PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

FOR

IMPLEMENTATION OF AN AREA DEVELOPMENT PLAN

FOR

HUNTER ARMY AIRFIELD, GEORGIA

NOVEMBER 2021

In compliance with the National Environmental Policy Act of 1969

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EXECUTIVE SUMMARY

This Programmatic Environmental Assessment (PEA) provides an analysis of the potential environmental impacts associated with implementing an Area Development Plan (ADP) on Hunter Army Airfield (HAAF), Georgia (GA). HAAF is a geographically separate component of Fort Stewart, Georgia, and is located 41 miles to its east and adjacent to the City of Savannah, GA. The Fort Stewart/HAAF Real Property Vision Plan divides the Installation into identifiable and connected districts based on geographical features, land use patterns, building types, and transportation networks. Each district has its own focused ADP, and the ADP specific to HAAF is the subject of this environmental analysis.

Implementation of an ADP at HAAF will guide future development of projects at the Installation in accordance with the Installation's Real Property Vision Plan. The Installation has chosen this programmatic approach to the analysis of the ADP to allow for early planning, coordination, and flexibility in project implementation and the identification of potential environmental impacts. This will provide the decision maker with the appropriate information required to make an informed decision as each project is developed. This programmatic analysis will also serve as the basis for future, tiered, NEPA analysis as the design associated with each individual project develops, during which time supplemental NEPA analysis will occur and will be documented via a REC, if it falls within the scope of this PEA, or via completion of a Supplemental EA, if it is beyond the scope of this PEA.

Three alternatives are analyzed in this PEA, including the No Action/Status Quo, including Alternative I, in which the Installation will adopt and implement an ADP for HAAF with development following the route proposed in the Illustrative Plan (PEA Figures 5-7) and Alternative II, in which an ADP will still be implemented, but under which construction will not occur south of the existing flightline (PEA Figure 8). The PEA also analyzes the No Action/Status Quo Alternative, under which the Installation would not implement an ADP at HAAF. No potential significant impacts are anticipated under any of the alternatives, and all potential environmental impacts associated with each alternative are summarized in PEA Table 4. This programmatic document, and its analysis, will assist the Army decision-makers in making a determination of the potential direct, indirect, and cumulative impacts to the human and/or natural environment as a result of implementation of the proposed action.

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1.0 INTRODUCTION

The United States (U.S.) Army manages millions of acres of land and billions of dollars in facilities and infrastructure across the world. The effective long-term management of these resources requires thoughtful and thorough planning. This is accomplished primarily at the Installation level through a comprehensive and collaborative real property master planning process, which provide a means for sustainable installation development that supports mission and environmental requirements, and establishes and prescribes planning philosophies and strategies applicable across all Army Installations. Unified Facilities Criteria (UFC) 2-100-01, *Installation Master Planning*, establishes a consistent approach for master planning across all Department of Defense (DoD) properties, while Army Regulation (AR) 420-1, *Army Facilities Management (DA, 2008a)*, and specifically addresses the management of real property resources on Army Installations. Master planning documents developed through these processes typically cover a minimum 20-year planning horizon (3-5 years for contingencies) and provide their Installation with a plan for executing its commitments.

The Fort Stewart (FSGA)/Hunter Army Airfield (HAAF), Georgia Real Property Vision Plan (RPPV) was developed and completed in November 2014. The FSGA/HAAF Vision and five supporting goals are to support the training mission and power projection capacities by creating a sustainable community with well-defined town centers and other walkable campuses connected by public spaces and quality multi-modal transportation and pedestrian networks, while maintaining its southern coastal identity. As part of its Long Range Component, the RPPV divides the Installation into identifiable and connected districts based on geographical features, land use patterns, building types, and transportation networks. This focus on districts allows for the identification of unique needs due to mission, requirements, or command priority changes. Also part of the Long Range Component Plan is the development of an Area Development Plan (ADP) for each District.

The HAAF District is geographically separated from the other Districts, located approximately 40 miles to the east of FSGA proper, encompassing 5,400 acres of land in Chatham County, Georgia, and sharing a common boundary with the City of Savannah (Figures 1 and 2). The ADP for HAAF was developed in a workshop held February 6-10, 2017, in which stakeholders analyzed the District's existing condition, documented stakeholder preferences for future development, crafted guiding goals and objectives for development within the District, and proposed alternatives for implementing future development. The results of this effort are the subject of this document.

1.1 PROGRAMMATIC APPROACH AND DECISION TO BE MADE

This Programmatic Environmental Assessment (PEA) analyzes the potential environmental impacts associated with adopting and implementing the ADP for HAAF and was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code Section [USC] 4321 et seq.); the Council on Environmental Quality (CEQ) regulations that implement NEPA (Title 40 CFR, Parts 1500 to 1508); and the Army's rule governing NEPA, 32 CFR Part 651, *Environmental Analysis of Army Actions*. The Army is currently in the process of updating its NEPA regulation; accordingly, based on this document's start date prior to September 14, 2020, it will be completed in accordance with the Army's NEPA regulation as it stands prior to that date.

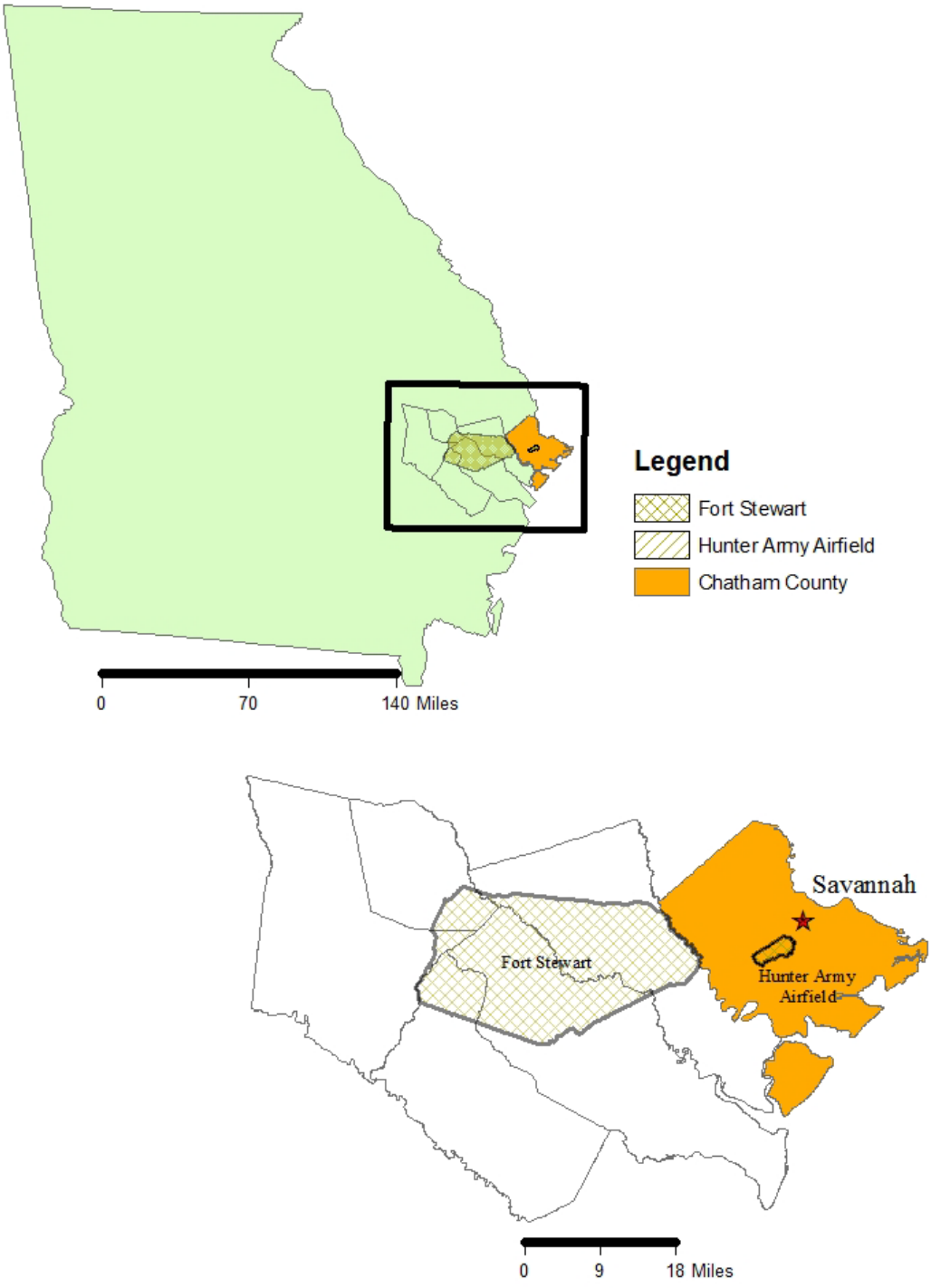

Figure 1. Fort Stewart and Hunter Army Airfield, Georgia.

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Figure 2. Hunter Army Airfield District.

Mission activities are subject to continuous change and evaluation, and changes may occur in response to a variety of factors, including new mission assignments, new technologies or training methods, and/or national defense requirements. In order to address the possibility of changes to the design of specific buildings and projects, this document focuses on the overall footprint of projects for implementation in the ADP, rather than individual projects themselves. Maintaining this broader scope, specific design changes within the project area will not affect the validity of the NEPA documentation addressing the overall plan for the site.

Army proponents prepare many types of management plans that must include or be accompanied by appropriate NEPA analysis and many of these can be accomplished with a programmatic approach, creating an analysis that covers a number of smaller projects or activities. If additional analyses are required, they can ''tier'' off the original analyses, eliminating duplication. Accordingly, this document serves as a basis for records of environmental consideration (RECs) per AR-200-1 or tiered environmental analysis addressing project specific actions and any substantive changes needed. The document's programmatic approach allows for early planning, coordination, and flexibility in project implementation and the identification of potential environmental impacts, and provides the decision maker with the appropriate information required to make an informed decision.

The Army provided an opportunity for the public, local, state, and federal agencies to participate in the NEPA process for this action. A Notice of its Availability was published in *The Frontline*, *The Coastal Courier*, and *The Savannah Morning News* announcing the start of the 30-day public review and comment period for this PEA, including its draft Finding of No Significant Impact and draft Finding of No Practicable Alternative. Electronic copies of the documents were available on the FSGA/HAAF NEPA webpage (https://home.army.mil/stewart/index.php/about/Garrison/DPW/environmental/prevention-and-compliance/nepa) and hard copies were provided to local libraries in Fort Stewart, Hinesville, and Savannah, GA.

One comment was received on this PEA. The GA EPD-Land Protection Branch (LPD) inquired about the lack of site-specific impact determinations to Restoration Sites in the vicinity of potential construction on HAAF. A follow-up MS Teams meeting was conducted between the GA EPD-LPD and FSGA NEPA and Restoration POCs. The programmatic nature of the PEA was more thoroughly discussed. i.e., that the PEA is process-focused versus project-focused, as the funding and design for the majority of the projects under analysis is not yet available, making a site-specific assessment of potential impacts for each project not possible at this time. If/when these projects are approved and funded, the design process will be initiated and the FSGA/HAAF Environmental Division, Engineering Branch, and other stakeholders will work to ensure none-to-minimal impacts will occur to Restoration Sites on the Installation. The GA EPD-LPD approved this process and asked only to be included if/when the identified projects are funded and approved. This will most likely be in the form of site-specific EAs or RECs that tier from this PEA, in accordance with the processes established in Chapter 1.1 of this PEA. The GA EPD-LPD will be included in the EA/REC process and did not request an amendment to the PEA, comment letter, and/or summary of meeting; however, their initial comment letter is at Appendix G, Record of Public and Regulatory Review. No other comments were received.

1.2 INSTALLATION BACKGROUND

HAAF was founded in 1929 to serve as the future site of the Savannah Municipal Airport. In 1940, the U.S. government approved construction of an Army Air Corps base at this location, resulting in the opening of the Savannah Air Base (SAB) in 1941. During World War II, the SAB supported various bombers, fighters, transports, and cargo aircraft. In 1948, the 2nd Bomb Wing moved from Arizona to Savannah's Chatham Field or what is now the Savannah / Hilton Head International Airport, and then to Hunter Field in 1950. Bombers predominated the airfield throughout the 1950s and most of the 1960s, until management of the field transferred from the Air Force to the Army in 1967.

Since that time, helicopters have represented the majority of the aircraft located at the airfield. In 1973, HAAF went into caretaker status but was reopened in 1975 as a support facility for the reactivated mechanized infantry division at Fort Stewart. In 1980, the 24th Infantry Division (Mechanized) became part of the nation's rapid deployment force and for Fort Stewart, the combination of Savannah's deep ports and HAAF's long runway made this region the ideal location for rapid deployment of troops and heavy mechanized equipment. Currently, HAAF is home to the aviation elements of the 3rd Infantry Division (3rd ID) (Mechanized) headquartered at Fort Stewart, Georgia (FSGA), including the 3rd Combat Aviation Brigade (CAB), 603rd Aviation Support Battalion, and 260th Quartermaster Battalion. Other units on HAAF include the 1st Battalion, 75th Ranger Regiment; the 3rd Battalion, 160th Special Operations Aviation Regiment (Airborne) (3/160th SOAR); and the 224th Military Intelligence Battalion (Aerial Exploitation). Coast Guard Air Station Savannah is also located on HAAF, which is the largest helicopter unit in the Coast Guard, providing Coastal Georgia with around-the-clock search and rescue coverage of the area. The Georgia Army National Guard, Air Force and other DoD components also have either resident or temporary tenure on HAAF, due to its premier training capabilities and strategic location.

1.2.1 PROPOSED ACTION AND PURPOSE AND NEED

The Installation is utilizing a programmatic approach to the analysis of the ADP to allow for early planning, coordination, and flexibility in project implementation and the identification of potential environmental impacts. This will provide the decision maker with the appropriate information required to make an informed decision as each project is developed. This programmatic analysis will also serve as the basis for future, tiered, NEPA analysis as the design associated with each individual project develops, during which time supplemental NEPA analysis will occur and will be documented via a REC, if it falls within the scope of this PEA, or via completion of a Supplemental EA, if it is beyond the scope of this PEA.

The purpose of the proposed action is to sustain the Installation's mission for training and the environment, offer a superior Quality of Life for Soldiers, employees, and their Families on HAAF, and ensure the projects proposed within the ADP are implemented in accordance with the Installation's environmental and operational constraints. The proposed action addresses the following needs: maximizing training resource areas by sustaining training lands for tenant and visiting Soldiers; maximizing the facility infrastructure footprint by demolishing underused, inadequate building space and constructing more efficient facilities for Soldiers and the Civilian workforce; improving infrastructure through utility and road/paving upgrades and upgrading existing utilities to more sustainable, energy efficient systems; and enhancing the recreational opportunities on HAAF for Soldiers and their Families.

2.0 DESCRIPTION OF THE ALTERNATIVES

2.1 ALTERNATIVE DEVELOPMENT

2.1.1 INSTALLATION ANALYSIS

An Interdisciplinary (ID) Team worked collaboratively to develop the alternatives analyzed in this PEA and consisted of the FSGA/HAAF Master Planning Division, Environmental Division, Engineering Division, Range Division, Directorate of Morale Welfare and Recreation, Directorate of Emergency Services, and other divisions, directorates and representatives of the military units potentially impacted by the actions proposed in the ADP.

During the ADP Workshop, the ID Team conducted two levels of site analysis to assess the current conditions of HAAF. First, the Facility Occupant Verification (FOV) Survey occurred, prior to the ADP workshop. The FOV Survey included a building evaluation to verify several key features of the built environment – current Real Property Category Codes, Unit Identification Codes of current occupants, general utilization and space availability, as well as an interior condition assessment. The ID Team evaluated 137 buildings in this manner, rating each as *Good*, where the majority of the facility is free of observable or known distress; *Fair*, where the facility appears degraded, but adequate for its current function; or *Poor*, where the facility suffers from significant serviceability or degradation. A total of 82 buildings were rated *Good*, 39 buildings were rated *Fair*, and 16 buildings were rated *Poor* (see Appendix A, pages 54-59, ADP for HAAF for full discussion).

The second phase of the site analysis occurred during the workshop, as the ID Team conducted an extensive on-site analysis of the HAAF District. The site analysis consisted of identifying, documenting, and verifying the condition of all buildings, streets, parking, and natural and cultural sites throughout the Installation, as noted below.

Field Building Assessment. An assessment of the exterior condition and structural quality of all existing buildings in the district, assigning a rating of Red, Yellow, or Green. This assessment was not conducted at an Installation Status Report (ISR) level, but focused instead on the long-term planning needs of the District. Field teams considered the durability of building materials, potential adaptability, and the layout of buildings in their assessment, as well as the building number, use, material, number of floors, and condition (function). Based on this qualitative analysis, the participants assigned each building a rating, where *Red* buildings should be demolished within 20 years, *Yellow* buildings may be demolished within 20 years, and *Green* buildings should remain in 20 years. A total of 283 buildings were rated *Green*, 117 *Yellow*, and 272 *Red* (see Appendix A, pages 63-67, ADP for HAAF for full discussion).

Field Street and Pavement Assessment. ID Team members made notes of the dimensions and quality of each street within the district. The quality was determined based on whether or not the street had all, some, or none of the following characteristics: curbs, planting strips, sidewalks, and adequate pavement. The dimensions of the existing streets were then taken into account to determine the need and capacity for improvement, expansion, or redevelopment. Street sections and the proposed recommendations for

improvements can be found in the Street Standards section (see Appendix A, pages 64-73, ADP for HAAF for full discussion).

Blights and Rights Assessment. Blights and rights on the Installation were also identified, with Blights defined as displeasing attributes that need to be improved, such as sidewalks that do not align and trees that are not maintained, and rights defined as positive elements to be maintained, enhanced, and used as positive examples, such as areas with attractive landscaping and well-designed parking lots (see Appendix A, pages 74-79, ADP for HAAF for full discussion).

Document Analysis/Review. Key planning documents provide a strong foundation on which future development may stand. The consultant planning team reviewed existing planning documents to develop base of knowledge about the planning needs of HAAF, and include the Transportation Network Plan, Installation Design Guide, the Green Infrastructure Network Plan, Installation Planning Standards, and Landscaping Standards.

Geographic Information Systems (GIS) Analysis Review. GIS analysis provides important constraints to be considered during the planning process. Unseen constraints present additional challenges for development. For example, a GIS layer showing a main utility corridor along a street within the study area implies that the street will not move. Often, there is a balance between the location and investment in infrastructure and how it affects the proposed development. GIS layers that were analyzed include Topography, Environmental Constraints, Built Constraints, Operational Constraints, and Existing Utilities.

Buildable Areas and the Regulating Plan. ID Team members utilized all of the data accumulated to identify all areas potentially suitable for additional development on HAAF, or the "Buildable Areas" on Post, mindful that future development not be incompatible with existing or future adjacent land uses. This process was aided by early identification of constraints to development, including environmental, operational, and built.

Constraints on development include wetlands, floodplains, cultural resources, and/or areas with known contamination concerns, and were identified early in the planning process, as well as any restrictions that apply to them. This helps minimize the potential for adverse effects to these resources associated with development, as well as the potential costs associated with mitigation impacts at these locations. Operational constraints include maintaining construction outside the clear zones of the airfield flightline, to ensure compliance with the Federal Aviation Administration (FAA) regulations. Built constraints include man-made elements within the environment, such as existing buildings, roads, and utility lines. Depending on their efficiency and quality, they should be maintained to maximize past investments and minimize future expenditures; however, demolition is proposed if they represent a blight on the Installation or impede positive development options.

This information was utilized to identify the buildable and non-buildable areas on HAAF. Non-buildable areas consist mostly of the undeveloped, open space to the south, west, and northwest on the Installation, in which the environmental and operational constraints were determined too great to overcome for developmental purposes. The remainder of the Installation was deemed buildable and its land uses were categorized by the ID Team as part of the development of the Regulating Plan for HAAF (Figures 3 and 4).

Figure 3: Regulating Plan for HAAF, Georgia.

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Figure 4: Buildable and Non-Buildable Areas on HAAF, Georgia.

The Regulating Plan serves as the principal tool for implementing future development on Post, with individual land uses identified via Building Standards. These include airfield support, airfield operations, industrial, residential, community support, training, recreation, mission, flex, and town center. The Regulating Plan establishes what can and cannot be implemented within each category. For example, only Airfield Operations facilities can be constructed directly adjacent to the flightline, to reserve this prime real estate strictly for aviation uses. The Regulating Plan also identifies what development cannot occur within each land use, such as negating the potential for constructing retention ponds near an airfield runway, which attracts birds and may create wildlife flight hazards. Collectively, these measures will help ensure no conflicting land uses in the future development proposed for HAAF.

