594
8LI00563
8LI00074
8LI00073
8LI00414
NE Sr 12
NW Sr 12
NW Dempsey Barron Rd
NE State Road 65
NE Sr 20
NW Sr 20
Hosford Hwy
Panama City
Tates Hell Swamp
G
F
E
D
C
B
A
Eglin MTR Project Centerline
Eglin MTR Project Area
Forest Service Land
Unassessed Historic Structure
Eligible Historic Bridge
Unassessed Historic Cemetery
Unassessed Resource Group
Eligible Site
Unassessed Site
0
2
Kilometers
0
1
Miles
ESRI NAIP Imagery (2022)
Map 4 of 8
N

B-6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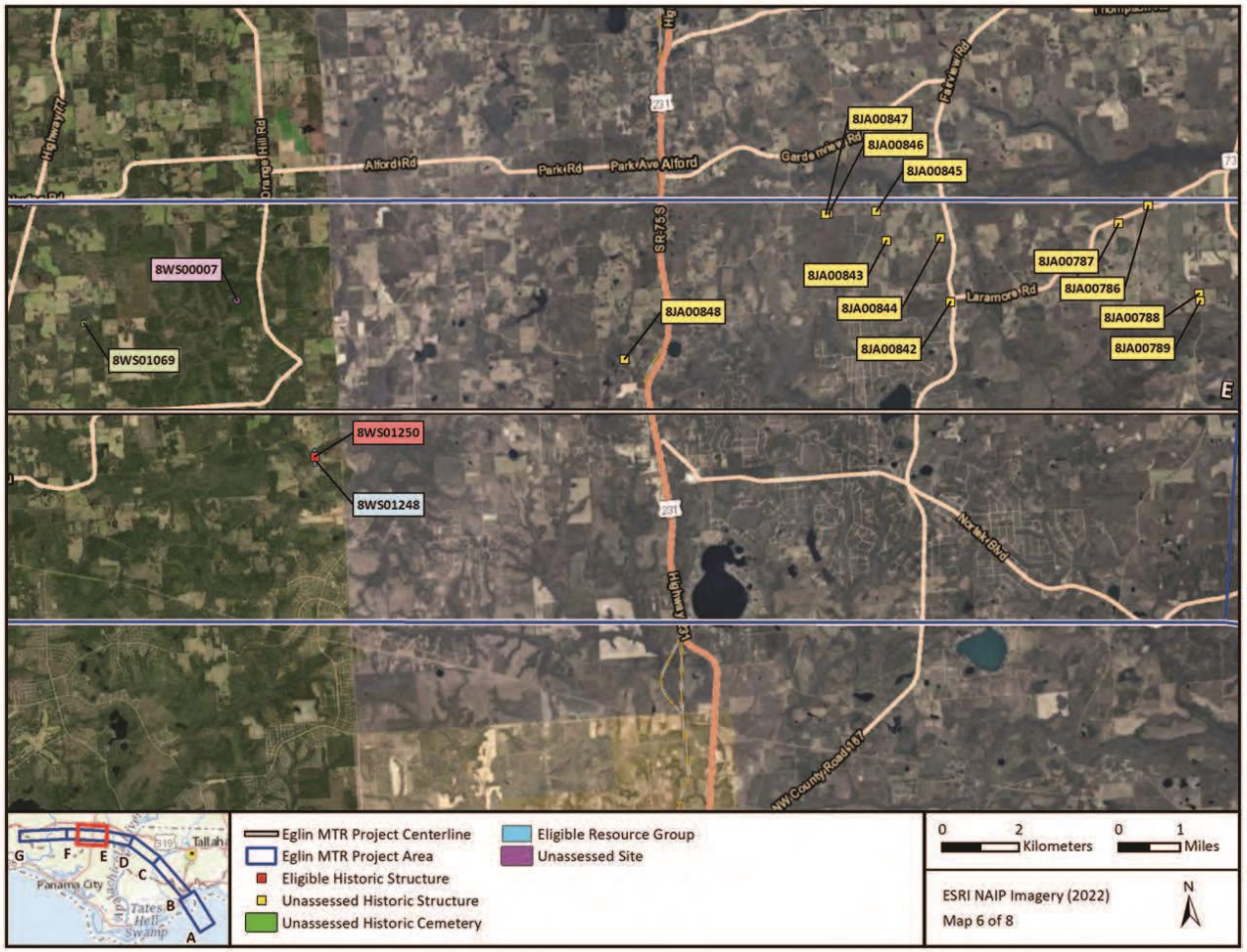
8JA00975
8JA00967
8JA00966
8JA01101
8JA00969
8JA00970
8JA00971
8JA01098
8JA00972
8JA00945
8JA00935
8JA00938
8JA00937
8JA00936
8JA01624
8JA01625
8JA01626
8JA01628
8JA01631
8JA00841
8JA01627
8JA01629
8JA01630
8JA01633
8JA00974
8JA01100