2.1.2 DEVELOPMENT OF SCREENING CRITERIA

The ID Team developed planning objectives to show how the HAAF vision and goals could be achieved within the HAAF District. These planning objectives were then used as the screening criteria for the development of the three initial planning alternatives. The screening criteria are key in assessing whether an alternative would meet its purpose and need and therefore could be considered reasonable. Thus, each alternative identified potential options for future development within the HAAF District. These screening criteria are:

Provide Flexible Training Spaces – What projects will ensure, enhance, and maintain HAAF's capability as a power projection platform, to include maximizing the potential usage of the existing airfield.

Provide Sustainable Infrastructure – What projects will maintain a resilient, secure, and energy-efficient infrastructure that promotes and enables mission success on HAAF.

Provide Multi-modal Transportation – What projects will create and maintain a transportation network that integrates all areas of HAAF, as well as addressing pedestrian safety.

Provide Public Spaces – What projects will create and maintain a cohesive environment in which to live and work, ensuring a superior quality of life.

Although each initial planning alternative presented good ideas for the District, none of the three individually presented the best option on its own (see PEA Section 2.5, Alternatives Dismissed from Further Review, as well as at Appendix A, pages 97-102, ADP for HAAF). Consequently, following a full discussion of each initial planning alternative, the best ideas and common themes from each were selected and are presented as the proposed action alternatives for the future development of the HAAF District, presented below in Section 2.3. To be carried forward for further, detailed analysis, each alternative must fully meet the above-stated screening criteria.

2.2 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN (PREFERRED)

Under Alternative I, the Installation will adopt and implement the HAAF ADP, with development following the route proposed in the Illustrative Plan, as detailed below (Figures 5-7) and in Table 1. Routine operations, training, and other standard activities on Post will be ongoing under this alternative, as detailed more fully in Alternative III: No Action/Status Quo. This alternative fully meets all of the screening criteria.

- Construct and relocate the 3/160th Special Operations Aviation Regiment (SOAR) from current location north of the flightline to a currently undeveloped area south of the flightline, to include a Parachute Rigging Facility, a Battalion (BN) headquarters, a Company Operations Facility (COF), barracks, a Human Performance Training Center (HPTC) Facility, and Tactical Equipment Maintenance Facility (TEMF);
- Construct a second taxiway along the southern portion of the Airfield proper to support the new development proposed for the 3/160th SOAR;
- Utilize former 3/160th SOAR footprint north of the flightline to site all five 3rd Combat Aviation Brigade (3rd CAB) BNs, including the 1/3, 2/3, 4/3, 3/17, and the 603rd Aviation Support BN (ASB). This will also provide hangar space for the U.S. Army Aviation and Missile Life Cycle Management Command (AMCOM) and the 224th Military Intelligence (MI) BN;
- Construct a CAB Memorial Plaza in the cantonment area near the 3rd CAB Facilities;
- Construct a COF for 2/3 BN Headquarters (HQ)/Headquarters Company (HHC) Brigade (BDE) medical component, a Criminal Investigation Command (CID) facility, a new Supply Support Activity (SSA) facility, a new Post Chapel, a new Garrison HQ, enhancements to the Rio Gate/Access Control Point (ACP), and a new fire and police station;
- Construct Project DeRenne, a City of Savannah road realignment project outside the Installation that will affect access to the Montgomery Gate;
- Renovate the Education Center, the Logistics Readiness Center (LRC), the DPW Building, and the existing SSA Facility;
- Implement pedestrian and bicycle improvements;
- Implement street improvements;
- Implement training area improvements; and
- Demolition (facilities and infrastructure).

As discussed in Section 1.1, in order to ensure the validity of the NEPA review for this ADP, the analysis in this PEA focuses on the footprint of a particular project, rather than on its site-specific design. Project proponents will be encouraged to shift project sites to avoid /minimize impacts to sensitive environmental resources to the extent feasible while maintaining land use/building standards. This approach was selected for the following reasons: (1) There is a limited amount of buildable space on HAAF, and all proposed projects were carefully sited within the appropriate Installation land use/building standard and must accordingly remain so; and (2) some projects require functional adjacency, meaning "like must be near like," thereby limiting the availability of alternate locations for construction and minimizing the potential for project resiting.

For example, new hangar construction to support the 3rd CAB, which is located directly adjacent to the airfield proper, must be sited within and in accordance with the airfield operations standard. These facilities should likewise be adjacent to other facilities that support the 3rd CAB, in order to maximize unit efficiency. There is a limited amount of airfield operations standard on HAAF; therefore, it is reasonably certain that construction of those facilities will occur only within that standard on HAAF and also adjacent to one another. Specific design details or project revisions, if not available at the time of this document's production, will be evaluated as they occur, during the project's design phase, and will determine whether

the actions are sufficiently covered in this NEPA analysis or whether further documentation (supplemental NEPA) is needed.

The projects proposed in the ADP will occur in three phases: Short-Range (0-5 years), Mid-Range (5-10 years), and Long-Range (10+ years). Short-range actions (PEA Figure 5) are identified as being high priority actions that can be quickly implemented, and/or have low implementation costs. This phase includes 11.85 acres of construction, 11.73 acres of renovation/upgrades, and 50 acres of demolition, as detailed on PEA Table 1. Mid-Range actions (Figure 6) are identified as being more complex, involving lengthier planning, programming, and budgeting processes, and/or are dependent upon other actions; for example, construction of a mid-range phase facility may first require demolition of another facility to clear its footprint. This phase includes 4.05 acres of construction, 2.95 acres of renovation/upgrades, and 87 acres of demolition. Long Range actions (Figure 7) are identified as being more distant in time, addressing the future needs of operations and personnel on the Installation. This phase includes 126.68 acres of construction and 25 acres of demolition, but does not currently include renovation/upgrades at this time. Under Alternative I, the proposed projects are widely dispersed, including within the existing cantonment area, south of the existing flightline, and to the southwestern portion of the Installation.

Several of the long-range projects do not currently have design or funding and may not seem ripe for analysis; however, as stated above and in Chapter 1.0, Programmatic Approach and Decision to be Made, this is a footprint assessment, analyzes potential impacts on a programmatic level, and does not depend upon site-specific requirements. Furthermore, even if these projects are shifted during the design process, each will remain within the same Building Standard and general vicinity in which they are currently sited due to the lack of buildable land on HAAF and to ensure maximum functional adjacency for the unit(s) and/or organization(s) that will inhabit them, making their analysis in this section of the PEA appropriate.

Routine operations, repairs and maintenance of existing facilities, roads, and ground, as well as training, will continue under this alternative, as detailed more fully in Alternative III: No Action/Status Quo. This alternative fully meets the vision, goals, and objectives for the HAAF District.

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Figure 5: Alternative I, Short-Range Development.

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Figure 6: Alternative I, Mid-Range Development.

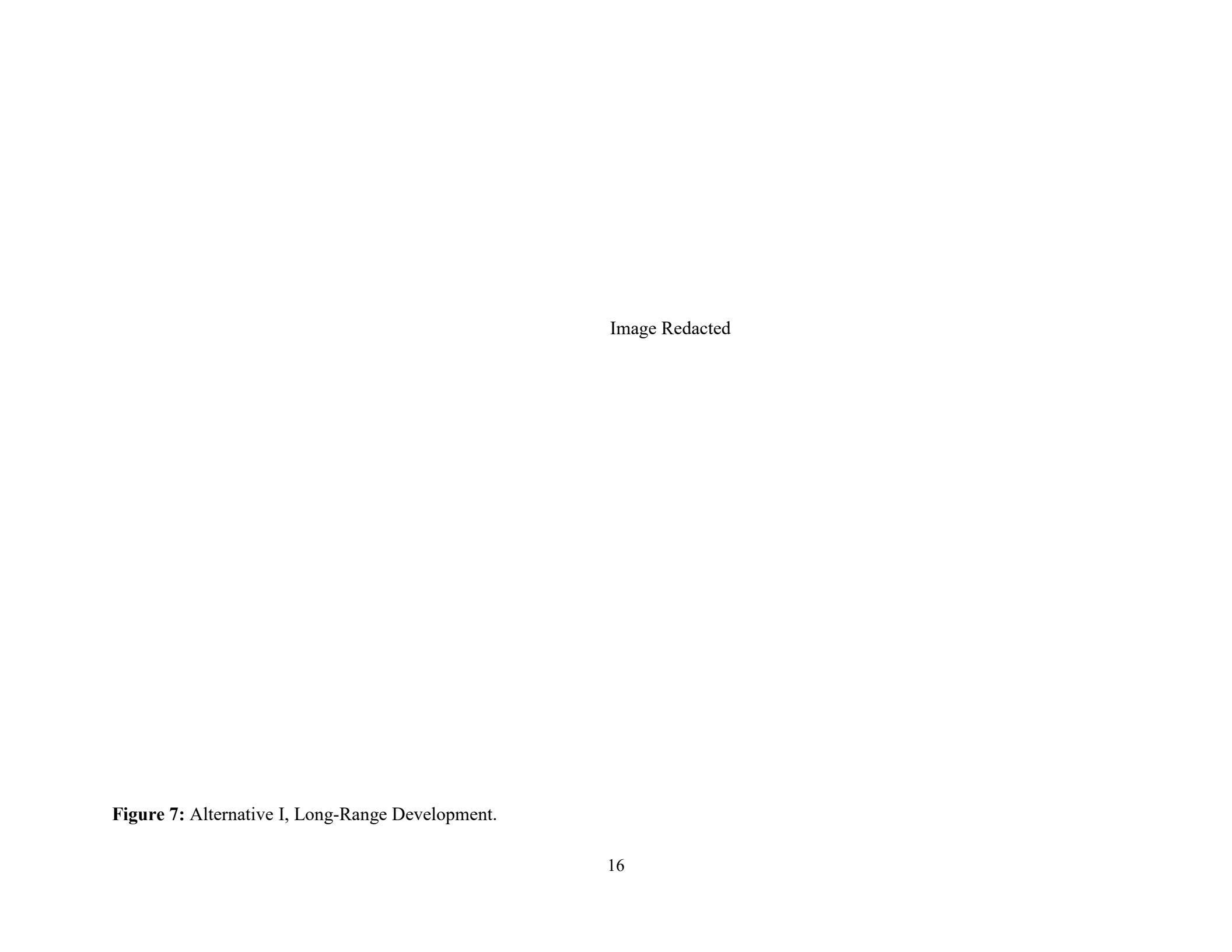

Figure 7: Alternative I, Long-Range Development.

Table 1: Alternative I Project List (*Note: Projects O and M not shown, as these projects have been completed***).**

Project Title & ID	Project Type	Project Footprint (Acres)	Tree Clearing Required (Acres)	Previously Disturbed Yes (Y) / No (N)	Access to Existing Utilities (Y/N)	Access to Existing Roads (Y/N)	Phase (S/M/L)
Construct Multi-Use Path Improvements (A)	Transportation	1.6 acres	1.6 acres	Y	NA (none required)	Y	S
Renovate Second Floor DPW (B)	Renovation	0.8 acres	NA	Y	Y	Y	S
Demolition Building #s (C) - 100, 125, 610, 844, 845, 850, 1005, 1021, 1026, 1160, 1290	Demolition	50 acres	0	Y	Y	Y	S
Construct Drainage Improvements (D)	Construction	0.10 acres	0	Y	Y	Y	S
Renovate Education Center (E)	Renovation	0.43 acres	NA	Y	Y	Y	S
Construct Leonard Neal Street Upgrades (F)	Transportation	0.07 acre	0	Y	Y	Y	S
Create Linked Pedestrian Path Network (G)	Transportation	0.06 acres	0	Y	Y	NA (none required)	S
Construct Parking (H)	Transportation	0.35 acres	0	Y	NA	Y	S
Construct COF for Brigade Medical and HHC (2/3) (I)	Construction	0.38 acres.	0.38 acres *	N	Y	Y	S
Improve Parking Lot (J)	Transportation	2 acres	0	Y	NA	Y	S
Upgrade N Lightning Street (K)	Transportation	3.8 acres	0	Y	Y	Y	S

Project Title & ID	Project Type	Project Footprint (Acres)	Tree Clearing Required (Acres)	Previously Disturbed Yes (Y) / No (N)	Access to Existing Utilities (Y/N)	Access to Existing Roads (Y/N)	Phase (S/M/L)
Construct CID (L)	Construction	0.1 acres	0	Y	Y	Y	S
Renovate 7901 & 7902 (N)	Renovation	2.5 acres	NA	Y	Y	Y	S
Construct CAB Memorial (P)	Construction	0.02 acres	0.02	Y	Y	Y	S
Renovate 7911 (Q)	Renovation	1.7 acres	NA	Y	Y	Y	S
Construct Outdoor Range (R)	Construction	1.0 acres	1.0 acre	Y	N	Y	S
Construct Hangar (4/3) (S)	Construction	2.6 acres	0	Y	Y	Y	S
Construct Road Realignment (T)	Transportation	0.03 acres	0.03 acres *	Y	Y	Y	S
Upgrade Intersection (U)	Transportation	0.5 acres	0.5 acres	Y	Y	Y	S
Construct Parachute Rigging Facility for 3/160th (V)	Construction	0.9 acres	0.9 acres	N	Y	Y	S
Construct Rigging Facility (W)	Construction	0.6 acres	0.6 acres	N	Y	Y	S
Construct Air Assault Building w/ Concrete Fencing (X)	Construction	0.2 acres	0.2 acres *	N	Y	Y	S
Construct Driving Course (Y)	Construction	3.2 acres	3.2 acres	N	Y	Y	S
Construct Crosswalks (Z)	Transportation	0.02 acres	0	Y	Y	Y	S
Enhance Land Navigation Course (AA)	Training	TBD	TBD	N	N	Y	S
Pave RV Lot and Construct Bathhouse (AB)	Construction	1.0 acres	0.5 acres	Y	Y	Y	S

Project Title & ID	Project Type	Project Footprint (Acres)	Tree Clearing Required (Acres)	Previously Disturbed Yes (Y) / No (N)	Access to Existing Utilities (Y/N)	Access to Existing Roads (Y/N)	Phase (S/M/L)
Construct Project DeRenne (ACRES)	Transportation	2.7 acres	2.7 acres	Y	Y	Y	M
Construct Shops & Admin for DPW (AD)	Construction	0.2 acres	0	Y	Y	Y	M
Demolition (AE) Building #s - 811, 813, 834, 840, 841, 842, 843, 1003, 1005, 1128, 1131, 1132, 1134, 1154, 1155, 1206, 1210-A, 1210-B, 1210-C, 1210-D, 1210-E, 1210-F, 1279, 1345, 1346, 1349, 1350; TFs 810-823, TF 850	Demolition	87 acres	0	Y	Y	Y	M
Construct Dog Kennel (AF)	Construction	0.3 acres	0	Y	Y	Y	M
Construct Sidewalks and Tree Buffer (AG)	Transportation	0.25 acres	0	Y	Y	Y	M
Construct HPTC (AH)	Construction	0.6 acres	0	N	Y	Y	M
Renovate Motorpool (2/3) (AI)	Renovation	0.4 acres	0	Y	Y	Y	Y
Construct MP Station (AJ)	Construction	0.2 acres	0.2 acres *	Y	Y	Y	M
Renovate Battalion HQ (2/3) (AK)	Renovation	0.4 acres	NA	Y	Y	Y	M
Construct AMCOM Hangar (AL)	Construction	3.1 acres	0	Y	Y	Y	M
Construct Addition to Hangars (2/3) (AM)	Construction	1.6 acres	0	Y	Y	Y	M
Construct ASB Hangar (AN)	Construction	3.1 acres	0	Y	Y	Y	M

Project Title & ID	Project Type	Project Footprint (Acres)	Tree Clearing Required (Acres)	Previously Disturbed Yes (Y) / No (N)	Access to Existing Utilities (Y/N)	Access to Existing Roads (Y/N)	Phase (S/M/L)
Construct Addition to Hangar (1/3) (AO)	Construction	0.7 acres	0	Y	Y	Y	M
Renovate SSA (AP)	Renovation	0.2 acres	NA	Y	Y	Y	M
Construct Road Realignment (AQ)	Renovation	4.0 acres	0	Y	Y	Y	M
Construct Hangar (3/17) (AR)	Construction	3.1 acres	0	N	N	N	M
Construct Live Fire Facility (AS)	Construction	0.1 acres.	1.0 acres	N	N	N	M
Construct Urban Assault Course (AT)	Construction	0.5 acres	0.5 acres	N	N	N	M
Construct Motorpool (3/17) (AU)	Construction	0.3 acres	0	Y	Y	Y	M
Renovate 224 TEMF (AV)	Renovation	0.2 acres	0	Y	Y	Y	M
Renovate Motorpool (2/3) (AW)	Renovation	0.5 acres	0	Y	Y	Y	M
Renovate LRC (AX)	Renovation	0.2 acres	NA	Y	Y	Y	M
Renovate Motorpool (3/17) (AY)	Renovation	0.5 acres	0	Y	Y	Y	M
Construct Organizational Storage (2/3) (AZ)	‘Construction	0.4 acres	0	Y	Y	Y	M
Construct Additional Storage (3/17) (BA)	Construction	0.4 acres	0.4 acres *	Y	Y	Y	M
Construct 224 Hangar (BB)	Construction	2.2 acres	0	Y	Y	Y	M
Renovate Barracks (BC)	Renovation	0.5 acres	NA	N	Y	Y	M
Construct Hangar 1 for 3/160th (BD)	Construction	42 acres	42 acres	N	N	N	M

Project Title & ID	Project Type	Project Footprint (Acres)	Tree Clearing Required (Acres)	Previously Disturbed Yes (Y) / No (N)	Access to Existing Utilities (Y/N)	Access to Existing Roads (Y/N)	Phase (S/M/L)
Construct Hangar 2 for 3/160th (BE)	Construction	22 acres	22 acres	N	N	N	M
Construct Cabins (BF)	Construction	1 acre	1.0 acre	Y	Y	Y	M
Renovate Slip (BG)	Renovation	0.05 acres	0.05 acres *	Y	Y	Y	M
Construct Rio Gate Enhancements (BH)	Construction	1 acre	1.0 acre	Y	Y	Y	M
Construct Washrack (BI)	Construction	1 acre	0	N	Y	Y	L
Demolition (BJ) Building #s - 129, 145, 860, 930, 932, 935, 1031, 1033, 1201, 7907, 7908, 7909, 8007, 8008; TF 821, TF 832; Small Arms Range	Demolition	25 acres	0	Y	Y	Y	L
Construct Chapel (BK)	Construction	0.3 acres	0	N	Y	Y	L
Construct Garrison HQ (BL)	Construction	0.3 acres	0	N	Y	Y	L
Construct NEC/SJA (BM)	Construction	0.2 acres	0	N	Y	Y	L
Construct POV Carwash (BN)	Construction	0.05 acres	0	Y	Y	Y	L
Construct Addition for Mobilization (BO)	Construction	0.15 acres	0	Y	Y	Y	L
Motorpool (1/3) (BP)	Construction	6.1 acres	0	Y	Y	Y	L
Construct COF (1/3) (BQ)	Construction	0.14 acres	0	Y	Y	Y	L
Construct Battalion HQ (1/3) (BR)	Construction	0.14 acres	0	Y	Y	Y	L

Project Title & ID	Project Type	Project Footprint (Acres)	Tree Clearing Required (Acres)	Previously Disturbed Yes (Y) / No (N)	Access to Existing Utilities (Y/N)	Access to Existing Roads (Y/N)	Phase (S/M/L)
Construct Washracks (1/3) (2/3) (BS)	Construction	0.3 acres	0	Y	Y	Y	L
Construct CAB Brigade HQ (BT)	Construction	0.41 acres	0	Y	Y	Y	L
Construct Addition to Fire Station (BU)	Construction	0.08 acres	0	N	N	N	L
Construct Battalion HQ for 3/160th (BV)	Construction	0.41 acres	0.41 acres *	N	N	N	L
Construct Barracks for 3/160th (BW)	Construction	1.8 acres	1.8 acres	N	N	N	L
Construct HPTC for 3/160th (BX)	Construction	1.35 acres	1.35 acres	N	N	N	L
Construct COF for 3/160th (BY)	Construction	0.35 acres	0.35 acres *	N	N	N	L
Construct Consolidated Logistics Facility for 3/160th (BZ)	Construction	0.7 acres	0.7 acres	N	N	N	L
Construct TEMF for 3/160th (CA)	Construction	0.4 acres	0.4 acres *	N	N	N	L
Construct Fire and Police Station (CB)	Construction	1.8 acres	0.4 acres *	N	Y	Y	L
Construct Taxiway Extension	Construction	25 acres	25 acres	N	Y	N	L
		Total: 318 acres	**Total: 85.17**	* Due to the small acreage of these projects, timber removal will likely be the responsibility of the contractor and a merchantable timber harvest will not be conducted by the FSGA/HAAF Forestry Branch; however, this decision will be made once the design has begun for each action and s site walk has occurred by the designer, user, and Forestry Branch POC.			

2.3 ALTERNATIVE II: IMPLEMENT CANTONMENT INFILL

Under Alternative II, the Installation will also adopt and implement an HAAF ADP. Development will be quite similar to that proposed under Alternative I; however, under this alternative, the new taxiway will not be constructed and the associated facility requirements for the 3/160th SOAR will instead be met through a combination of renovations of their existing facilities and new construction within the existing cantonment area. Specifically, this will accommodate space for the AMCOM, the 603 ASB, an AAB, the 224th MI BN, and GSAB (Figure 8, Table 2). Additional construction under this alternative may also include new motorpools along Wilson Avenue, as well as mixed use infill development (not yet determined). All remaining construction, demolition, renovation, operations and maintenance, and training activities will occur as described and as located under Alternative I, and routine operations, training, and other standard activities will continue as detailed more fully in Alternative III: No Action/Status Quo.

As discussed under Alternative I, implementation of the actions in the ADP for HAAF will still occur in the Short-Range (0-5 years), Mid-Range (5-10 years), and Long-Range phases (10+ years) as discussed under Alternative I and under the previously discussed funding assumptions. Although this alternative meets the overall purpose and need for the proposed action, it is not preferred by the Installation because it only partially meets the flexible training spaces criteria, as defined in Section 2.2.2 of this PEA. Specifically, not constructing the new taxiway does not allow for maximize flightline access, leaving lands south of the flightline undeveloped and unusable by aviation assets. However, this alternative does meet the remainder of the screening criterial for flexible training spaces by preserving and enhancing airfield capabilities and by promoting infill development to conserve training lands. Accordingly, this alternative is carried forward for full analysis in this PEA.

Image Redacted

Figure 8: Alternative II: Implement Infill Alternative.

Table 2. Alternative II Project List (*Note: Projects O and M not shown, as these projects have been completed)***.**

Project Title & ID (if assigned)	Project Type	Project Footprint (Acres)	Tree Clearing Required (Acres)	Previously Disturbed Yes (Y) / No (N)	Access to Existing Utilities (Y/N)	Access to Existing Roads (Y/N)	Phase (S/M/L)
Construct Multi-Use Path Improvements (A)	Transportation	1.6 acres	1.6 acres	Y	NA	Y	S
Renovate Second Floor DPW (B)	Renovation	0.8 acres	NA	Y	Y	Y	S
Demolition (C) Buildings #s - 100, 125, 610, 844, 845, 850, 1005, 1021, 1026, 1160, 1290	Demolition	50 acres	0	Y	Y	Y	S
Construct Drainage Improvements (D)	Construction	0.10 acres	0	Y	Y	Y	S
Renovate Education Center (E)	Renovation	0.43 acres	NA	Y	Y	Y	S
Construct Leonard Neal Street Upgrades (F)	Transportation	0.07 acres	0	Y	Y	Y	S
Create Linked Pedestrian Path Network (G)	Transportation	0.06 acres	0	Y	Y	NA	S
Construct Parking (H)	Transportation	0.35 acres	0	Y	NA	Y	S
Construct COF for Brigade Medical and HHC (2/3) (I)	Construction	0.38 acres.	0.38 acres *	N	Y	Y	S
Improve Parking Lot (J)	Transportation	2 acres	0	Y	NA	Y	S

Project Title & ID (if assigned)	Project Type	Project Footprint (Acres)	Tree Clearing Required (Acres)	Previously Disturbed Yes (Y) / No (N)	Access to Existing Utilities (Y/N)	Access to Existing Roads (Y/N)	Phase (S/M/L)
Upgrade N Lightning Street (K)	Transportation	0.8 acres	0	Y	Y	Y	S
Construct CID (L)	Construction	0.1 acres	0	Y	Y	Y	S
Renovate 7901 & 7902 (N)	Renovation	2.5 acres	NA	Y	Y	Y	S
Construct CAB Memorial (P)	Construction	0.02 acres	NA	Y	Y	Y	S
Renovate 7911 (Q)	Renovation	1.7 acres	NA	Y	Y	Y	S
Construct Outdoor Range(R)	Construction	1.0 acres	1.0 acre	Y	N	Y	S
Construct Hangar (4/3) (S)	Construction	2.6 acres	0	Y	Y	Y	S
Construct Road Realignment (T)	Transportation	0.03 acres	0.03 acres *	Y	Y	Y	S
Upgrade Intersection (U)	Transportation	0.5 acres	0.5 acres	Y	Y	Y	S
Construct Parachute Rigging Facility for 3/160th (V)	Construction	0.9 acres	0.9 acres	N	Y	Y	S
Construct Rigging Facility (W)	Construction	0.6 acres	0.6 acres	N	Y	Y	S
Construct Air Assault Building w/ Concrete Fencing (X)	Construction	0.2 acres	0.2 acres *	N	Y	Y	S
Construct Driving Course (Y)	Construction	3.2 acres	3.2 acres	N	Y	Y	S
Construct Crosswalks (Z)	Transportation	0.02 acres	0	Y	Y	Y	S

Project Title & ID (if assigned)	Project Type	Project Footprint (Acres)	Tree Clearing Required (Acres)	Previously Disturbed Yes (Y) / No (N)	Access to Existing Utilities (Y/N)	Access to Existing Roads (Y/N)	Phase (S/M/L)
Enhance Land Navigation Course (AA)	Training	TBD	TBD	N	N	Y	S
Pave RV Lot and Construct Bathhouse (AB)	Construction	1.0 acres	0.5 acres	Y	Y	Y	S
Construct Project DeRenne (ACRES)	Transportation	2.7 acres	2.7 acres	Y	Y	Y	M
Construct Shops & Admin for DPW (AD)	Construction	0.2 acres	0	Y	Y	Y	M
Demolition (AE) Building #s - 811, 813, 834, 840, 841, 842, 843, 1003, 1005, 1128, 1131, 1132, 1134, 1154, 1155, 1206, 1210-A, 1210-B, 1210-C, 1210-D, 1210-E, 1210-F, 1279, 1345, 1346, 1349, 1350; TFs 810-823, TF 850	Demolition	87 acres	0	Y	Y	Y	M
Construct Dog Kennel (AF)	Construction	0.3 acres	0	Y	Y	Y	M
Construct Sidewalks and Tree Buffer (AG)	Transportation	0.25 acres	0	Y	Y	Y	M
Construct HPTC (AH)	Construction	0.6 acres	0	N	Y	Y	M
Renovate Motorpool (2/3) (AI)	Renovation	0.4 acres	0	Y	Y	Y	M
Construct MP Station (AJ)	Construction	0.2 acres	0.2 acres *	Y	Y	Y	M
Renovate Battalion HQ (2/3) (AK)	Renovation	0.4 acres	NA	Y	Y	Y	M

Project Title & ID (if assigned)	Project Type	Project Footprint (Acres)	Tree Clearing Required (Acres)	Previously Disturbed Yes (Y) / No (N)	Access to Existing Utilities (Y/N)	Access to Existing Roads (Y/N)	Phase (S/M/L)
Construct AMCOM Hangar (AL)	Construction	3.1 acres	0	Y	Y	Y	M
Construct Addition to Hangars (2/3) (AM)	Construction	1.6 acres	0	Y	Y	Y	M
Construct ASB Hangar (AN)	Construction	3.1 acres	0	Y	Y	Y	M
Construct Addition to Hangar (1/3) (AO)	Construction	0.7 acres	0	Y	Y	Y	M
Renovate SSA (AP)	Renovation	0.2 acres	NA	Y	Y	Y	M
Construct Road Realignment (AQ)	Renovation	4.0 acres	0	Y	Y	Y	M
Construct Hangar (3/17) (AR)	Construction	3.1 acres	0	N	N	N	M
Construct Live Fire Facility (AS)	Construction	0.1 acres.	1.0 acres	N	N	N	M
Construct Urban Assault Course (AT)	Construction	0.5 acres	0.5 acres	N	N	N	M
Construct Motorpool (3/17) (AU)	Construction	0.3 acres	0	Y	Y	Y	M
Renovate 224 TEMF (AV)	Renovation	0.2 acres	0	Y	Y	Y	M
Renovate Motorpool (2/3) (AW)	Renovation	0.5 acres	0	Y	Y	Y	M
Renovate LRC (AX)	Renovation	0.2 acres	NA	Y	Y	Y	M
Renovate Motorpool (3/17) (AY)	Renovation	0.5 acres	0	Y	Y	Y	M

Project Title & ID (if assigned)	Project Type	Project Footprint (Acres)	Tree Clearing Required (Acres)	Previously Disturbed Yes (Y) / No (N)	Access to Existing Utilities (Y/N)	Access to Existing Roads (Y/N)	Phase (S/M/L)
Construct Organizational Storage (2/3) (AZ)	Construction	0.4 acres	0	Y	Y	Y	M
Construct Additional Storage (3/17) (BA)	Construction	0.4 acres	0.4 acres *	Y	Y	Y	M
Construct 224 Hangar (BB)	Construction	2.2 acres	0	Y	Y	Y	M
Renovate Barracks (BC)	Renovation	0.5 acres	NA	N	Y	Y	M
Construct Hangar 1 for 3/160th (BD)	Construction	42 acres	42 acres	N	N	N	M
Construct Hangar 2 for 3/160th (BE)	Construction	22 acres	22 acres	N	N	N	M
Construct Cabins (BF)	Construction	1 acres	1.0 acre	Y	Y	Y	M
Renovate Slip (BG)	Renovation	0.05 acres	0.05 acres *	Y	Y	Y	M
Construct Rio Gate Enhancements (BH)	Construction	1 acre	1.0 acre	Y	Y	Y	M
Construct Washrack (BI)	Construction	1 acre	0	N	Y	Y	L
Demolition (BJ) Building #s - 129, 145, 860, 930, 932, 935, 1031, 1033, 1201, 7907, 7908, 7909, 8007, 8008; TF 821, TF 832; Small Arms Range	Demolition	25 acres	0	Y	Y	Y	L
Construct Chapel (BK)	Construction	0.3 acres	0	N	Y	Y	L
Construct Garrison HQ (BL)	Construction	0.3 acres	0	N	Y	Y	L

Project Title & ID (if assigned)	Project Type	Project Footprint (Acres)	Tree Clearing Required (Acres)	Previously Disturbed Yes (Y) / No (N)	Access to Existing Utilities (Y/N)	Access to Existing Roads (Y/N)	Phase (S/M/L)
Construct NEC/SJA (BM)	Construction	0.2 acres	0	N	Y	Y	L
Construct POV Carwash (BN)	Construction	0.05 acres	0	Y	Y	Y	L
Construct Addition for Mobilization (BO)	Construction	0.15 acres	0	Y	Y	Y	L
Motorpool (1/3) (BP)	Construction	6.1 acres	0	Y	Y	Y	L
Construct COF (1/3) (BQ)	Construction	0.14 acres	0	Y	Y	Y	L
Construct Battalion HQ (1/3) (BR)	Construction	0.14 acres	0	Y	Y	Y	L
Construct Washracks (1/3) (2/3) (BS)	Construction	0.3 acres	0	Y	Y	Y	L
Construct CAB Brigade HQ (BT)	Construction	0.41 acres	0	Y	Y	Y	L
Construct Addition to Fire Station (BU)	Construction	0.08 acres	0	N	N	N	L
Construct Battalion HQ for 3/160th (BV)	Construction	0.41 acres	0	Y	Y	Y	L
Construct Barracks for 3/160th (BW)	Construction	1.8 acres	0	Y	Y	Y	L
Construct HPTC for 3/160th (BX)	Construction	1.35 acres	0	Y	Y	Y	L
Construct COF for 3/160th (BY)	Construction	0.35 acres	0	Y	Y	Y	L
Construct Consolidated Logistics Facility for 3/160th (BZ)	Construction	0.7 acres	0	Y	Y	Y	L

Project Title & ID (if assigned)	Project Type	Project Footprint (Acres)	Tree Clearing Required (Acres)	Previously Disturbed Yes (Y) / No (N)	Access to Existing Utilities (Y/N)	Access to Existing Roads (Y/N)	Phase (S/M/L)
Construct TEMF for 3/160th (CA)	Construction	0.4 acres	0	Y	Y	Y	L
Construct Fire and Police Station (CB)	Construction	1.8 acres	0.4 acres *	N	Y	Y	L
		Total: 293 acres	**Total: 80.16**	* Due to the small acreage of these projects, timber removal will likely be the responsibility of the contractor and a merchantable timber harvest will not be conducted by the FSGA/HAAF Forestry Branch; however, this decision will be made once the design has begun for each action and s site walk has occurred by the designer, user, and Forestry Branch POC.			

2.4 ALTERNATIVE III: NO ACTION / STATUS QUO

Under the No Action Alternative (No Figures), the HAAF ADP would not be implemented, and none of the construction, renovation, and demolition projects would occur. Routine operations, training, and other activities would be ongoing, as detailed below. Although the No Action Alternative does not meet the Army's purpose and need for the Proposed Action, it is analyzed in the PEA to provide a baseline for evaluating the impacts of the action alternatives, as directed in NEPA, the CEQ regulations, and 32 CFR Part 651, Environmental Effects of Army Actions.

HAAF currently supports approximately 4,600 Soldiers, 700 Civilian workers, and 1,600 dependent Family members, all of which utilize its resources and benefit from their use. Families residing on Post do so within Army Family Housing Units (AFHUs), which are separately managed and maintained by the Army's Residential Communities Initiative (RCI) Partner and not by Army resources. Routine operations on HAAF include the day-to-day use of its facilities, roads, and grounds, as well as their routine repair and maintenance. This currently consists of 811 facilities, 50 paved roads, 22 dirt/unpaved roads, 3,948 acres of improved/semi-improved (developed) grounds, and 1,705 acres of undeveloped (forested) grounds; there are no tanks trails on HAAF, as it does not support maneuver training. Daily operations include the arrival/departure of traffic as Civilians, contractors, and military workers (who reside off-Post) arrive for/depart from their place of work, work conducted by personnel involved in construction, renovations, or repairs, the daily business conducted within Installation facilities, daily use of the on-Post Child Development Centers and schools, and intermittent use of the Installation's recreational facilities. The majority of these activities occur within the cantonment area, located in the northeast portion of the Installation (Figure 1), as it is the most highly developed portion of the Installation; however, activities also occur on the airfield proper, which runs through the center of the Installation, and at a couple of smaller developed areas to its south.

The airfield proper supports up to 60,000 operations per year, ranging from military deployments to training exercises conducted with a variety of military and civilian aircraft and rotary helicopters. Airfield operations are accomplished by both Civilians/contractors and Soldiers. These activities occur within a multitude of facilities on HAAF, and include the Air Traffic Control Tower, aircraft rescue and firefighting facilities (as well as their associated support equipment), fueling facilities, the airfield operations center (airfield management facility), squadron operations/aircraft maintenance units, and air mobility operations groups. To maximize operational functionality, airfield operations are located along the hangar line, with the central area typically allocated to airfield operations. Other facilities that support these airfield operations are located adjacent and allow simplified access among maintenance, aircraft, and support areas. Daily operations within these facilities include the arrival/departure of traffic as personnel arrive for/depart from their place of work, work conducted by personnel involved in construction, renovations, or repairs, and the daily business conducted within these facilities.

Routine repair and maintenance on facilities include (but are not limited to) repairs to ceilings, walls, and floors, replacing carpet or sheetrock, replacing miscellaneous parts to machinery, painting, and conducting preventive maintenance. Routine repairs and maintenance of roads and grounds include (but are not limited to) repairing cracks and holes in existing paved/unpaved roads, establishing grass on eroded sites, minor ground disturbance associated with utility repairs, and conducting preventive maintenance on existing roads and bridges. Routine repairs and maintenance in forested portions of HAAF include (but is not limited to)

actions utilized to maintain forest health, including selective timber thinning, removal of trees infected by pine beetles, and other such actions. All facilities, roads, and grounds repairs and maintenance activities occur in compliance with Army regulations, policies, and plans, as well as with federal and state law, to include the FSGA/HAAF Integrated Natural Resources Management Plan, FSGA/HAAF Hazardous Waste Management Plan, the Clean Water Act, Clean Air Act, and others. Most of these actions are managed and maintained by the FSGA/HAAF Directorate of Public Works (DPW).

HAAF is an active training Installation and Soldiers are able to utilize training ranges, training lands, and the airfield for these purposes, all in compliance with the provisions of Army Regulations, Department of the Army Pamphlets, Training Circulars, the FSGA/HAAF Aviation Procedures Guide (2015), and the FSGA/HAAF Post Range Guide (2019). Small arms fire and dismounted (foot) maneuver exercises are conducted routinely on Installation lands, but there are no artillery, gunnery, aircraft-to-ground-based training ranges, or maneuver corridors located on HAAF, and units requiring those tasks are transported to Fort Stewart to meet those requirements. Training on the airfield consists of flight simulator training, aircraft touchdown/takeoff, and Forward Army Refueling Points. Helicopter units also conduct training on the Installation's Helicopter Landing Zones (LZs), located within Training Areas (TAs) H5, H9, and H11. Some units also conduct minor training activities within the cantonment area, although this is limited primarily to unit-sized physical training tasks and obstacle courses. All training is managed and maintained by the Directorate of Planning, Training, Mobilization, and Security (DPTMS).

Additional ongoing actions include utilization of the numerous recreational opportunities on HAAF, including Lott's Island Recreation Area on the southwest, the Installation Golf Course to the southeast, and the athletic field, Skeet Range, and Flight Simulator in the cantonment area. HAAF also provides fishing and hunting permits to the public and the forested portions of the Post contain several walking/hiking trails. All of these resources are open to Soldiers, Civilians, and Army Families, as well as to the public. Under implementation of Alternative III: No Action/Status Quo, all of these routine activities will continue.

2.5 ALTERNATIVES DISMISSED FROM FURTHER REVIEW

ADP workshop participants developed three initial planning alternatives through which the future development of the HAAF District could be achieved; however, none of the three fully met the overall vision, goals, and objectives (screening criteria) for the HAAF District and were not carried forward individually as full alternatives for evaluation. Instead, the ID Team took the best components from each alternative and incorporated them into the Preferred Alternative and the 3/160th SOAR Infill Alternative, each fully analyzed in this PEA and Alternative I and Alternative II, respectively. Each initial alternative is discussed briefly below, as are the reasons for its dismissal.

2.5.1 DEVELOP FLIGHTLINE NORTH AND SOUTH[1]

Initial Planning Alternative I was largely focused on phasing the 3/160th SOAR relocation south of the flightline and the development of the 3rd CAB complex to its north, both integral actions identified by the ID Team in the HAAF ADP. The top priority projects for the 3/160th SOAR relocation were the rigger facility (shared by 3/160th SOAR and the 1/75th RGR) and two hangars. Once in place, the 3/160th SOAR can vacate their existing footprint, which can then be used as swing space during the 3rd CAB

[1] (Appendix A, pages 98-99, ADP for HAAF)

redevelopment or to accommodate a 5th BN, if needed in the future. The 3rd CAB redevelopment was again largely focused on phasing, but did include a project to expand the existing fire station for administrative space for the fire department. This planning alternative provided a robust scenario for the redevelopment of flightline facilities to accommodate 3rd CAB mission needs and to provide a 3/160th SOAR footprint south of the flightline; however, with the exception of a proposal to renovate a facility for use as an Education Center, this alternative did not address non-aviation needs, thereby not fully meeting the screening criteria. Accordingly, it was not identified as a feasible alternative.

2.5.2 DEVELOP FLIGHTLINE NORTH[2]

Initial Planning Alternative II was largely focused on developing a town center on HAAF and on relocating the NEC. Town center development addressed the lack of pedestrian connectivity between neighborhoods, shopping, and other services, as well as on making the transition from block-to-block safe and easy for pedestrians, accomplished with traffic calming elements such as medians, crosswalks, and street trees. The NEC would relocate about 200-300 feet from its current location to lessen the cost of reconfiguring existing service lines. There was also a road realignment along Wilson drive that would continue the median and sidewalk to North Lightning Road. However, this alternative did not address aviation needs, with no development south of the airfield, thereby not fully meeting the screening criteria. Accordingly, it was not identified as a feasible alternative.

2.5.3 DEVELOP FLIGHTLINE SOUTH[3]

Initial Planning Alternative III was largely focused on development on the taxiway and hangar areas, while also highlighting that additional recreational opportunities and housing were required if new BNs or BDEs are introduced in the future. The alternative identified that the 1/75th RGR need some new and or reconfigured training space and that wetland mitigation may be required if the Capacity Plan is fully built out. Pedestrian accommodations were discussed mainly in and between the housing areas and the school, and a road alignment change was proposed at the proposed CAB memorial, as were quality of life issues in the housing and community areas south of the airfield. However, this alternative did not address aviation needs with minimal development north of the airfield, thereby not fully meeting the screening criteria. Accordingly, it was not identified as a feasible alternative.