8JA00973
8CA00214
8CA00204
8CA00208
8CA00203
8CA00209
8CA00211
8CA00190
8CA00188
8CA00170
8CA00189
8CA00187
8CA00191
8CA00005
8LI00014
8LI00014
8LI00334
8LI00336
8LI00337
8LI00338
8LI00335
8LI00005
8LI00530
8LI00565
8LI00551
8LI00073
E
D
Rocky Creek Rd
Church St
NE County Road 274
Hasty Pond Rd
Eglin MTR Project Centerline
Eglin MTR Project Area
Eligible Historic Structure
Unassessed Historic Structure
Eligible Historic Bridge
Unassessed Historic Bridge
Unassessed Historic Cemetery
Eligible Resource Group
Unassessed Resource Group
Unassessed Site
0 2 Kilometers
0 1 Miles
ESRI NAIP Imagery (2022)
Map 5 of 8
N

B-7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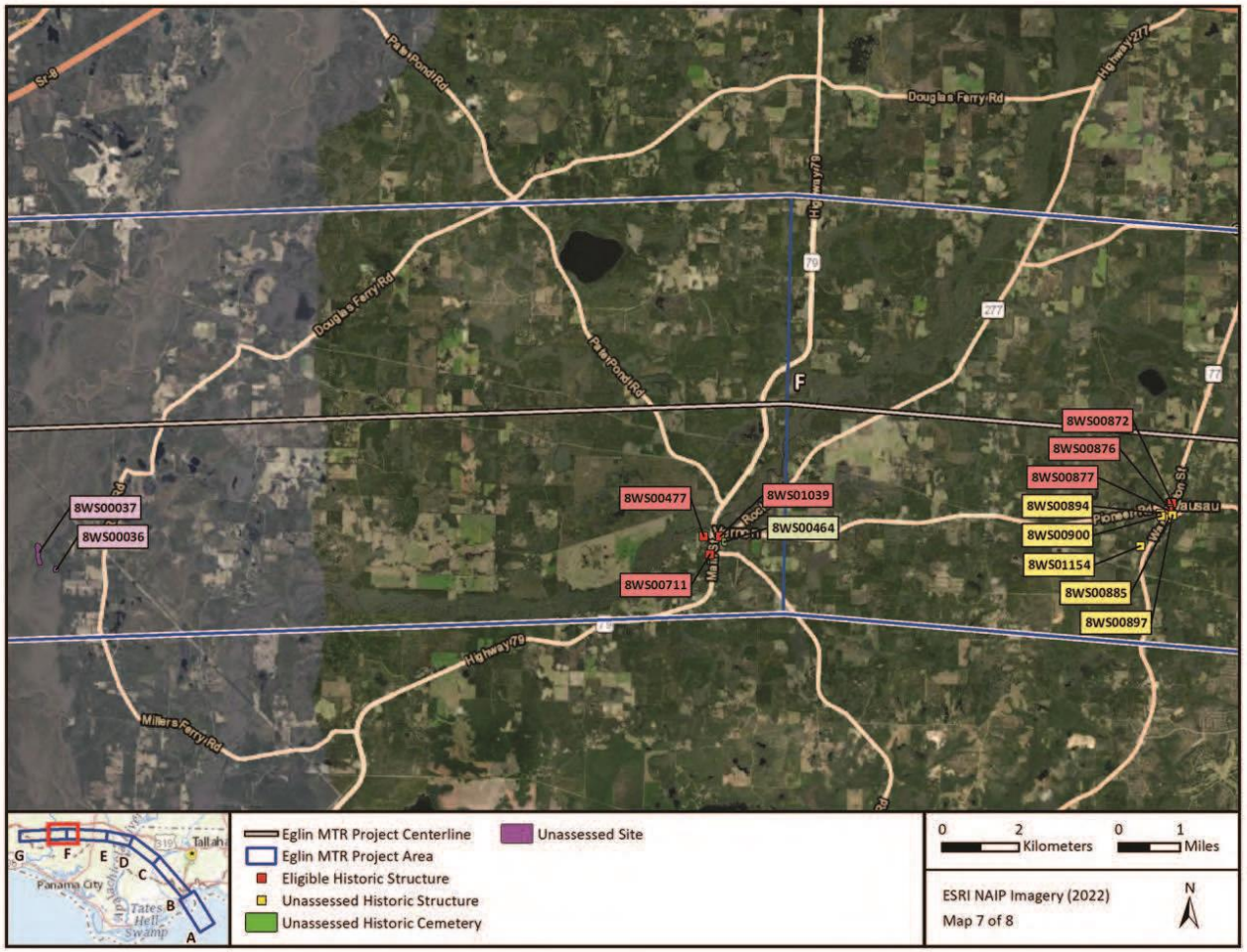
8JA00842
8JA00848
8JA00787
8JA00786
8JA00788
8JA00789
8WS00007