2.5.4 CAPACITY PLAN/FULL BUILD OUT ALTERNATIVE[4]

Utilizing the known constraints to development on HAAF, the members of the ID Team were able to develop a picture of the buildable and unbuildable areas on HAAF and create its Capacity Plan. This Plan identified several areas on HAAF where there is potential for future growth, development, and expansion should additional units be realigned and/or otherwise assigned to HAAF at a future date. This Capacity Plan was further expanded into a Full Build-Out/Capacity Plan to identify where this new development could best be accommodated on the Installation and in what amounts. This includes Family Housing Area expansion south of the airfield's flightline, an additional unit support facility built-out along the new second

[2] (APPENDIX A, PAGE 100, ADP FOR HAAF)
[3] (APPENDIX A, PAGES 101-102, ADP FOR HAAF)
[4] (APPENDIX A, PAGES 135-152, ADP FOR HAAF)

taxiway (if constructed) (beyond that proposed for the 3/160th SOAR), additional hangar development along the existing flightline, and the construction of a mixed-use town center within the existing cantonment area.

Utilizing all known existing data, field assessments, and acknowledging these constraints, the ID Team was able to develop a picture of the total buildable area on the Installation, which was utilized to create the Capacity Plan/Full Build-Out Plan. This Plan provides Master Planners and Installation leadership with a valuable "future look" at their Installation's potential ability to accommodate future mission changes or growth. This plan is not carried forward for full, in-depth analyses in this PEA, as none of the facilities discussed in this plan has received even preliminary analyses or funding associated with their potential validation, and therefore are not considered feasible at this time.

2.6 PRIOR NEPA ANALYSIS

Where pertinent and applicable, the analysis in this PEA references prior NEPA analysis, to include Army-wide and FSGA/HAAF documentation. This approach entails referencing the specific analyses, discussions, and conclusions of these documents in the present PEA. Consistent with CEQ guidance, the following NEPA analyses are incorporated by reference:

- PEA for Army 2020 Force Structure Realignment, *Army-wide*, January 2013.
- Final EA/FONSI for Land Swap to Support Military Housing Privatization Actions at HAAF, GA, 2010.
- Final EA/FONSI for Runway Vegetative Obstruction Removal at HAAF, GA, November 2016.
- REC for Integrated Pest Management Plan, FSGA/HAAF, GA, 2019
- Record of Environmental Consideration (REC) and Environmental Consideration of Property Report for the Renovation of the HAAF Bowling Alley by the United Services Organization (*ADP Project*), HAAF, GA, 2019;
- REC for Army Compatible Use Buffer on FSGA/HAAF, GA, 2019.
- REC for Construction of the new SSA Facility on HAAF, GA, 2019 (*ADP Project*); and
- REC for Construction of the Indoor Range on HAAF, GA, 2019 (*ADP Project*)

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter focuses on those components of the natural and human environment potentially impacted by the proposed action and its alternatives. Potential direct, indirect, and cumulative impacts to the affected environment are discussed as they relate to each alternative. Direct impacts are those caused specifically by each alternative and that occur at the same time and place. Indirect impacts are also caused by each alternative, but later in time or farther in distance. Cumulative impacts "result from the incremental impact of the action" when added to "other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or what person undertakes such other actions" (Canter et. al, 2007). The levels of intensity of potential impacts are described as follows:

- *Adverse*. A negative net impact.
- *Beneficial.* A positive net impact.
- *Negligible.* Impacts are so low that they are not perceptible or measurable.
- *Minor.* Short-term but measurable impacts are expected. The resource would recover in a relatively short period of time (days to months).
- *Moderate.* Measureable and long-term impacts that may not remain localized, but are considered less than significant. Recovery may require several years or decades.
- *Significant.* Based on context and intensity, impacts would result in substantial change or loss of a resource. This applies to both beneficial and adverse impacts.
- *Direct.* Impacts of an action that are caused by the action and that occur at the same time and place.
- *Indirect.* Impacts of an action that are caused by the action, but occur later in time and/or farther removed in distance, but are still reasonably foreseeable.
- *Cumulative.* The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

3.1 STUDY AREA AND REGION OF INFLUENCE

The scope of the affected environment involves both the geographic extent of the effects and the time in which the effects may occur. The environmental consequences analysis for this proposed action, in which direct and indirect impacts may be felt, is confined to the lands lying within and immediately adjacent to the physical boundaries of HAAF, or its Study Area.

Cumulative impacts are also analyzed in this section, and may be felt on a broader scale, depending on the resource under analysis, rippling out to a larger Region of Influence (ROI). Preliminary analysis determined most cumulative impacts would also remain within or immediately adjacent to the HAAF boundary, for reasons discussed in those sections, unless otherwise indicated in the specific media under discussion. Refer to Figure 9 for a visual depiction of the Study Area and ROI associated with this PEA.

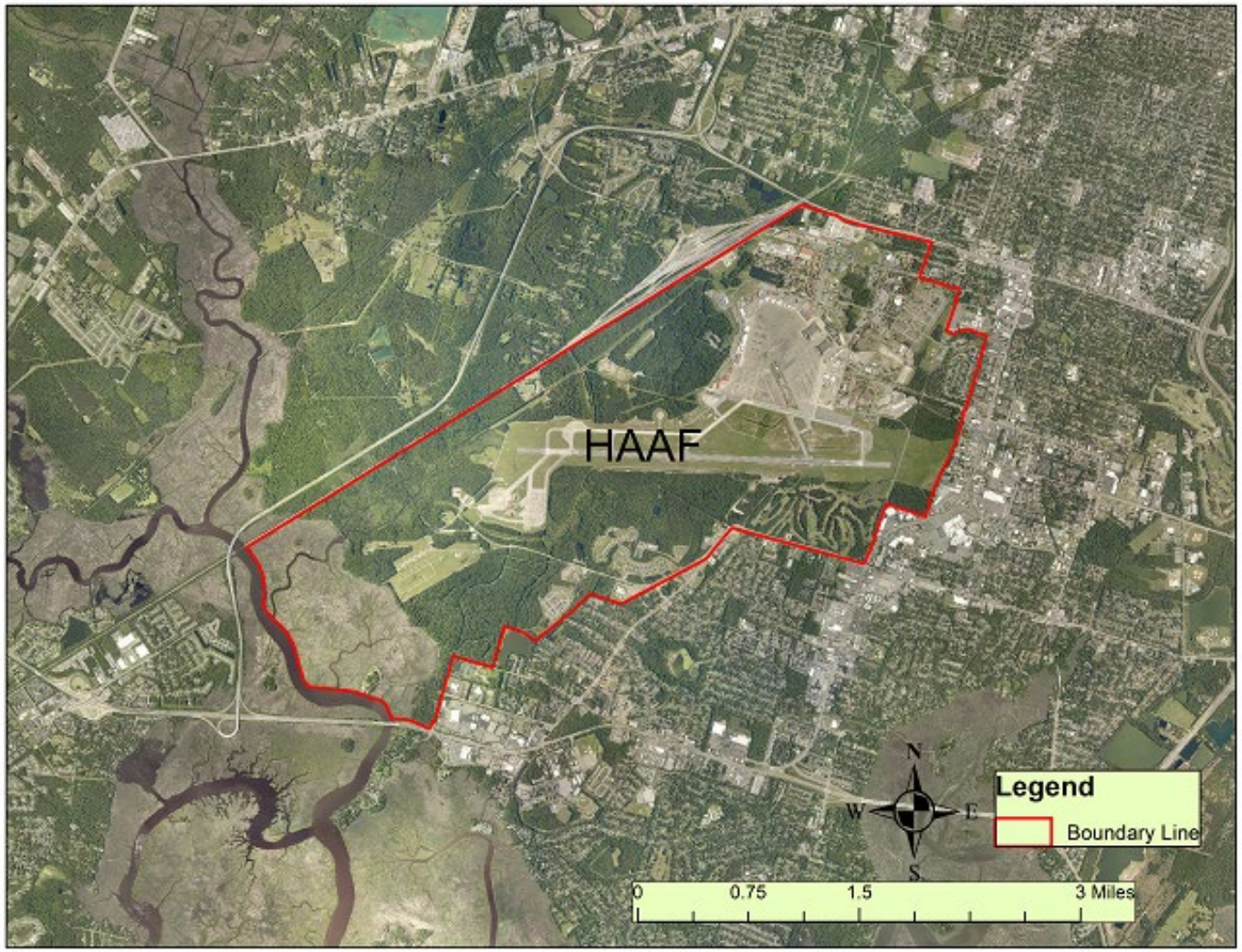

Figure 9. Study Area/Region of Influence for HAAF, Georgia.

HAAF is located within the Coastal Plain Province on the southeastern Georgia coast. Coastal Georgia is one of the fastest growing regions in the state and must balance the need for growth while maintaining the integrity of its natural resources (CRC, 2012). Efforts to curb sprawling development is a major consideration in the region. The Georgia Department of Community Affairs established standards and procedures for regional planning in accordance with O.C.G.A. 50-8-1 Et. Seq. which became effective in 2009. The *Regional Plan of Coastal Georgia* was finalized in 2010 and amended in 2012 to provide developmental guidance to regional and business leaders, local government, state and federal agencies, and citizens (CRC, 2012).

In addition to economic and infrastructure components to future development, primary conservation areas are considered an equally important regional planning aspect. Regional primary conservation areas include wetlands, floodplains, streams, endangered species and critical habitat and prime agricultural lands, federal or state listed species (CRC, 2012). Additionally, the region incorporates essential buffers along streams and wetlands, and water bodies that require riparian buffers as conservation areas (CRC, 2012). Figure 10 depicts regional future development where conservation areas are expected to be preserved in order to protect important resources and environmental sensitive areas.

The Regional Future Development Map reflects the most recent trends and projected land use patterns from local Comprehensive Plans created or updated under DCA's 2005 Local Planning Requirements and the most recent comprehensive inventory of the Region's natural and cultural resources. As local comprehensive plans are amended and updated, local development trends inherently evolve. The Coastal Regional Commission continues to update the Future Development Map as necessary to reflect the most responsible, appropriate and desired, long range development patterns for the Coastal Region of Georgia. Factors affecting future amendments to the Future Development Map may include changes to regional transportation plans, strategic plans and other applicable studies, many of which are referenced further in this PEA.

3.2 PAST AND PRESENT ACTIONS

Known as the "first planned city in Georgia," the City of Savannah was founded by James Oglethorpe in 1733. Early settlers settled, farmed, and cultivated the area for a variety of crops, constructing homes and community facilities in which to live and work. Over time, development thrived in the region, and the settlement grew, with smaller communities branching out into the surrounding region. HAAF developed first as a municipal airfield operated by the City of Savannah. Beginning in 1941, the U.S. Army utilized the airfield as an operational training and staging area for B-17 crews on route to Europe. By 1946, the airfield had returned to municipal use, but was later reclaimed for military usage by the U.S. Air Force in 1950, and eventually transferred back to the U.S. Army in the early 1970s. It has remained a vital air and ground training resource and deployment site ever since.

Present activities on HAAF include ongoing military operations, support-related construction, maintenance of transportation support networks (roads, bridges, and railroads) and support of associated infrastructure (stormwater drainage systems, utilities). As an active component of a Military Installation, HAAF experiences continuous modifications in its mission and training requirements, often resulting in ongoing facility upgrades on the Installation, supporting both the Army's in–progress transformation process and compliance with resident and tenant units' basic quality of life requirements.

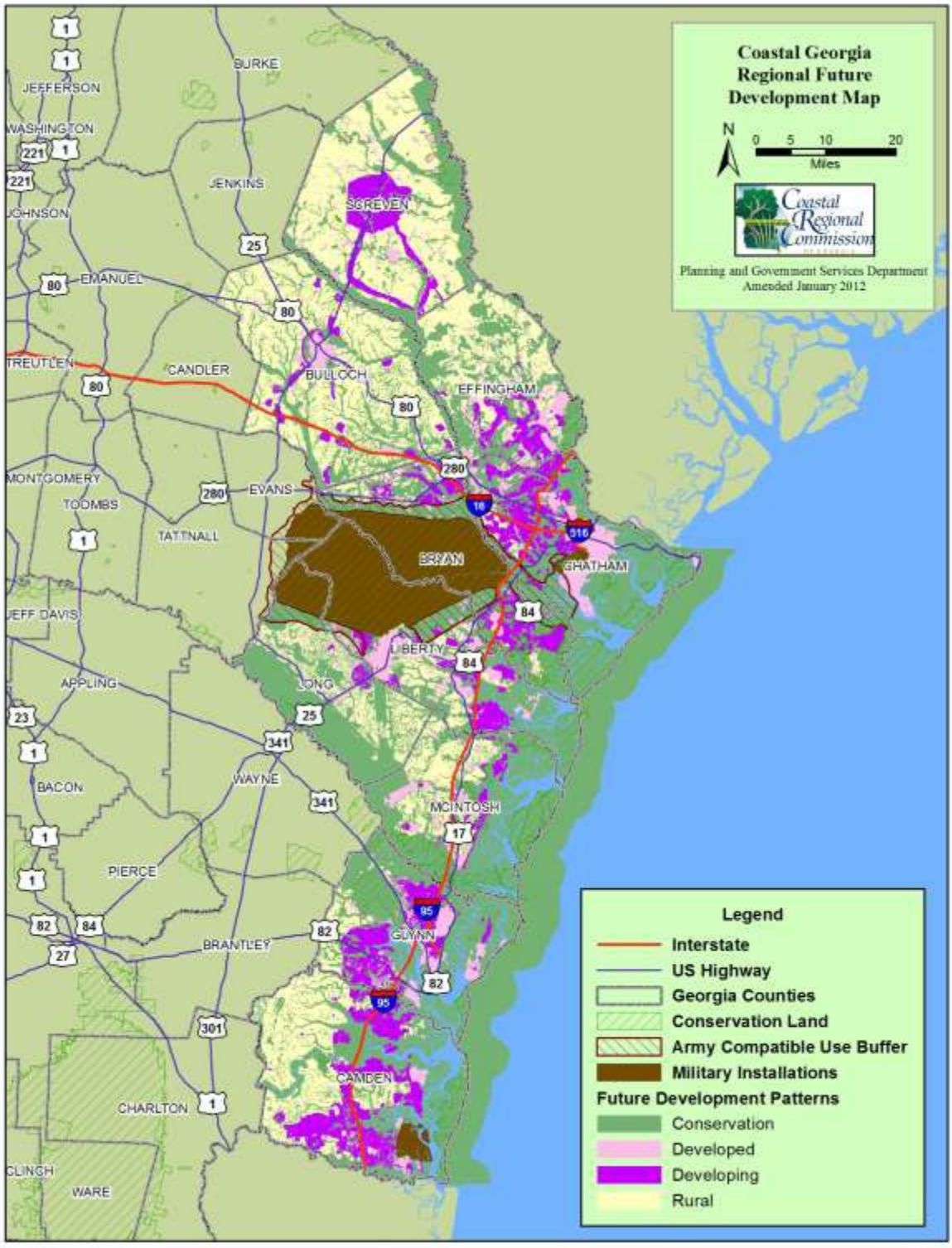

Figure 10. Coastal Georgia Regional Future Development Map (CRC, 2012).

Recently completed projects of note on the Installation include the Vegetative Obstruction Removal on the airfield, which involved clearing trees, brush, and other standing vegetation that impeded line of sight for aircraft taking off and landing at the airfield, for which an EA/FONSI was completed (FSGA/HAAF, 2016). In addition, development of new Army Family Housing Areas (AFHAs), unaccompanied personnel housing, and other on-Post housing improvements have occurred, as well as the demolition of old, less efficient military and Family housing, for which an EA/FONSI (FSGA/HAAF, 2010) and other NEPA documentation was completed. These housing actions occurred in several areas across the Installation. Work is also complete for the Renovation of the HAAF Bowling Alley and Construction of the new SSA Facility, both of which occurred within the cantonment area of HAAF, located in the northwestern portion of the Study Area. NEPA documentation (via a REC) is also complete for these actions.

Past and present development in the adjacent City of Savannah includes commercial, residential, and industrial activities, all of which cradle HAAF to its northern, western, and southeastern boundaries. Some residential development can also be seen along the western/southwestern boundary of HAAF, along the edges of the large marsh system shared by the City and the Installation. The Savannah Harbor Expansion Project is in progress and will eventually deepen the existing Savannah Harbor on the Savannah River from its current depth of 42 feet to a final depth of 47 feet. Although not directly adjacent to HAAF, many of the tributaries from the Savannah River extend onto the southwestern portion of HAAF and it is possible for impacts to be felt in this part of the Installation. This project is still in progress and will be implemented by the US Army Corps of Engineer (COE) District, Savannah, and Cooperating agencies are the Environmental Protection Agency (Region IV), the Department of Commerce (acting through the National Marine Fisheries Service), the Department of the Interior (acting through the US Fish and Wildlife Service) and the Georgia Ports Authority. An EIS was prepared for this action by the U.S. COE and supplemental NEPA documentation is prepared as needed.

3.3 REASONABLY FORESEEABLE FUTURE ACTIONS

Reasonably foreseeable future actions anticipated in the HAAF portion of the Study Area include ongoing administrative, operations, maintenance and repair to existing and future facilities on the Installation. Projects of specific note are also discussed below and summarized for future reference in Table 3.

- HAAF Stormwater Drainage System Improvements. In 2015, the U.S. Army commissioned a survey of 63,000 linear feet of the HAAF stormwater drainage system. Based on the results of that survey, 2,100 linear feet (lf) of stormwater drainage pipe will be replaced with new pipe, and an additional 21,00lf will be replaced via cure-in-place concrete pipe installation. Stormwater drainage pipe not determined to require total replacement will be cleaned (approximately 1,700lf). This project will be implemented in phases over an approximate 5-10 fiscal years, start date dependent on the availability of funding. A REC was completed for this action.
- HAAF Apron and Taxiway Reconstruction. The runway, taxiways, and aprons at HAAF were determined to require repairs in the most recent Airfield Pavement Evaluation Report (2017). Repairs will be implemented via the removal and replacement of these paved surfaces. Due to their operational adjacency with the HAAF Stormwater Drainage System Improvements, these repairs will occur concurrently, and FSGA/HAAF Master Planners will work with Airfield POCs to phase

these actions accordingly in phases over an approximate 5-10 fiscal years, start date dependent on the availability of funding. A REC was completed for this action.

- Improve Bradley Crose Shoothouse. The existing Shoothouse will be modified to enable the use of short range training ammunition (SRTA) and detonation cord for breaching exercises. This will require installation of durapanel to all interior walls, external catch walls at window / breach points, and perimeter walls perpendicular to breach doors. This will reduce damage to concrete block by SRTA impact and explosive concussion during future training exercises at this location. It is anticipated that this will be needed within the next five years.
- Construct/Renovate Flight Simulator on HAAF. Current flight simulator at HAAF is being phased out within the next 5 years and the facility it is located within may/may not be sufficient to support the incoming systems. Accordingly, the existing facility needs to be evaluated to determine if it will support the new system, requires modification/renovation, or needs to be demolished and a new facility constructed to support the incoming flight simulator. It is anticipated that this will be needed within the next 5-10 years.

Reasonably foreseeable future actions within the City of Savannah include ongoing residential, commercial, and industrial development within the City. Projects of special note are discussed below and summarized for future reference in Table 3.

- The City proposes to conduct improvements to DeRenne Avenue, a road that connects I-516 to the Truman Parkway in Savannah, and also provides access for residents in the southern portion of Savannah into HAAF. The abundance of peak-hour travel demand on DeRenne Avenue, coupled with the transition from free flow travel on I-516, results in heavy congestion that restricts regional travel and mobility at this location. Accordingly, to alleviate congestion, operational improvements (as shown on Figure 11) are proposed along DeRenne Avenue, including modifications to where and how it accesses HAAF. The Georgia Department of Transportation (DOT) and Federal Highway Administration (FHWA) are completing an Environmental Impact Statement (EIS) for Project DeRenne.
- Work will continue on the Savannah Harbor Extension Project, which, once complete, will deepen the Savannah Harbor from its current depth of 42 feet to a final depth of 47 feet. This project is multi-agency, multi-year, and an EIS for this action is complete (No figures).

Image Redacted

Figure 11: Project DeRenne, Potential Future Action in the HAAF Study Area (GA DOT, 2018).

Table 3: Future Actions in the ROI

Future Actions in the ROI				
Project Title	**Location**	**Project Description**	**Area Impacted**	**Timeframe**
HAAF Stormwater Drainage System Improvements.	On-Post	Replace portions of existing stormwater drainage pipe.	23,100 linear feet	2020-2030
HAAF Apron and Taxiway Reconstruction.	On-Post	Replace sections of existing pavement on runway, taxiways, and aprons of airfield.	0.5 acres	2020-2030
Improve Bradley Crose Shoothouse.	On-Post	Modify existing Shoothouse to use short range training ammunition (SRTA) and detonation cord for breaching exercises.	0 acres (interior work)	2021-2025
Construct/Renovate Flight Simulator on HAAF. It is anticipated that this will be needed within the next 5-10 years.	On-Post	Modify/renovate existing facility or demolish and construct new facility, based on results of pending facility analysis.	Interior work (if modification) or new construction (0-0.25 acres)	2021-2031
Project DeRenne.	Off-Post and On-Post	Improve traffic congestion on DeRenne Avenue, which connects I-516 to the Truman Parkway in Savannah, and provides access for residents in the southern portion of Savannah into HAAF.	2-5 acres	2021-2025
Savannah Harbor Expansion Project.	Off Post	Deepen the Savannah Harbor from its current depth of 42 feet to a final depth of 47 feet.	32 miles of Savannah River	2020-TBD

3.4 RESOURCES ANALYZED

Implementing the action or no action alternatives may impact Biological, Cultural, Air, Land Use, Socioeconomic, and Visual Resources; as well as Airspace, Noise, Transportation, Utilities and Hazardous Waste on HAAF; accordingly, these potential impacts as well as potential avoidance, minimization, and mitigation measures, as pertinent, are discussed in this chapter. NOTE: The HAAF flightline will be utilized as a primary point of reference for this PEA, as it is a primal focal point that runs almost perfectly midway through HAAF; accordingly, some of the descriptions throughout the remainder of this document will reference areas that run north, south, east, and west of the flightline.

3.4.1 BIOLOGICAL RESOURCES

3.4.1.1 AFFECTED ENVIRONMENT

Biological resources include native and nonnative plants and animals and the habitats in which they occur. Habitat is defined as the area of environment where the resources and conditions are present that cause or allow a plant or animal to live there. Management of wildlife and wildlife habitat is conducted in accordance with the provisions of the FSGA/HAAF Integrated Natural Resources Management Plan (INRMP), providing a comprehensive overview of the status of biological resources throughout the Installation. For purposes of this PEA, discussions of resources that would be affected by implementation of the proposed action at HAAF are provided below. Unless otherwise indicated, information in this section is taken from the FSGA/HAAF INRMP (FSGA/HAAF, 2005), Urban Tree Management Policy (FSGA/HAAF, 2018a), Urban Tree Management Guide (FSGA/HAAF, 2018b), and/or the Integrated Pest Management Plan (IPMP) (FSGA/HAAF, 2019a).

3.4.1.1 PROTECTED SPECIES

Protected species include those that are federally listed, or proposed for listing, as threatened or endangered under the Endangered Species Act (ESA) by the U.S. Fish and Wildlife Service (USFWS). Management and protection of listed species is given priority in natural resource management. In cases where endangered species management, in accordance with the appropriate guidance, would conflict with other mission activities, consultation with the USFWS will be initiated to avoid jeopardizing any listed species or its critical habitat. Formal consultation with the USFWS is coordinated with the Installation Staff Judge Advocate (SJA); proposals to enter into formal consultation or seek an exemption are coordinated through the Installation SJA.

There are twelve federally listed species known to historically occur in the study area containing HAAF Table 4); the wood stork (*Mycteria americana*), red-cockaded woodpecker (RCW) (*Dryobates borealis*), eastern indigo snake (*Drymarchon couperi*), gopher tortoise, frosted flatwoods salamander (FFS) (*Ambystoma cingulatum*), shortnose sturgeon (*Acipenser brevirostrum*), atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), West Indian manatee (*Trichechus manatus*), Green sea turtle (*Chelonia mydas*), Kemp's Ridley sea turtle (*Lepidochelys kempi*), Leatherback sea turtle (*Dermochelys coriacea*), Loggerhead sea turtle (*Caretta caretta*), and smooth coneflower (*Echinacea laevigata*); these species are discussed below.

Table 4: Protected Species on Hunter Army Airfield, Georgia.

Species	Common Name	Federal Status	State (GA) Status
Birds			
Mycteria americana	Wood Stork	Threatened (T)	T
Dryobates borealis	Red-cockaded Woodpecker	Endangered (E)	E
Reptiles			
Drymarchon couperi	Eastern Indigo Snake	T	T
Gophers polyphemus	Gopher Tortoise	Species of Concern (SC)	T
Chelonia mydas	Green Sea Turtle	T	T
Lepidochelys kempi	Kemp's Ridley Sea Turtle	E	E
Dermochelys coriacea	Leatherback Sea Turtle	E	E
Caretta caretta	Loggerhead Sea Turtle	T	T
Amphibian			
Ambystoma cingulatum	Frosted Flatwoods Salamander	T	R
Fishes			
Acipenser brevirostrum	Shortnose Sturgeon	E	E
Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	E	E
Mammal			
Trichechus manatus	West Indian Manatee	T	T
Plant			
Echinacea laevigata	Smooth Coneflower	E	E

Wood Stork. The wood stork listed as threatened by the USFWS due to habitat loss. It is a long-legged wading bird with a head to tail length of 33-45 inches and a wingspread of 59-65 inches, and its plumage is white, except for the iridescent black primary and secondary wing feathers and the short black tail. On

adults, the rough scaly skin of the head and neck is unfeathered and blackish in color, the legs are dark, the feet are dull pin, and the bill color is blackish. Immature storks, up to the age of about 3 years, differ from adults in that their bills are yellowish or straw colored and there are varying amounts of dusky feathering on the head and neck. During courtship and the early nesting season, adults have pale salmon coloring under the wings, fluffy undertail coverts that are longer than the tail, and toes that brighten to a vivid pink. Wood storks occasionally forage at FSGA in shallow wetlands that persist as swamps and dry out in the summer months. There are no known wood stork rookeries on HAAF; however, isolated sightings have occurred on HAAF when water levels were sufficient to concentrate their prey.

Red-cockaded Woodpecker (RCW). The RCW is listed as endangered by the USFWS. Fort Stewart contains Georgia's largest remaining forest of longleaf pine, which is essential habitat for the RCW. The quality of RCW foraging habitat varies depending upon vegetation in the understory, weather, soils, season, and fire frequency and intensity, with the highest populations of RCWs occurring in areas with active prescribed burning programs that control hardwoods (frequency every 2-3 years). These woodpeckers are territorial, non-migratory, cooperative breeders that exclusively excavate their roost and nest cavities in living pines. Potential breeding groups comprise an adult male and female, with or without adult helpers, and young of the year. Helpers generally are offspring of a breeding pair that were produced in a prior years. Single bird groups comprise a bachelor male or female that has not attracted a mate.

Fort Stewart reached its RCW recovery goal of 350 potential breeding groups during the breeding season of 2012 and has enough suitable or potentially suitable habitat to support 657 RCW clusters. However, as indicated in the FSGA/HAAF INRMP, the RCW is not managed on HAAF due to the lack of any sitings of this species on HAAF, the Installation's small size (and associated amount of suitable habitat), and the inability to conduct specific activities required for the management of this species (cannot conduct prescribed burns due to adjacency to City of Savannah).

Eastern Indigo Snake. The indigo snake is listed as threatened by the USFWS due to habitat loss and its collection for the pet trade. It is a large, robust snake, and is iridescent bluish-black in color, except for the chin and sides of the head, which may be red, coral, or white. Hatchling eastern indigo snakes are 17-24 inches long, and may have considerably more red on the head and forward part of the belly than adult indigos. There are four known populations of this species on FSGA, all associated with the sandhills along the Canoochee River, Ogeechee River, and Beards Creek. The eastern indigo snake are known to have large home ranges and use several different habitat types at different times of the year; however; none are known to occur on HAAF.

Gopher Tortoise. The gopher tortoise is listed as a candidate species by the USFWS due to habitat loss and its collection for the pet trade. Gopher tortoises inhabit well-drained, sandy soils and are associated with fire-maintained longleaf pine habitats and dry oak sandhill habitats. While there are suitable gopher tortoise soils on HAAF no gopher tortoises occur there. Fort Stewart/HAAF does not manage for gopher tortoises on HAAF due the Installation's small size, and the inability to conduct specific activities required for the management of this species (cannot conduct prescribed burns due to adjacency to City of Savannah). No gopher tortoises are known to occur on HAAF.

Frosted Flatwoods Salamander (FFS). The flatwoods salamander is listed as threatened by the USFWS because of loss and degradation of native mesic flatwoods habitat and isolated ephemeral wetlands used for breeding. Their habitat is widespread on FSGA and includes many areas not heavily used or impacted by mechanized training activities. Salamander breeding sites are small ponds, often less than one acre, which receive surface water runoff from adjacent pine habitat. Terrestrial adult FFS inhabit low areas in pine flatwoods, where they live in underground burrows that they excavate or in crayfish tunnels.

The FFS have been found more than one mile from their breeding ponds; accordingly, once a potential breeding pool is identified, a protective buffer of 492 yards from its edge is recommended by USFWS and used by FSGA/HAAF. Fort Stewart has identified potential breeding pools and ranked them according to their suitability as FFS breeding sites, including establishing protective buffers; however, none are known to occur on HAAF.

Atlantic and Shortnose Sturgeon. The Atlantic and shortnose sturgeons are listed as endangered by the USFWS because of habitat degradation. These fish have long bodies and are distinguished from other sturgeon by their wide mouths and individual coloration. These fish are "freshwater amphidromous," where adults spawn in freshwater, then remain in either the river's estuary or in the river itself, and only periodically visit saltwater at the river's mouth, to include the Canoochee River system on FSGA; however, none are known to occur in any of the river or stream systems on HAAF.

West Indian Manatee. The West Indian Manatee is a large aquatic mammal that is listed as threatened by the USFWS. They are also protected by the Marine Mammal Protection Act. It is found throughout the Caribbean basin, including the southeastern United States, where they feed on seagrasses and other aquatic plants. The Little Ogeechee (Forest) River and Henry Creek contain suitable habitat for the West Indian manatee. Manatees are slow moving and must surface regularly to breathe, making them vulnerable to injury or death from impact with boat propellers. Fort Stewart/HAAF does not maintain records of manatees, and the nearest manatee sighting to the project area is at Coffee Bluff some 7.5 river miles downstream from the project area. No manatees have been observed by Fort Stewart/HAAF personnel in or near the project area, and none are known to occur in any of the river or stream systems on HAAF.

Sea Turtles (four species). Sea turtles are large marine reptiles that hatch on coastal beaches and spend their early and adult life in the ocean. Four species are found in the southeastern United States. The loggerhead sea turtle and green sea turtle are listed as threatened; the leatherback sea turtle and Kemp's Ridley sea turtle are listed as endangered by the USFWS, due largely to human impact. No sea turtles have been observed by Fort Stewart/HAAF personnel in or near the project area and none are known to occur in any of the river or stream systems on HAAF. However, loggerhead sea turtles do occur in tidally influenced rivers of the Georgia coast during summer months and Kemp's ridley sea turtles are known to forage on marsh grass species (Spartina) found in abundance in coastal estuaries, some of which do occur in the southwestern portion of HAAF. Accordingly, the Installation accounts for these species in their management plans.

Smooth Coneflower. The smooth coneflower is a perennial herb, with a smooth steam and large purple petals. The plant loses all its leaves in the fall, but remains alive underground until the leaves reemerge in

March. The plant grows up to 1.5 feet tall and has very few leaves. Fort Stewart's population of the smooth coneflower is located in one training area on FSGA proper; however, none are known to occur on HAAF.

3.4.1.1.2 WILDLIFE AND MIGRATORY BIRDS

Wildlife. Together, Fort Stewart and HAAF collectively support at least 410 invertebrate, fish, and wildlife species. HAAF species are not considered or listed separately from Fort Stewart; however, not all of those species found on FSGA are likewise found on HAAF due to its more urban environment, as well as its different geographic location and available habitat. Common wildlife on HAAF include white-tailed deer (*Odocoileus virginianus*), wild boar (*Sus scrofa*), fox (*Vulpes* and *Urocyon* spp.), bobcat (*Lynx rufus*), rabbit (*Sylvilagus* spp.), squirrel (*Sciurus* spp.), and other small mammals, in addition to a diverse assemblage of forest songbirds, game birds such as eastern wild turkey (*Meleagris gallopavo silvestris*) and northern bobwhite quail (*Colinus virginianus*).

Hunting and fishing are permitted on HAAF, which contains 3,650 acres of huntable/fishable habitat divided into 12 training areas (H1-H12). Persons desiring to hunt or fish at HAAF must have an applicable permit purchased through iSportsman, and a valid State license. Though hunting seasons and bag limits at FSGA/HAAF work within the framework of Georgia's seasons and limits, there may be minor differences for management purposes, so check the FSGA/HAAF regulations before going. Ponds at HAAF are monitored and managed; fishing is authorized year-round.

Fort Stewart has an IPMP in place to deal with both wildlife-related and more routine pest-centered issues of concern. Most pest management activities involve areas in and around the cantonment area; however, pest management services are also provided to semi-improved and unimproved grounds on Post, when requested, and in the case of nuisance species, such as wildlife, promotes the focus on surveillance, physical barriers, and more efficient operations to reduce reliance on conventional pesticides, reflecting current DOD/Army policies, procedures, and standards. These services do not occur on a regular basis and are generally unpredictable, depending upon mission activities at that location and changing conditions due to flooding, fire, insects, and other variables. These services, when required, are implemented in accordance with the FSGA/HAAF INRMP.

There are approximately 170 species of birds protected under the Migratory Bird Treaty Act (MBTA) that are known to occur on HAAF, either seasonally or year round, and the Installation complies with the MBTA by implementing Army Policy Guidance (17 August 2001) and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Potential effects to migratory birds resulting from actions on HAAF are considered in Section 3.4.

3.4.1.1.3 VEGETATION

HAAF is located in the Atlantic Coastal Plain of southeastern Georgia and includes mixed upland forests with a canopy dominated by loblolly pine (*Pinus taeda*), slash pine (*Pinus elliottii*), water oak (*Quercus nigra*), pignut hickory (*Carya glabra*), sweet-gum (*Liquidambar styraciflua*), southern magnolia (*Magnolia grandiflora*), and black-gum (*Nyssa sylvatica*). These forests are characterized by a sub-canopy, scrub-shrub, and herbaceous layer of sand laurel oak (*Quercus hemisphaerica*), water oak, sweet-gum, southern magnolia, cabbage palmetto (*Sabal palmetto*), American holly (*Ilex opaca*), highbush blueberry (*Vaccinium*

corymbosum), wax myrtle (*Myrica cerifera*), muscadine (*Vitis rotundifolia*), and bracken fern (*Pteridium aquilinum*) (FSGA/HAAF, 2005).

FSGA/HAAF supports one of the largest forest resources programs in the Department of Defense. AR 405-90, para 6-7(e) states that Installation commanders have been delegated the authority to sell timber with an estimated value under $1,000, with all remaining timber sales coordinated and conducted by the U.S. Army Corps of Engineers. The primary purpose of Fort Stewart's forest program is to support the Army's training mission by sustaining the ecosystem through prescribed burning, timber thinning, and longleaf pine regeneration. Most timber harvesting consists of selective cutting (thinning), emphasizing retention of high quality pines at between 50 and 60 square feet of basal area per acre. Clear cutting is limited to clearing land for construction, wildland fire salvage operations, bark beetle salvage and suppression operations, or re-establishment of longleaf pine. The majority of timber harvested is pine, with hardwood making up only a small and low-value component of timber sales. Pine timber products produced include poles, saw timber, and pulpwood. Aboveground portions of trees can also be chipped for use at the installation' central energy plant (INRMP, date). Best Management Practices (BMPs) are included within Corps of Engineers contracts for forest harvest on Post and include recommendations for streamside management zones, stream crossings, access roads, timber harvest, site preparation, reforestation, prescribed burning, wildfire suppression, chemical treatments, and forested wetland management.

The Forest Management Plan for FSGA/HAAF establishes policies, objectives, guidelines, responsibility, resources, and timelines for the scientific management of forest resources to both enhance military training opportunities and ensure its compatibility with conservation objectives. The plan also has as its general goal providing an Army training environment that is compatible with conservation and utilization of standing timber. Forested areas at HAAF are not actively managed for timber production and forest management activities. Forest management activities consist primarily of timber thinning conducted in support of Army projects (to include construction) or for control of southern pine beetle infestations/disease, the removal of which is coordinated through the Installation Pest Management Program.

Due to the adjacency of the City of Savannah and associated smoke concerns, prescribed burning is not conducted on HAAF, resulting in lower than historic levels of longleaf pine on the Installation. Accordingly, removal of hardwood tree species is favored during timber thinning operations, which are based on tree spacing, amount of regeneration, hardwood types and ages. As longleaf-dominated uplands are favored on HAAF, removal objectives are to favor longleaf by removing competing pine species in areas where fire exclusion has caused longleaf to diminish. Many of the slash and loblolly pine are over 50 years old, so these species are heavily harvested when able.

Forests on HAAF also have issues with insects and diseases common to forests of the southeastern U.S. Annual losses to forest resources from insects and disease exceed those from wildfires. Brown spot needle blight (*Scirrhia acicola*) particularly affects longleaf pine seedlings, and fusiform rust (*Cronartium fusiforme*) affects slash and loblolly pines. Brown spot needle blight infects longleaf seedlings, with all or partial denuding of needles, which can kill seedlings or keep them in the grass stage for years. Fusiform rust causes stem swellings in which a canker forms with a sunken area of rotten wood surrounded by a callus. This increases the chances of damage due to winds. This latter disease is especially prevalent in pine plantations. Longleaf pine, in general, is less susceptible to diseases and pests than are loblolly or slash

pine. Loblolly pine is more susceptible to southern pine beetle than are slash or longleaf. As the Installation approaches its objectives with regard to conversion of its upland forest to longleaf pine, there should be few southern pine beetle problems. Also fusiform rust disease should decrease as thinning occurs in the forest.

The areas to the north and northeast of the HAAF flightline are relatively developed and unforested and consist primarily of the Installation's cantonment area, including barracks, company operations facilities, Installation support facilities, and one of the Installation's Army Family Housing Areas (AFHAs). Most of the Fort Stewart cantonment area is built upon uplands which are ideal for supporting pine communities. Cantonment pine stands are overstocked and need thinning. Much of the periphery of the cantonment area could be managed for mature pines, which are ideal for community living due to their open, park-like nature when regularly thinned and burned.

The eastern portion of the Installation is partly developed, partly forested, containing a golf course and an additional AFHA. Areas to the south and southwest of the Installation are densely forested and contain a large marsh area, at which is located the Lott's Island Recreation Area and forested lands hosting military training activities, to include land navigation areas and small arms firing ranges. The western portion of HAAF is primarily forested and contains additional training lands, to include land navigation areas and small arms firing ranges. The airfield flightline dominates the central portion of the Installation, around which are several hangars and other aviation training assets and support facilities. All developed areas maintain a good deal of vegetation and ground cover, however, and the Installation ensures trees are removed only as needed and as required due to either disease or project-specific requirements.

Approximately 2,870 of HAAF's 5,400 total acres consists of improved grounds, 943 acres of flightline, and the remaining 1,587 acres consists of forested lands. Widespread tree removal has occurred in areas adjacent to the flightline and associated clear zones to ensure aviation safety requirements are fully met. Vegetation management efforts on HAAF are conducted under the provisions of the FSGA/HAAF Urban Tree Management Policy (2018a) and FSGA/HAAF Urban Tree Management Guide (2018b), both of which serve as planning tools and guides on the Installation, and require that Forestry be consulted prior to any tree removal or tree planting effort on HAAF. This coordination is to ensure optimal planting success as well as to ensure correct species and spacing for trees planted on the Installation. These plans also provide useful definitions and guidance related to tree maintenance/management on the Installation as a whole.

Select portions of forested lands on HAAF are actively utilized for training purposes and are managed via the Integrated Training Area Management (ITAM) program, an Army-wide program that provides quality training environments to support the Army's military mission. Land Rehabilitation and Management (LRAM), a component of ITAM, is intended to involve repair of damaged lands and use of land construction technology to avoid future damage to training lands. LRAM uses technologies such as revegetation and erosion control techniques to prevent site degradation, soil erosion, and water/wetlands pollution. These efforts are specifically designed to maintain quality military training lands, minimize long-term costs associated with land rehabilitation or additional land purchase, ensure compliance with environmental laws and regulations, and reduce erosion associated with military training.

Vegetation management efforts are assisted through implementation of the Installation's IPMP on both its improved and unimproved grounds, as well as on some lands considered semi-improved. Improved grounds include acreage on which intensive maintenance activities are planned and performed annually as a fixed requirement, such as the cantonment area. These "management" activities include mowing, irrigation, dust and erosion control, drainage systems, landscaping, and other intensive practices. Semi-improved grounds include areas on which periodic maintenance is performed, but to a lesser extent than on improved grounds, and include ammunition storage areas, airfields, and heliports. Unimproved grounds include all acreages not classified in the two previous categories, such as the range and training lands. As previously discussed, pest management activities on unimproved grounds are an irregular requirements, depending upon mission activities and changing conditions at a specific location, but can be provided upon request. Collectively, this multi-component environmental management approach ensures the biological resources on the Installation are effectively and efficiently managed to sustain both the mission and the environment.