8WS01069
8WS01250
8WS01248
Alford Rd
Park Rd
Park Ave
Alford
Orange Hill Rd
Gerden way Rd
Fairview Rd
SR 75 S
Laramore Rd
Nowak Blvd
NW County Road 167
231
Eglin MTR Project Centerline
Eglin MTR Project Area
Eligible Historic Structure
Unassessed Historic Structure
Unassessed Historic Cemetery
Eligible Resource Group
Unassessed Site
0 2 Kilometers
0 1 Miles
ESRI NAIP Imagery (2022)
Map 6 of 8
N
Panama City
Tallah
Tates Hell Swamp
A
B
C
D
E
F
G

B-8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Palm Pond Rd
Highway 79
Highway 277
Miller's Ferry Rd
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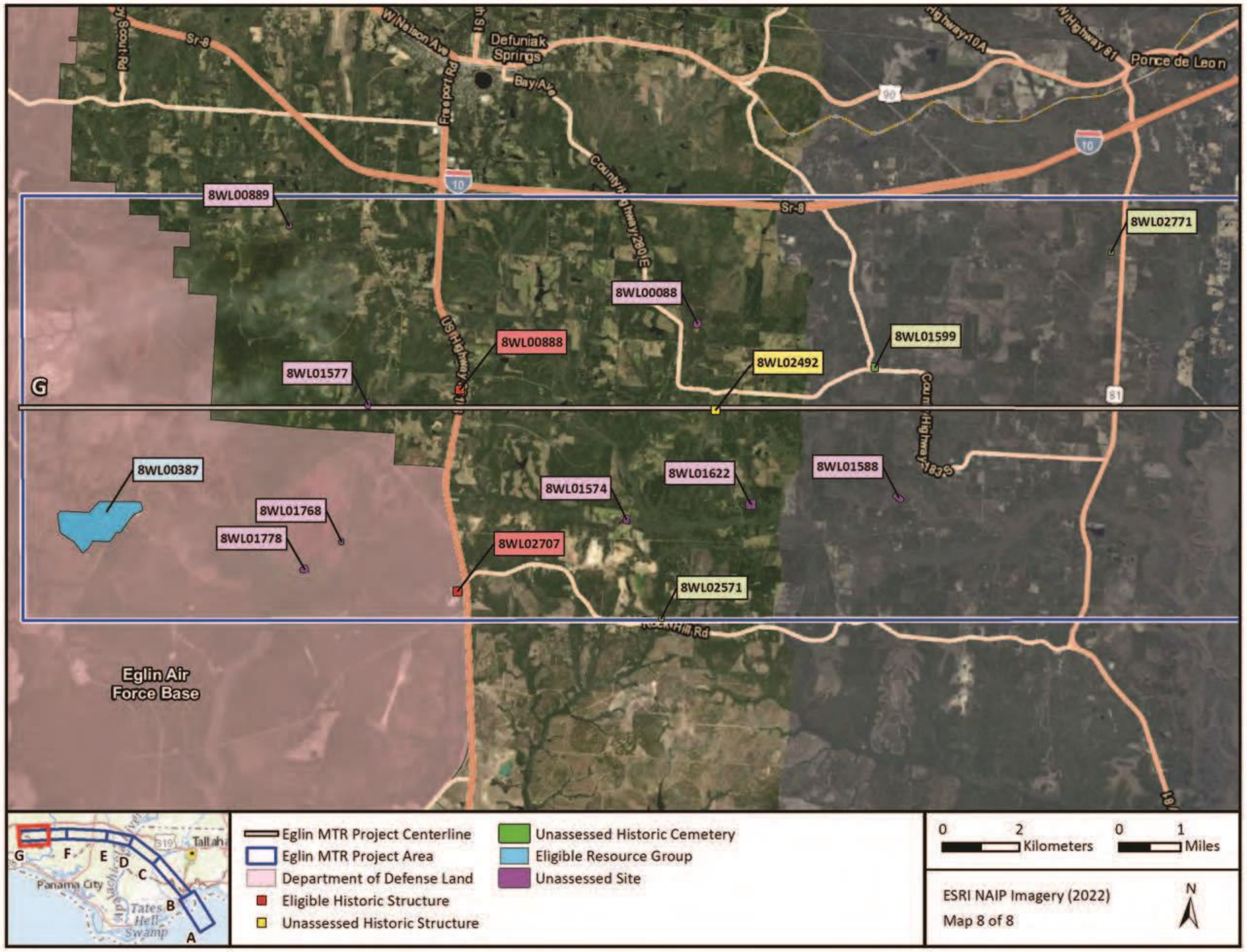
8WS00036
8WS00477
8WS01039
8WS00464
8WS00711
8WS00872
8WS00876
8WS00877
8WS00894
8WS00900
8WS01154
8WS00885
8WS00897
Eglin MTR Project Centerline
Eglin MTR Project Area
Eligible Historic Structure
Unassessed Historic Structure
Unassessed Historic Cemetery
Unassessed Site
0 2 Kilometers
0 1 Miles
ESRI NAIP Imagery (2022)
Map 7 of 8
N
B-9


Sr-8
Defuniak Springs
Bay Ave
W Nelson Ave
Freeport Rd
Ponce de Leon
90
10
8WL00889
8WL02771
8WL00088
8WL01599
8WL00888
8WL02492
8WL01577
G
81
8WL00387
8WL01588
8WL01622
8WL01574
8WL01768
8WL01778
8WL02707
8WL02571
Rock Hill Rd
Eglin Air Force Base
G
F
E
D
C
B
A
Panama City
Tates Hell Swamp
Eglin MTR Project Centerline
Eglin MTR Project Area
Department of Defense Land
Eligible Historic Structure
Unassessed Historic Structure
Unassessed Historic Cemetery
Eligible Resource Group
Unassessed Site
0 2 Kilometers
0 1 Miles
ESRI NAIP Imagery (2022)
Map 8 of 8
N

B-10