3.4.1.2 ENVIRONMENTAL CONSEQUENCES

Overall impacts to Biological Resources anticipated as a result of implementing the proposed action are discussed in this section. As each project in the ADP for HAAF enters the design phase, supplemental NEPA analysis will occur and will be documented via a REC (if it falls within the scope of this PEA) or an EA (if it beyond the scope of this PEA), as necessary.

3.4.1.2.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Protected Species, Wildlife, and Migratory Birds. Short-term, indirect, negligible, adverse impacts to Protected Species are anticipated as a result of implementing Alternative I. Of the 12 species known to occur in the Study Area, only the wood stork has been sighted on HAAF, on an intermittent basis in the fresh or brackish wetlands located in the southwestern boundary of the Installation. Sitings typically occur during wet periods of the year, when water levels are sufficient to sustain food for the birds to forage, and this species is not a resident on HAAF. No direct impacts are anticipated, as no future development is proposed within the habitat in which they may occur (marsh/wetlands); however, short-term, negligible, indirect, adverse impacts are possible during the development phase of actions proposed adjacent to these wetlands, specifically the proposed recreational improvements at Lott's Island, which are also occurring in the same wetlands/marsh area on HAAF. The nearest wood stork rookery is at the Savannah Municipal Airport, more than five miles away, and no rookery has been identified or is anticipated on HAAF. No changes to the existing ESMP for the wood stork is proposed in absence of an identified rookery, for which the Installation does not contain sufficient habitat.

No impacts are anticipated to any of the remaining protected species because they are not known to occur on HAAF lands, because HAAF does not contain suitable habitat to support these species, and/or (in the case of the red-cockaded woodpecker) the Installation cannot manage its lands as required for these species (cannot conduct prescribed burns due to adjacency of the City of Savannah). FSGA/HAAF biologists survey for these 12 species in accordance with the Installation INRMP, and manage accordingly based on the results of those surveys and federal and state laws and regulations.

Long-term and Short-term, indirect and direct, minor, adverse impacts are anticipated to Wildlife and Migratory Birds as a result of implementing this alternative, specifically, to the timber harvest, site clearing/grading/stabilization, construction (to include installation of new utility corridors or connecting to an existing corridor), demolition, and some renovation activities. Impacts will primarily anticipated to be short term and indirect, as these species typically flush away from a disturbance at its initial phase, are rarely directly impacted by the machinery and equipment utilized in these activities, and return to their place of original once activities cease. However, some long-term and direct impacts may also occur due to timber removal to facilitate construction, as that vegetation will not be replanted and available to these species once activity on-site stops. Tis will displace the wildlife and migratory birds, but sufficient habitat remains on HAAF to ensure this remains at a minor adverse level and does not rise to a level of significance. No impacts to wildlife and migratory birds are anticipated due to ongoing, routine operations, maintenance, and repairs, as these typically occur in previously disturbed/established open areas, where these species are not typically present, or, if present, are there on a temporary basis. In addition, these actions are conducted in accordance with Installation policies, procedures, and plans (to include the INRMP and IPMP) and in compliance with federal and state laws and regulations that minimize potential impacts to these species.

Short-term, indirect, negligible adverse impacts are anticipated during Installation training events, as these species will flush from the area where training is occurring and then return once the training ceases. No adverse impacts are anticipated to these species due to routine training events on established Installation ranges, as these are used often and do not host wildlife within or immediately adjacent to these structures. These species may be in the vicinity of these ranges at night during foraging; however, the ranges are not routinely used at that time and they are unlikely to be adversely impacted by a one-off, occasional training event. This is not anticipated to change once the new ranges are constructed under this alternative, for the same reasons. No adverse impacts are anticipated to routine training activities conducted on the airfield proper, as it is routinely monitored to ensure it is kept clear of wildlife and birds to the best degree possible, for safety of the flight crews training at these locations.

Vegetation. Long-term, direct, moderate, adverse impacts are anticipated to Vegetation under this alternative, which will result in approximately 318 acres of vegetated ground disturbance and require approximately 110.17 acres of timber harvest, impacting approximate 12% the Installation's current vegetated acreage on Post. Impacts are primarily associated with converting this acreage from forested land into developed areas. Prior to the start of any timber harvest, its boundaries are clearly delineated on the ground by a representative from the FSGA/HAAF Forestry Branch and the FSGA/HAAF DPW Project Manager. The Installation reserves all rights for a timber sale, and timber proposed for removal is assessed by the Forestry Branch POC to determine if it is suitable for a merchantable timber sale; if not, it is opened up for the contractor conducting the work. For smaller projects (less than 0.5 acres), the Forestry Branch may elect to allow the contractor awarded the project remove all timber from the site, as smaller projects may not be suitable for a merchantable timber harvest. Regardless of who conducted timber removal, the contractor is required to remove all slash, non-merchantable timber, and/or debris following a merchantable timber harvest.

Contractors must adhere to all site-specific timber harvest best management practices (BMPs), as well as erosion and sedimentation (E&S) requirements established in the project-specific Clean Water Act Notice of Intent (if disturbance is greater than 0.75 acres) and/or erosion and sedimentation pollution control

(ESPC) Plan for each action. If required, whomever is performing the work must adhere to all special measures laid out in the Clean Water Act (CWA) Section 404 permit for clearing within wetland areas (see Water Resources Discussion, PEA Section 3.6). Seeding and stabilization efforts on the Installation aim to ensure minimal adverse impacts to environmental resources and ensure healthy vegetative cover returns to each project site. This helps minimize potential erosion concerns caused by the increase of impervious surfaces at each construction and at adjacent sites.

New construction is required to adhere to existing stormwater conveyance and infrastructure provisions of Section 438 of the Energy Independence and Security Act as well as Georgia's Coastal Stormwater Supplement to ensure new stormwater features allow for post-construction site flows at the same rate as pre-construction flows, in order to address the impacts from an increase of impervious surfaces on the Installation. . The design should derive a reasonable solution to prevent any sediment from leaving the site and to stabilize the area as soon as possible following all land disturbance activities. In addition, the phased nature of the project implementation over time will further minimize the potential for adverse impacts to vegetation within the District, as these projects will occur over a potential span of up to 20 years.

Short-term, indirect, negligible, adverse impacts are anticipated due to demolition actions, as these sites are previously disturbed and typically impact only grassy/shrubby vegetation and require little, if any, larger timber harvest actions. However, prior to tree removal associated with demolition (or that may be damaged as part of the demolition action), the project manager shall coordinate with the FSGA/HAAF DPW Forestry Branch to ensure all actions are in accordance with the Urban Tree Management Plan and Policy. Adherence to E&S BMPs for construction, as previously discussed, will help minimize potential adverse impacts to ground level vegetation at each project location.

Short-term and long term, direct, but negligible, adverse impacts are anticipated from renovation projects. Renovation occurs on sites that are already developed and do not typically require substantial disturbance to or removal of existing vegetation at the work site. Where vegetation must be disturbed or removed, project proponents must adhere to FSGA/HAAF erosion and sedimentation BMPs, timber harvest BMPs, and the Installation Tree Management Plan and Policy, which all include reestablishment of the vegetative cover. Impacts may be considered long-term if revegetation in accordance with the site's original condition is not feasible; however, all measures implemented are site-specific to ensure minimal adverse impacts and ensure healthy vegetative cover returns. Short-term, direct and indirect, negligible adverse impacts are anticipated from routine operations, maintenance, and repairs (to include work on existing roads, grounds, and utility corridors). As an active component of a Military Installation, HAAF experiences continuous modifications in its mission and training requirements, often resulting in ongoing facility upgrades on the Installation, supporting both the Army's in–progress transformation process and compliance with resident and tenant units' basic quality of life requirements. These actions may require the removal of trees and smaller vegetation that are impeding efficiency or safety on Post, such as vegetation growing into and impeding the efficiency of an air conditioning system or impeding the flow of a culvert. As previously discussed under Protected Species, Wildlife, and Migratory Birds, these actions are conducted in accordance with Installation policies, procedures, and plans, and in compliance with federal and state laws and regulations.

Long-term, direct, negligible, adverse impacts to vegetation are anticipated due to ongoing training on HAAF. These consist primarily of vegetation being cut for camouflage during training events and routine

wear and tear on training lands from land navigation and field training exercises. These impacts are consistently monitored, minimized and/or mitigated via implementation of the Integrated Training Area Management/Land Rehabilitation and Maintenance (ITAM/LRAM) program following training events. In addition, larger training events are pre-coordinated through the Installation NEPA process, through which specific environmental requirements are provided to the unit conducting the training prior to implementing the training event. All of these measures minimize any long-term adverse impacts to vegetation on HAAF.

Overall, this alternative is anticipated to result in short-term, indirect, negligible, adverse impacts to Protected Species; short-term and long-term, indirect, negligible adverse impacts to Wildlife and Migratory Birds; and long-term, direct, moderate impacts to Vegetation.

3.4.1.2.2 ALTERNATIVE II: IMPLEMENT 3/160TH SOAR INFILL

Protected Species, Wildlife and Migratory Birds. Short-term, indirect, negligible impacts are anticipated to Protected Species as a result of implementing this alternative. As discussed under Alternative I, the wood stork is the only protected species that has been sighted on HAAF and only within the fresh or brackish wetlands in the southwestern portion of the Installation. Of the 12 species known to occur in the Study Area, only the wood stork has been sighted on HAAF, on an intermittent basis in the fresh or brackish wetlands located in the southwestern boundary of the Installation. Sitings typically occur during wet periods of the year, when water levels are sufficient to sustain food for the birds to forage, and this species is not a resident on HAAF. No direct impacts are anticipated, as no future development is proposed within the habitat in which they may occur (marsh/wetlands); however, short-term, negligible, indirect, adverse impacts are possible during the development phase of actions proposed adjacent to these wetlands, specifically the proposed recreational improvements at Lott's Island, which are also occurring in the same wetlands/marsh area on HAAF. The nearest wood stork rookery is at the Savannah Municipal Airport, more than five miles away, and no rookery has been identified or is anticipated on HAAF. No changes to the existing ESMP for the wood stork is proposed in absence of an identified rookery, for which the Installation does not contain sufficient habitat. Under this alternative, construction would not occur south of the existing flightline; however, this would not result in different impacts to protected species, as no wood storks have been sighted at that location. No potential impacts are anticipated to any of the remaining protected species because they do not occur on HAAF lands, because HAAF does not contain suitable habitat to support these species, and (in the case of the red-cockaded woodpecker) the Installation cannot manage its lands as required for these species.

Short-term and long-term, indirect and direct, minor, adverse impacts are anticipated to Wildlife and Migratory Birds as a result of implementing Alternative II, for reasons discussed under Alternative I. These species are known to temporarily flush from the site of a disturbance and then return once the associated activities cease. Impacts are anticipated to be indirect as these species typically flush away from a disturbance at its initial phase and are rarely directly impacted by the machinery and equipment utilized in these activities. No adverse impacts to wildlife and migratory birds are anticipated due to ongoing, routine operations, maintenance, and repairs (to include work on existing roads, grounds, and utility corridors). Typically, these sites are previously disturbed, established, open areas, where wildlife and migratory birds are not present. Timber removal to facilitate construction may result in long-term direct adverse impacts to these species, as that vegetation will not be replanted and available to these species once activity on-site stops. This will displace the wildlife and migratory birds, but sufficient habitat remains on HAAF to ensure

this remains at a minor adverse level and does not rise to a level of significance. All actions are conducted in accordance with Installation policies, procedures, and plans (to include the INRMP and IPMP) and in compliance with federal and state laws and regulations.

Vegetation. Long-term, direct, minor, adverse impacts are anticipated to Vegetation under this alternative. Approximately 293 acres of vegetated ground disturbance and approximately 80.17 acres of timber harvest will occur, impacting approximate 10% the Installation's current vegetated acreage on Post. This is less than under Alternative I, as the new taxiway south of the existing flight line will not being constructed, nor will the facilities proposed to support the move of the 3/160th SOAR to this location. As discussed under Alternative I, the contractor selected for implementation of the work proposed under this alternative shall adhere to all E&S requirements, BMPs, permits, Installation policies and procedures, and state and federal law. All remaining proposed actions and associated impacts are as discussed under Alternative I.

Overall, this alternative is anticipated to result in short-term, indirect, negligible, adverse impacts to Protected Species; short-term and long-term, direct and indirect, minor adverse impacts to Wildlife and Migratory Birds; and long-term, direct, minor adverse impacts to Vegetation.

3.4.1.2.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Protected Species, Wildlife and Migratory Birds. No impacts are anticipated to Protected Species as a result of the implementation of Alternative III. As discussed under Alternative I and II the wood stork is the only one of the 12 protected species known to occur in the Study Area, and only on an intermittent basis in the fresh or brackish wetlands located in the southwestern boundary of the Installation. Under Alternatives I and II, short-term, negligible, indirect, adverse impacts to the wood stork were determined to be possible during the development phase of actions proposed adjacent to these wetlands, specifically the proposed recreational improvements at Lott's Island. However, these actions will not occur under this alternative, and the potential for impacts to this species drop below even a negligible level. The nearest wood stork rookery is at the Savannah Municipal Airport, more than five miles away, and no rookery has been identified or is anticipated on HAAF. No changes to the existing ESMP for the wood stork is proposed in absence of an identified rookery, for which the Installation does not contain sufficient habitat. No potential impacts are anticipated to any of the remaining protected species because they do not occur on HAAF lands, because HAAF does not contain suitable habitat to support these species, and (in the case of the red-cockaded woodpecker) the Installation cannot manage its lands as required for these species.

Short-term, indirect, negligible, adverse impacts to Wildlife and Migratory Birds are anticipated due to ongoing, routine operations, maintenance, and repairs (to include work on existing roads, grounds, and utility corridors), as these typically occur in established open areas where these species are not typically present, unless passing through or foraging, or a similar activity. However, if disturbed, they typically flush from an area and then return once activities cease. Short-term, indirect, negligible, adverse impacts are anticipated to Wildlife and Migratory Birds during Installation training events, as these species will flush from the area where training is occurring, mostly during Land Navigation activities, and will then return to their homes once the training ceases or the Soldiers navigate to another training area. No adverse impacts are anticipated to these species due to routine training events on established Installation ranges, as these are used daily and do not host wildlife within or immediately adjacent to these structures. These species may be in the vicinity of these ranges at night during foraging; however, this would also result in no impact to

these species, as the ranges are not routinely used at that time and they are unlikely to be adversely impacted by a one-off, occasional training event. No adverse impacts are anticipated to routine training activities conducted on the airfield proper, as it is routinely monitored to ensure it is kept clear of wildlife and birds to the best degree possible, for safety of the flight crews training at these locations.

Vegetation. Long-term direct, negligible, adverse impacts are anticipated from routine operations, maintenance, and repairs (to include work on existing roads, grounds, and utility corridors), and may require the removal of trees and smaller vegetation that are impeding efficiency or safety one Post, such as vegetation growing into and impeding the efficiency of an air conditioning system or blocking the function of a culvert. However, as previously discussed, these actions are conducted in accordance with Installation policies, procedures, and plans, and in compliance with federal and state laws and regulations. No substantial increase in impervious surfaces is anticipated due to these routine operations, or due to routine repairs and maintenance acidities on Post.

Short-term and long-term, indirect, adverse impacts to vegetation are anticipated due to ongoing training on HAAF. These consist primarily of vegetation being cut for camouflage during training events and routine wear and tear on training lands from land navigation and field training exercises. These impacts are consistently monitored, minimized and/or mitigated via implementation of the ITAM/LRAM program following training events. In addition, larger training events are pre-coordinated through the Installation NEPA process, through which specific environmental requirements are provided to the unit conducting the training prior to implementing the training event. All of these measures minimize any long-term adverse impacts to vegetation on HAAF.

Overall, this alternative is anticipated to result in no impacts to protected species; short-term, indirect, negligible, adverse impacts to Wildlife and Migratory Birds; and short-term and long-term, direct, negligible, adverse impacts to Vegetation.

3.4.1.3 CUMULTATIVE IMPACTS

The ROI for Biological Resources lies within and immediately adjacent to the physical boundary of HAAF. Protected species, wildlife, and especially migratory birds can cross over the Installation boundary and onto non-Installation lands; vegetation, as well, is not limited by the Installation boundary. Past, present, and reasonably foreseeable future actions with the potential to result in cumulative impacts to Biological Resources are discussed in the section below.

3.4.1.3.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Past and present actions in the ROI consist of the historical development of the City of Savannah and HAAF, as well the associated infrastructure and transportation network that supports them. Periodic iterations of timber harvest, site clearing/grading/stabilization, and construction/demolition in the ROI were followed by periods of routine operations, maintenance and repair, as well as military training activity on HAAF. Wildlife and Migratory Birds typically flush from areas of development, returning to remaining available habitat once activities cease. Over time, less and less land remained for these species to utilize as habitat, and more vegetated land was transformed into development, resulting in minor adverse cumulative impacts to Biological Resources in the ROI. Site stabilization measures, to include grass and tree planting,

were implemented as part of the development process, minimizing some of the potential adverse impact to wildlife and vegetation. Present actions on HAAF will implement these measures to ensure protected species and wildlife depending on this vegetation are rarely impacted more than indirectly, as previously discussed.

Future actions in the ROI include ongoing routine operations, repair and maintenance, and training on HAAF, as well as ongoing commercial and residential development on adjacent City of Savannah lands. As previously discussed, these routine actions have the potential for negligible cumulative impacts to Biological Resources in the ROI. As identified on Table 3, Future Actions in the ROI, the City of Savannah proposes to implement Project DeRenne. This action will improve the transportation system at the northern portion of HAAF and require the removal of 2-3 acres of trees along the northern boundary of HAAF. Impacts associated with vegetation removal will be minimized via adherence to federal, state, and local laws and regulations, to include site-specific permits and BMPs, and implementation of site stabilization measures. No adverse impacts are anticipated to protected species from this tree removal, as they do not inhabit this portion of HAAF. Wildlife will likely flush from this area of development and relocate, resulting in minor adverse impacts to wildlife in the ROI. Combined with the direct impacts associated with the 318 acres of ground disturbance and 85 acres of tree removal associated with this alternative, overall moderate adverse cumulative impacts are anticipated to Biological Resources.

3.4.1.3.2 ALTERNATIVE II: IMPLEMENT CANTONMENT INFILL

Past and present actions within the ROI are primarily as discussed under Alternative I; however, under this alternative, there will be no development south of the runway associated with the actions in the ADP for HAAF, resulting in approximately 25 acres less vegetation removal and less its associated impacts. Potential future actions would be as discussed under Alternative I, to include implementation of Project DeRenne. Impacts associated with vegetation removal will be minimized via adherence to federal, state, and local laws and regulations, to include site-specific permits and BMPs, and implementation of site stabilization measures. No adverse impacts are anticipated to protected species, which do not inhabit this portion of HAAF. Wildlife will likely flush from this development activity and relocate, which may result in minor adverse cumulative impacts to wildlife in the ROI. Combined with the direct impacts associated with the 293 acres of ground disturbance and 80 acres of tree removal associated with this alternative, overall minor adverse cumulative impacts are anticipated to Biological Resources.

3.4.1.3.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Past and present actions within the ROI are as discussed under Alternative I, and future actions consist of continued routine operations, repair and maintenance, and training on HAAF, as well as the ongoing commercial and residential development on adjacent City of Savannah lands. None of the projects identified in the ADP for HAAF would be implemented under this alternative, resulting in far less disturbed acres in the ROI. However, Project DeRenne may still be implemented and will require the removal of 2-3 acres of trees along the northern boundary of HAAF. Impacts associated with vegetation removal will be minimized via adherence to federal, state, and local laws and regulations, to include site-specific permits and BMPs, and implementation of site stabilization measures. No adverse impacts are anticipated to protected species, which do not inhabit this portion of HAAF; however, wildlife will likely flush from this development

activity and relocate, still resulting in minor adverse cumulative impacts to wildlife in the ROI. Overall, these activities may result in negligible adverse cumulative impacts to Biological Resources.

3.4.2 WATER QUALITY AND RESOURCES

3.4.2.1 AFFECTED ENVIRONMENT

Water resources on HAAF include natural systems such as streams, rivers, lakes, estuaries, groundwater, wetlands, and floodplains, as well as the man-made stormwater drainage system on Post. Water resources management requirements are typically derived from the Clean Water Act (CWA), Safe Drinking Water Act, and water rights laws that vary from state to state.

Groundwater. The groundwater resources of coastal Georgia are recognized as some of the most productive in North America. The Floridan is the principal artesian aquifer in the region and provides most of the fresh water for cities and communities throughout southeastern Georgia, to include the City of Savannah and HAAF. There are three distinct aquifer systems in the Fort Stewart region. The principal artesian aquifer, the Floridan aquifer, is a deep sequence of limestone of Eocene to Oligocene age, the primary source of large groundwater withdrawals in the coastal area. This aquifer is generally 300 to 500 feet below the surface and is composed of two distinct layers. The upper layer is derived from the Oligocene Series of sandy, phosphatic limestone and is not generally used as a water source. It is underlain by the Ocala Limestone of Eocene age, which is the primary water supply source for much of the coastal plain.

The principal artesian aquifer is overlain by two shallow aquifer systems. A 394- to 492-foot-thick series of Miocene clays, sandy clays, and gravel lies directly above the principal artesian aquifer. Several industries in the coastal area have wells with yields greater than 200 gallons per minute from this aquifer. It is recharged largely by percolation from the surface aquifer, as well as some discharge from the principal artesian aquifer.

The surface aquifer is composed of a relatively thin layer of sands, gravels, and clays extending to a depth of 82 feet near the coast. The surface aquifer is recharged directly from rainfall percolating through sediments. During dry months the base flow of streams and rivers of the coastal area is maintained by discharge from the surface aquifer. Water quality varies from very low total dissolved solids to slightly alkaline, moderately hard water. The two shallow aquifer systems are used almost exclusively for domestic water, and only as a secondary water supply for drinking water on HAAF, with the Floridan aquifer being the source of drinking water for the Installation.

Currently, HAAF withdraws groundwater from five community wells and three non-community system wells that tap into the Floridan aquifer. This groundwater is treated with chlorine at the well head prior to being utilized. HAAF operates under a Water Management Plan, and groundwater withdrawals are permitted by the GA DNR, Environmental Protection Division (EPD), for a combined monthly average withdrawal of 0.35 million gallons per day (mgd), and a yearly average withdrawal of 0.30 mgd from these eight wells. The approximate available capacity for additional use at HAAF is roughly 419,000 gallons per day.

Coastal Zone Management. The Coastal Zone Management Act (CZMA) was passed in 1972 and provides a formal structure to address the challenges of continued growth in coastal areas (NOAA, 2019). The Georgia Coastal Management Program is authorized by the CZMA and administered by the National

Oceanic and Atmospheric Administration (NOAA), Georgia Department of Natural Resources (GA DNR)-Coastal Resources Division (CRD), and a network of other state agencies. HAAF is located within the coastal zone of Georgia and is required to conform to state coastal zone requirements, which in Georgia includes mandating construction be a minimum distance from the shore or shoreline feature. In Georgia, an action is considered consistent with the CZMA if it does not contain any activity that would be in conflict with the state's CZMA program. The Installation will seek a consistency determination to the GA DNR-Coastal Resources Division (CRD) for development at this location.

ESPC Plans are implemented for all actions with the potential to impact surface water sources on Post, in accordance with the CWA, Georgia Water Quality Act (GWQA), and GA Erosion Sediment Control Act (ESCA), and periodically monitors all active construction sites to ensure sensitive resources in and near the action area are avoided. The Army requires the correction of all deficiencies immediately, and consults with the GA DNR-Coastal Resources Division as part of the NEPA process. Section 438 of the Energy Independence and Security Act (EISA) is also implemented, the goal of which is to replicate pre-development hydrology to protect and preserve both the water resources onsite and those downstream. The Army complies with EISA Section 438 by designing facilities based on the goal of maintaining pre-development hydrology on a site-specific basis and an objective methodology with which to determine appropriate practices to protect the receiving environment. Coupled with EISA Section 438, HAAF also specifies the requirement for site designers to utilize Georgia's Coastal Stormwater Supplement (CSS). The purpose of the CSS is to protect Georgia's existing water quality standards, particularly those of the State's coastal waters. By utilizing the CSS, post-construction stormwater runoff rates and volumes are reduced through the use of low impact development practices to help maintain pre-development site hydrology, help prevent downstream water quality degradation, and to help prevent downstream flooding and erosion. These measures ensure the Installation maintains compliance with the CZMA, as well as preventing pollutant loading of sensitive surface water sources, floodplains, and wetlands.

Surface Water Resources (Figure 12). In the proposed action's natural, undisturbed environment, rainfall is quickly absorbed by trees, other vegetation, and the ground. Most rainfall that is not intercepted by leaves infiltrates into the ground or is returned to the atmosphere by the process of evapotranspiration. Very little rainfall becomes stormwater runoff in permeable soil, and runoff generally only occurs with larger precipitation events, all of which is currently well handled by the Installation's natural surface water and man-made stormwater drainage networks. The Little Ogeechee River forms the southwestern boundary of HAAF and drains most of the Installation. Tides exert a great influence on the river and salt water is carried upstream for some distance. Fresh to brackish tidal marshes have developed along much of the shore and the river is not a significant source of drinking water. Due to the large area of impervious surface associated with the airfield and cantonment area, large volumes of runoff are directed to the Little Ogeechee salt marsh/river system to the south. Drainage from these areas flows west through a stormwater drain system including a series of ditches to the Lamar Canal, flowing southwest to the Little Ogeechee River. Surface water resources at HAAF include 12 miles of brackish water streams and several small impoundments ranging in size from 4.3 to 9.7 acres (Figure 12).

Figure 12: Surface Waters and Wetlands on HAAF.

There are no streams known to be impaired [per CWA, Section 303(d)] within the Study Area; however, HAAF applies best management practices (BMPs) in accordance with GA DNR guidance throughout the Installation to limit sedimentation into waterways. These practices include:

- Implementing an Erosion Sedimentation Pollution Control Plan (ESPCP) for land disturbing activities to meet the requirements of the Georgia Erosion and Sedimentation Control Act (ESCA),
- Using Georgia Forestry Commission Best Management Practices (BMPs) for timber harvests,
- Adopting Natural Resources Conservation Service (NRCS) conservation practices,
- Adopting unpaved road maintenance practices, and
- Repairing and preventing stream bank erosion due to increased stream flow velocities caused by urban runoff.

In all areas where vegetation has been wrested by normal stream flow, a 25 foot vegetative stream buffer must be maintained, to include surrounding surface water sources, wetlands, and natural or man-made stormwater drainage systems. Construction is generally not allowed within the buffer area; however, if construction requires intrusion into the buffer, a stream buffer variance (SBV) is required from GA DNR.

Wetlands (Figure 12). Wetlands are defined, per 33 CFR Part 328.3(b) of the CWA, as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Section 404 of the CWA regulates the discharge of dredge or fill material into waters of the United States, and the U.S. Army Corps of Engineers (USACE) holds the primary federal authority for regulation of these discharges.

A Nationwide Permit is required for activities resulting in minimal individual and cumulative potential environmental impacts, and an Individual Permit is required for activities that do not qualify for the Nationwide Permit program. Section 401 of the CWA requires that the state in which the activity occurs issue a Water Quality Certification for any activity requiring a Federal permit that may result in a discharge to state waters. This certification states that applicable effluent limits and water quality standards will not be violated. Executive Order 11990, *Protection of Wetlands,* requires federal agencies to avoid new construction in wetlands unless it finds that there is no practicable alternative to such construction, and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. Given their prevalence on the Installation, HAAF has made avoidance and minimization of wetlands impacts a top priority and wetlands are one of the primary factors to be considered when planning a new project.

The National Wetlands Inventory (NWI), a nationwide inventory of wetlands and deep-water habitats across the United States, was established by the U.S. Fish and Wildlife Service (USFWS) for the purposes of management, research, and planning purposes, and serves as a tool for the Army when planning its projects. Wetland vegetative species on HAAF include vegetative species such as pond cypress (*Taxodium ascendens*), bald cypress (*T. distichum*), black tupelo (*Nyssa sylvatica*), swamp tupelo (*N. aquatica*), sweetgum (*Liquidambar styraciflua*), pond pine (*Pinus serotina*), water oak (*Quercus nigra*), redbay (*Persea borbonia*), and fetterbush lyonia (*Lyonia lucida*). According to the FSGA/HAAF INRMP, HAAF

contains approximately 1,400 acres of wetlands, of which 58.9% are classified as Palustrine, while forested wetlands comprise 56.4% of the Palustrine system.

In accordance with the CWA and Executive Order 11990, Fort Stewart is required to implement measures to avoid, minimize and compensate for wetland impacts. Installation environmental and master planning team members avoid wetland impacts during the design process and, where wetlands cannot be completely avoided, the impacts to these sensitive resources are minimized and the impacts remaining are mitigated. All vegetation within the wetland areas and their buffers are flagged prior to the start of any work to ensure the contractor(s) clearly understands the physical demarcation limits and utilizes appropriate equipment and techniques for felling and removing vegetation. The grubbing, grading, and discharge of dredged or fill material into streams and wetlands requires prior coordination with/permitting through the USACE-Regulatory Branch (Wetlands). Wetland impact minimization efforts are documented during the proposed action design phase to assist with completion of the Individual Permit application.

Floodplains (Figure 13). Floodplains typically are described as areas likely to be inundated by a particular flood. A flood that has a one percent chance of occurring in any one year is the 100-year flood. Floodplains on Fort Stewart, as in much of the south Atlantic Coastal Plain, are linked to adjacent streams and rivers and serve watersheds through water storage and conveyance, filtration of nutrients and other pollutants, erosion control, groundwater recharge, fish and wildlife habitat, and recreation.

EO 11988, *Floodplain Management* (1977), and thereby DoD Instruction 4715.03 (DoD 2011), require Federal agencies to avoid construction or management practices that will adversely affect floodplains unless (1) there is no practicable alternative and/or (2) the proposed action is designed to minimize harm to or within the floodplain. Where impacts to floodplains are unavoidable or not practicable, the Army documents all steps taken to avoid adverse impacts, designs and/or modifies the actions it takes to minimize adverse impacts, and explains why no practicable alternative to impacting the floodplain exists. Floodplains are of great value due to their ability to link adjacent streams and rivers and they serve a multitude of functions, including water storage and conveyance, filtration of nutrients and other pollutants from runoff, erosion control, and groundwater recharge, as well as a valuable habitat for fish and wildlife. Areas regulated under this Executive Order include those lands subject to a 1% or greater chance of flooding in any given year, referred to as the 100-year floodplain.

The Federal Emergency Management Agency (FEMA) is responsible for mapping flood-prone areas. Floodplains are a link to adjacent streams and rivers, and serve various functions, including water storage and conveyance, filtration of nutrients and other pollutants from runoff, erosion control, groundwater recharge, fish and wildlife habitat, and recreation. To the greatest extent possible, HAAF avoids construction and other activities within these sensitive resources; however, in some cases, total avoidance is neither possible nor feasible, due to the predominance of wet conditions and/or low elevations found on HAAF.

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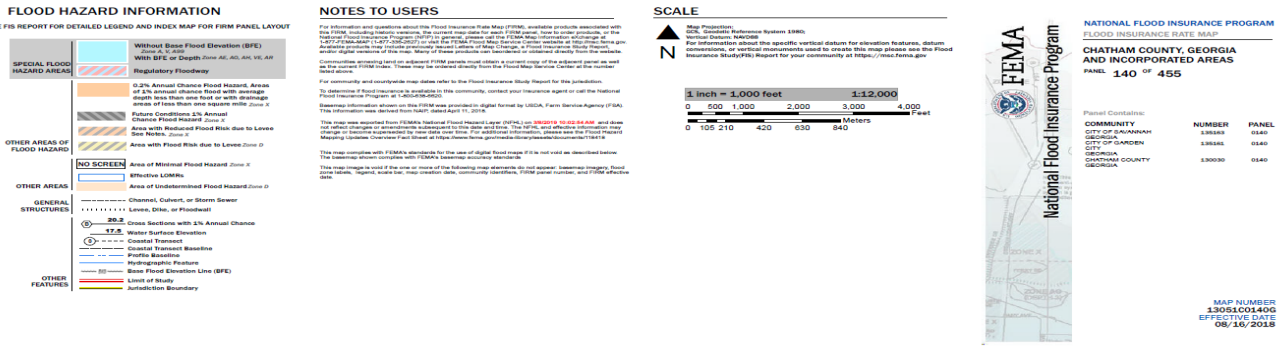

Figure 13: Floodplains on HAAF.

The Georgia Stormwater Management Manual/CSS requires: (a) the review of all construction projects within a floodplain and (b) compliance with the Energy Independence Security Act-Section 438. Floodway encroachment, including structures, fill placement, etc. is generally prohibited unless certification with supporting technical data is provided by a registered professional engineer demonstrating the encroachment will not result in any increase in flood elevations upstream or downstream. When constructing within a floodplain, construction contractors must review the USEPA Technical Guidance for Implementation of EISA-Section 438 (USEPA 2009) and select from a series of floodplain-specific BMPs contained within the document.

The BMPs chosen must be tailored to a specific project and its unique site characteristics, to best address runoff reduction and flood protection measures and help minimize potential flooding and stormwater concerns in the future. The contractor must also adhere to the standard BMPs provided in the NPDES and other required permits for the site, as well as the Federal and State of Georgia guidelines for the floodplain. A State of Georgia certified Professional Engineer must document all hydrological analyses when preparing the ESPCP and incorporate the selected BMPs, ensuring State and Federal requirements are met for floodplain encroachments and flood controls, including runoff reduction and water quality requirements. In addition, State of Georgia requirements must be met, such as elevating the structures a minimum of 1 to 3 feet above the base flood elevation of the 100-year floodplain level. The U.S. Geological Service (USGS) has mapped flood-prone areas on HAAF and lands lying within the 100-year floodplain have been delineated, indicating there are approximately 1,400 acres lying within the 100-year floodplain and approximately 40 acres lying within the 500-year floodplain.

3.4.2.2 ENVIRONMENTAL CONSEQUENCES

Overall impacts to Water Resources anticipated as a result of implementing the proposed action are discussed in this section. As each project in the ADP for HAAF enters the design phase, supplemental NEPA analysis will occur and will be documented via a REC (if it falls within the scope of this PEA) or an EA (if it beyond the scope of this PEA), as necessary.

3.4.2.2.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Groundwater. Short-term, indirect, minor, adverse impacts to groundwater is anticipated due to ground disturbance associated with timber harvest, site clearing/grading/stabilization, construction, to include installation of new utility corridors, parking areas, and support/connector roads, and demolition of existing facilities and infrastructure. The Floridan aquifer lies at a depth of 300-500 feet and ground disturbance to support these actions will not occur at depth sufficient to directly impact the aquifer system in the Study Area; however, increased waterborne pollutants (e.g., dissolved solids, sediment, petroleum hydrocarbons) in surface waterbodies resulting from construction-related activities, and from the increased impervious surfaces following construction, may be transported into the groundwater system via runoff from work sites. Following protocols outlined in the installation SWPPP, state sediment and erosion control guidelines, and the installation spill prevention plan would minimize potential effects. Similarly, short-term, direct, minor impacts are anticipated due to routine operations, repair and maintenance, as runoff of sediments and chemicals associated with routine activities could trickle down and into groundwater resources over time; however, adherence to these same protocols should minimize potential impacts and negate their becoming more adverse over time. No impacts to groundwater are anticipated as a result of military training

operations, as these activities consist of actions on established ranges (already factored into routine operations), land navigation, and will not increase potential withdrawals from the Floridan aquifer.

Potential increases in groundwater usage from the Floridan aquifer associated with projects in the ADP for HAAF are not known at this time; however, it is required to be within the guidelines of the GA DNR *Interim Strategy for Managing Salt Water Intrusion in the Upper Floridan Aquifer of Southeast Georgia*. If future usage does not fall within the limits of the current permit for HAAF, the permit will be amended at a time when more exact estimates of potential future usage is available. Implementation of water conservation measures prescribed in the *Interim Strategy for Managing Salt Water Intrusion in the Upper Floridan Aquifer of Southeast Georgia*, is recommended to ensure that drinking quality water is only used as necessary. FSGA/HAAF currently implements water saving measures where possible and practicable, to include planning for landscapes which do not require a lot of watering (xeriscapes) and watering at times most conducive to saving water (such as at sundown when evaporation rates are lower).

CZMA. Long-term, direct, minor, adverse impacts to lands lying within the CZMA are anticipated under this alternative. All ground disturbance is associated with timber harvest, site clearing/grading/stabilization, construction, to include installation of new utility corridors, parking areas, and support/connector roads, and demolition of existing facilities and infrastructure. Impacts are associated with three projects only, all located at Lott's Island Recreation Area on HAAF (Figure 14, Lott's Island Vicinity Map; Figures 15-16, Pave RV Lot and Construct Bathhouse, Construct Cabins, and Renovate Slips).

Personnel from the GA DNR-CRD and FSGA/HAAF Environmental Division met on site to conduct a coastal zone delineation at the location of the *Pave RV Lot* and *Construct Bathhouse* project, the result of which determined that all construction, as currently scoped, will remain well outside of the 25 foot buffer adjacent to the Coastal Zone and avoid all impacts to the coastal zone (Figure 17). This determination will be verified at each iteration of the project design and documentation maintained in the administrative record for this project by the NEPA and Wetland/CZMA programs.

During the planning and design phases for this and all projects in coastal zone areas, planners, designers, environmental personnel, and the user (FSGA/HAAF Directorate of Morale, Welfare, and Recreation) will take care to ensure all work remains outside of the 25-foot buffer, with additional delineations conducted as required to ensure this measure is maintained. Prior to construction, the FSGA/HAAF DPW Environmental Division will conduct an on-site visit to physically mark/flag the entirety of the 25-foot buffer. During the construction phase, the contractor conducting the work will be provided with all mapping and data regarding the coastal zone.

No direct impacts are anticipated as actions at this location would not include ground disturbing activities such as the construction proposed in the ADP for HAAF. Coastal zones are found only in the vicinity of Lott's Island Recreation Area on HAAF (Figures 14, 17) and potential impacts at this location are minimized through standard BMPs currently utilized by Installation personnel for these actions, to include adherence to site-specific policies, guidelines, and BMPs.

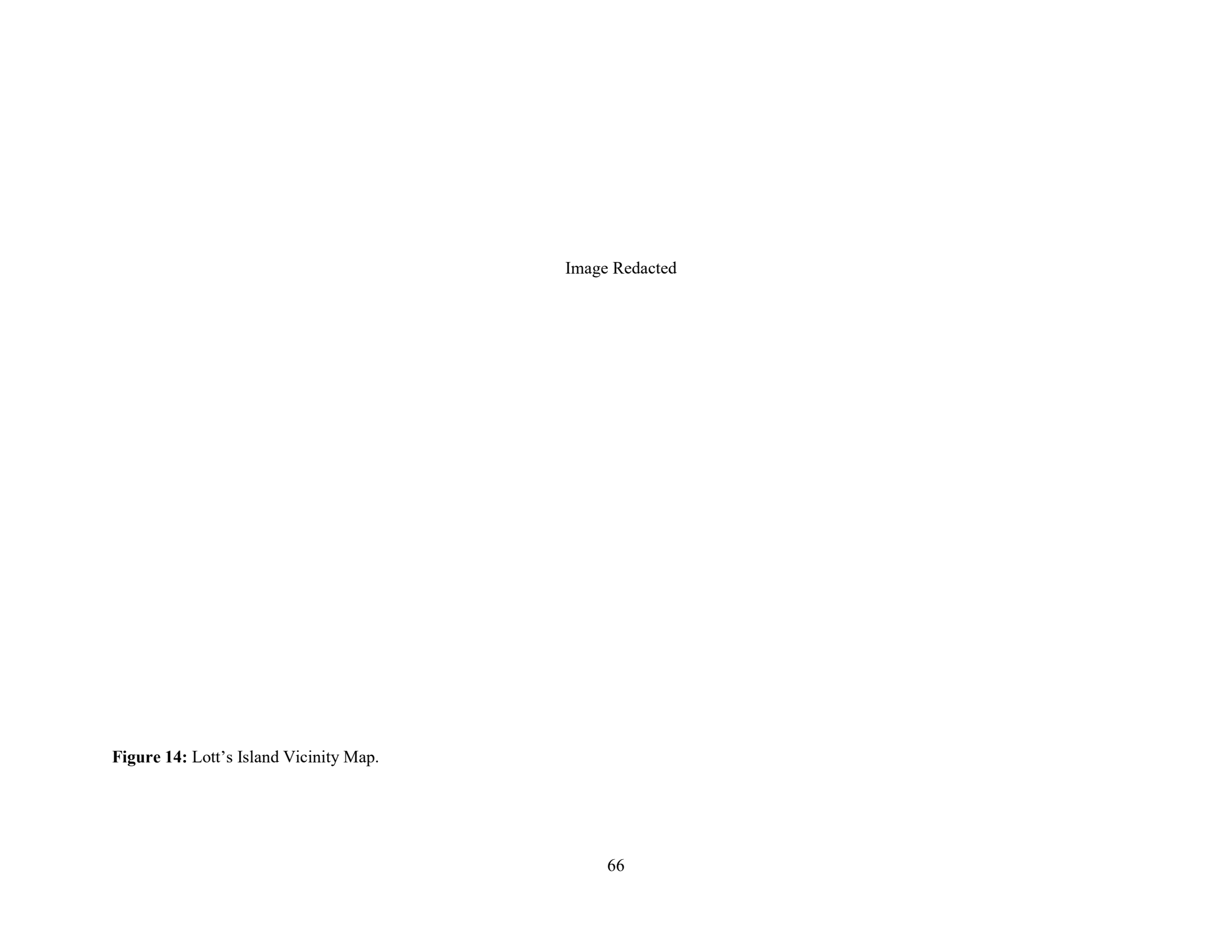

Figure 14: Lott's Island Vicinity Map.

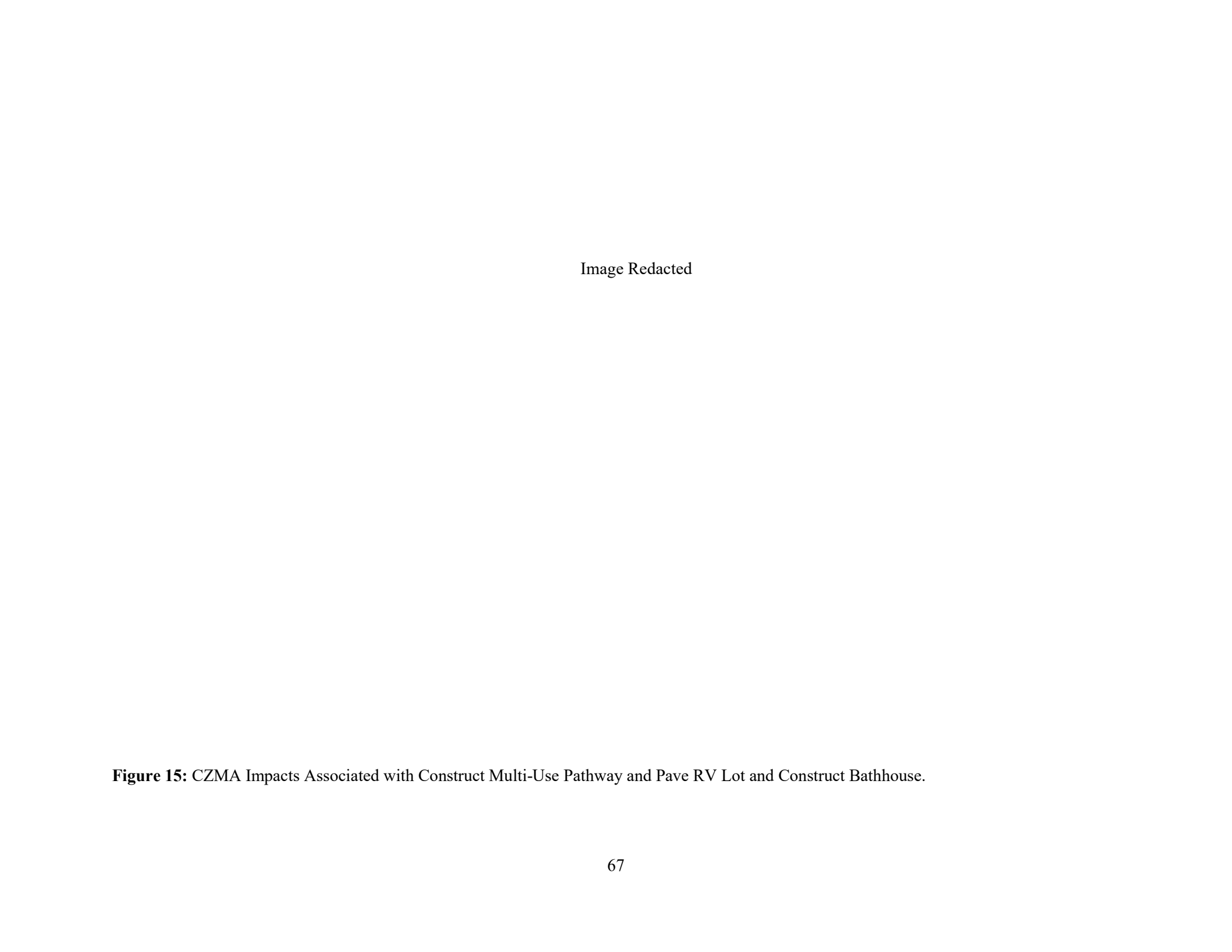

Figure 15: CZMA Impacts Associated with Construct Multi-Use Pathway and Pave RV Lot and Construct Bathhouse.

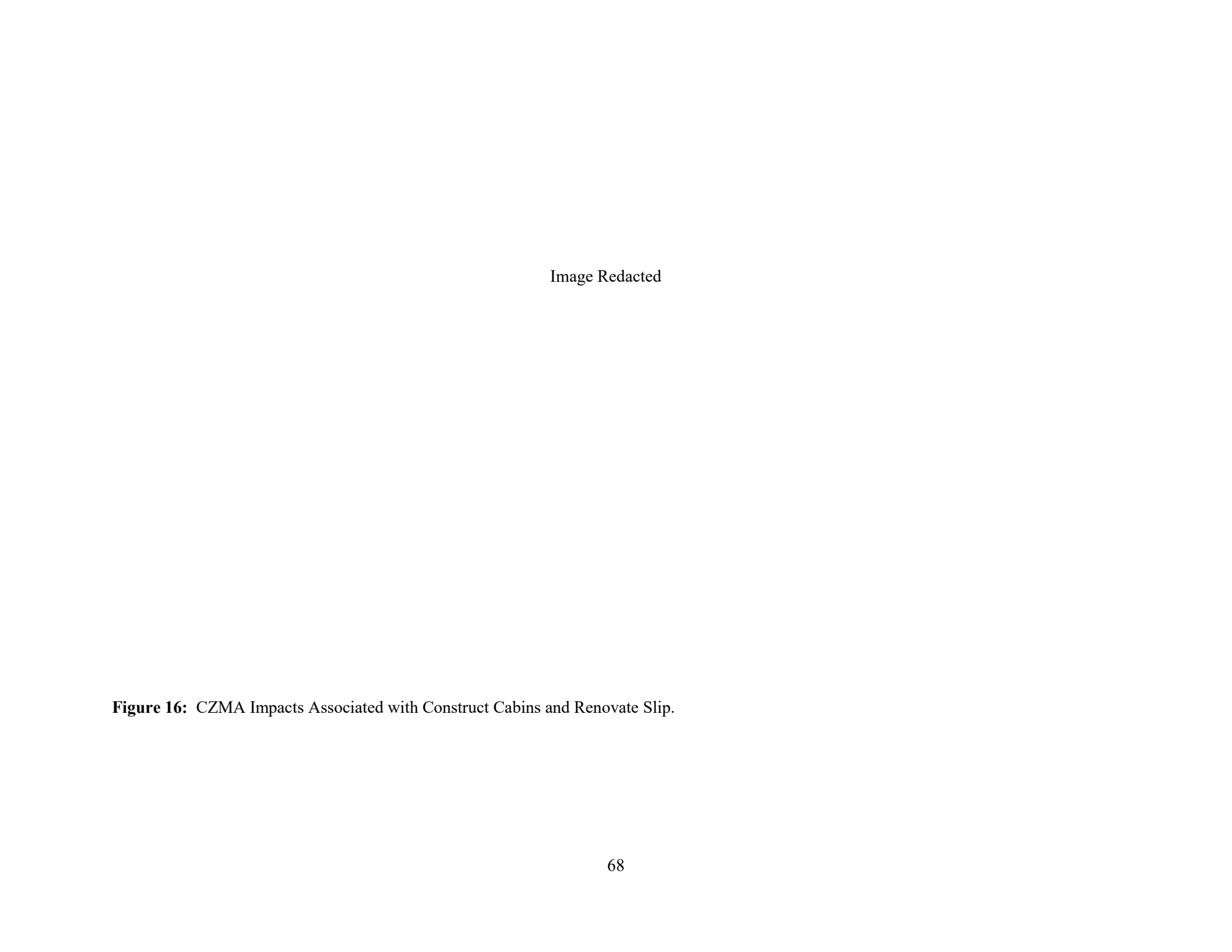

Figure 16: CZMA Impacts Associated with Construct Cabins and Renovate Slip.

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Figure 17: Coastal Zone and Wetlands Delineation at Lott's Island, HAAF.

Surface Waters. Long-term, direct, moderate adverse impacts are anticipated to surface waters, their streambanks, and their ability to convey water due to implementation of projects proposed under this alternative. Proposed actions will convert approximately 318 acres of vegetated/forested lands into developed areas and their associated impervious surfaces, ranging from timber harvest, site clearing/grading/stabilization, and construction, to include installation of new utility corridors, parking areas, and support/connector roads. Impacts may be minimized via adherence to site-specific erosion and sedimentation permits, the requirements therein, and federal, state, and local laws and regulations. Permitting and the establishment of site-specific erosion control BMPs will be implemented prior to land disturbance, including timber harvest BMPs, and must be in accordance with the GWQA and GA ESCA. The BMPs will be identified in advance on an ESPCP developed by the contractor or other responsible entity for the proposed action. These BMPs must be utilized at all times and will be inspected by the Army periodically for adequacy. All deficiencies require correction. The ESPCP will also include requirements identified in the *Manual for Erosion and Sedimentation Control for the State of Georgia*, the CSS, EISA Section 438, and local stormwater control requirements, and will be coordinated through the Installation DPW Environmental Division Stormwater POC, copies of which will be maintained at Appendix G, as applicable.

Permitting associated with state erosion and sedimentation control rules also requires fees in the amount of $80.00/disturbed acre and must be paid to the Georgia EPD. The project's executing agency (U.S. Army) or contractor will provide a copy of the fee submission to the Installation Environmental Office along with a prepared and initialed NOI for coverage under the State's National Pollutant Discharge Elimination System (NPDES) Permit. Land disturbance may not commence until 14 days from the date of certified mailing of the NOI packet to Georgia EPD. Construction activities are primarily maintained a minimum of 25 feet from all surface water sources, to include wetlands; however, if site clearing or other construction-related activities require intrusion into the buffer area, the Installation will apply for a SBV. This helps ensure that runoff rates post-construction will be commensurate with those identified pre-construction.

During construction, the State of Georgia requires an E&S certified individual be on the site during any land disturbance activity. The contractor is expected to comply with this requirement. In order for the Army to accept the project as complete, the site must be stabilized to prevent silts and sediments from leaving the construction site. The Installation must agree that the project site meets necessary site stabilization parameters as required by the State of Georgia prior to project acceptance by the Army. Implementation of permitting requirements may also be involved in renovation and demolition projects on Post, as well as the proposed road improvements projects. All projects that propose soil disturbance and are in the vicinity of surface water sources must adhere to these requirements for the protection of water resources and the avoidance of adverse impacts.

Negligible but direct adverse impacts are anticipated due to demolition and renovation actions on Post. Demolition and renovation, as identified on the ADP, has the potential to impact stormwater drainage canals running through the Installation; however, impacts may be minimized through adherence to Installation-wide BMPs utilized by Installation personnel, to include adherence to facility-specific policies, guidelines, and BMPs, such as maintaining a 25-foot buffer around all drainage-ways. Short-term, indirect, negligible adverse impacts are anticipated from routine operations, maintenance, and repairs (to include work on

existing roads, grounds, and utility corridors), and these actions may require work within or directly adjacent to a stream or drainage-way, such as clearing the flow of a culvert. Impacts associated with training actions on HAAF are also negligible in nature, to include small petroleum-oil-lubricant (POL) spills on the training lands and minor erosion on land navigation areas, and impacts are minimized and mitigated via the Installation's TAM process.

Floodplains. Long-term, direct, minor, adverse impacts to floodplains are anticipated under this alternative, primarily occurring in the western and southwestern portion of the Installation, where the majority of the floodplains on the Installation are concentrated. As currently sited, potential impacts to floodplains may result from implementation of *Construct Multi-Use Path Improvements, Enhance Land Navigation Course, Pave RV parking Lot and Construct Bathhouse, Construct Shops and Admin for DPW, Construct Live Fire Facility, Construct Cabins, Renovate Slip, Construct Rigging Facility, Construct Air Assault Building, Enhance Land Navigation Course, and Construct Driving Course,* (projects A, AA, AB, AD, AS, BF, BG, W, X, and Y, respectively, on ADP for HAAF; individual project figures at Appendix B). Floodplains associated with portions of project A, *Construct Multi-Use Pathway,* are located at several points along the exterior border of the Installation.

Impacts to floodplains are anticipated primarily from timber harvest, site clearing/grading/stabilization, and construction, to include installation of new utility corridors, parking areas, and support/connector roads, as well as demolition and renovation of existing structures/infrastructure. In accordance with EO 11988, all new construction is designed upfront to reduce the risk of flood loss and to minimize the impact of floods on human safety, health, and welfare. Design will emphasize drainage and stormwater management practices that minimize impacts to floodplains such as stormwater elevation potential and risk of damage to the surrounding infrastructure. The design engineer will be responsible for the preparation and documentation of technical support showing DoD/Section 438 and FSGA/HAAF Stormwater and Engineering Detention Basin policies are adhered to for runoff reduction, water quality, aquatic protection, and flood controls. Documentation will be coordinated through the FSGA/HAAF Environmental Division Floodplains POC, copies of which will be maintained at Appendix G, as applicable.

Floodway encroachment, including structures, fill placement, etc., is prohibited unless certification with supporting technical data is provided by a registered professional engineer demonstrating the encroachment will not result in any increase in flood elevations upstream or downstream. The professional design engineer registered in the State of Georgia will be required to document hydrological analysis when preparing the erosion and sedimentation pollution control plan and incorporate appropriate post construction stormwater BMPs, ensuring the State and Federal requirements are met for floodplain encroachments and flood controls, inclusive of the runoff reduction and water quality requirements.

Construction within the floodplain must be in accordance with the standards and criteria of the National Flood Insurance Program, including the application of accepted flood-proofing/flood protection measures, such as elevate structures were practicable. In addition, State of Georgia requirements must be met, such as elevating the structures at a minimum of one-to-three feet above the base flood elevation of the 100-year floodplain level, adequately anchoring the facility to prevent flotation, and collapse.

Potential impacts resulting from building within a floodplain may include the increased risk of flood damage, which can be mitigated through structural BMPs designed for floodplain construction and careful attention to low impact development (LID) and other engineered landscape hydrologic features. Potential impacts to floodplains are due to reducing the floodplain's capacity and can include the increased risk of flood damage to the surrounding landscape (including wetlands or other potentially sensitive habitat or human-occupied areas). Increasing disruption to floodplain, i.e. decreasing floodplain space, will increase flood heights elsewhere. This can be mitigated to some extent through landscape features that deal with larger stormwater events, such as placing dry detention basins, bio-retention cells and/or grassed channels near natural outfalls from the site. Such features are designed to detain stormwater and gradually release it to reduce potential of downstream flooding and erosion.

More short-term, negligible, indirect impacts to floodplains are anticipated from operations, maintenance, and repairs (to include work on existing roads, grounds, and utility corridors) occurring on HAAF. Impacts may result indirectly as runoff from work being performed as part of these routine activities; however, impacts may be minimized through Installation-wide E&S BMPs, as utilized by Installation personnel. Impacts associated with training actions on HAAF are negligible in nature and minimized via the Installation's ITAM/LRAM process, as discussed in Section 3.5.

Wetlands. Long-term, direct, moderate, adverse impacts to wetlands are anticipated under this alternative, primarily due to implementation of *Upgrade Intersection, Construct Air Assault Building, Enhance Land Navigation Course, Construct Shops and Admin for DPW, Construct MP Station, Renovate Slip, and Construct Fire and Police Station* (projects U, X, AA, AD, AJ, BG, and CB, respectively, on ADP for HAAF, Figure 18; individual project figures at Appendix A). Impacts are primarily associated with converting this acreage from forested lands into developed areas and their associated impervious surfaces, ranging from timber harvest, site clearing/grading/stabilization, and construction, to include installation of new utility corridors, parking areas, and support/connector roads. Wetlands are also present in association with portions of project A, *Construct Multi-Use Pathway,* which winds around the exterior border of the Installation. Collectively, this represents an impact to approximately 100 acres of the Installation's total 1,400 acres of wetlands, comprising approximately a 14% impact to delineated and NWI wetlands on Post.

Installation environmental and master planning team members avoid wetland impacts during the design process for *Construct Indoor Range* and *Pave RV Lot and Construct Bathhouse*, and will utilize the same processes to avoid and minimize potential impacts to wetlands for the remaining projects as well; record of all consultation and coordination will be maintained in the administrative record by the NEPA and Wetlands programs. Where wetlands cannot be completely avoided, the impacts to these sensitive resources will be minimized and the impacts remaining will be mitigated. All vegetation within the wetland areas and their buffers will be flagged prior to the start of any work to ensure the contractor clearly understands the physical demarcation limits and utilizes appropriate equipment and techniques for felling and removing vegetation. The grubbing, grading, and discharge of dredged or fill material into streams and wetlands requires prior coordination with/permitting through the USACE-Regulatory Branch (Wetlands). All permitting efforts will be coordinated by the Installation Environmental Division Wetlands POC, copies of which will be maintained in Appendix G, as applicable. Wetland impact minimization efforts will be documented during the proposed action design phase to assist with completion of the Individual Permit application.

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Figure 18: Projects Potentially Impacting Wetlands on HAAF.

The FSGA/HAAF Wetlands POC assists in the completion of all CWA Section 404 permitting requirements and will ensure all required approvals/permits have been obtained prior to the timber harvest contractor commencing any work for this action. FSGA/HAAF will submit a Preconstruction Notification (PCN) in accordance with Section 404 of the CWA to the Savannah District U.S. Army Corps of Engineers (USACE). Mid- and post-construction inspections will ensure all actions are proceeding in accordance with the terms and conditions of the PCN.

Removing vegetation in wetlands will be conducted using mats to stabilize mechanized equipment as they reach into the wetland for trees marked for removal. Removal by hand (i.e., chainsaw) will be necessary in areas where mechanized equipment mats cannot be utilized. Vegetation felled within wetlands may fall and remain in place where feasible (i.e., not causing the wetland to lose its aquatic function as determined through periodic inspections by the Installation environmental personnel). In cases where such impacts are occurring, vegetation will be removed with minimal disturbance.

If wetland impacts cannot be avoided, mitigation will consist of utilizing the Savannah District USACE-Regulatory Branch's standard operating procedure for calculating compensatory mitigation requirements. Wetland credits will be debited from the Installation's FSGA Pond 4 Mitigation Bank, as the aquatic resources are similar in function and there are sufficient credits available. The FSGA/HAAF Wetlands Program Manager is actively discussing the timing of the actions proposed under this alternative with the USACOE-Regulatory Branch (Wetlands) POC, to ensure the full programmatic nature of this action is in place.

More short-term, negligible impacts are anticipated as a result of demolition, and renovation activities on Post. Demolition and renovation actions occur on sites that are previously disturbed and for which wetlands are either not present or can be easily identified and its boundaries avoided, with potential impacts easily avoided during the duration of the project. Adherence to E&S BMP, as previously discussed, minimizes and/or prevents potential impacts to adjacent wetlands from runoff during the demolition/renovation action. At most, short-term, indirect, negligible impacts are anticipated from training on Post, as training is not permitted within wetlands and all trainees are briefed on avoidance of these resources prior to entering the field. Some indirect impacts may occur, however, due to runoff of materials associated with this training, to include POLs from vehicles utilized in the field, as well as sediments from Soldiers' vehicles when crossing surface water sources

Overall, this alternative is anticipated to result in short-term, indirect, minor adverse impacts to Groundwater; long-term, direct, minor adverse impacts to CZMA; long-term, direct, moderate adverse impacts to Surface Waters; long-term, direct, minor adverse impacts to Floodplains; and long-term, direct, moderate adverse impacts to Wetlands.

3.4.2.2.2 ALTERNATIVE II: IMPLEMENT 3/160TH SOAR INFILL

Groundwater. Short-term, indirect, minor adverse impacts to groundwater are anticipated under this alternative, for reasons discussed under Alternative I. Construction would not occur south of the existing flightline; however, this would not result in different impacts to groundwater resources in the Study Area and, accordingly, the potential impact to groundwater will be the same as Alternative I.

CZMA. Long-term, direct, minor, adverse impacts to Coastal Zone Management Areas are anticipated under this alternative. Construction would not occur south of the existing flightline; however, this would not result in different impacts to coastal zone resources as they are not located on this part of HAAF and are found only in the vicinity of Lott's Island on HAAF (Figures 15 and 18). Not developing the lands south of the flightline would therefore not increase or decrease the amount of coastal zone lands potentially impacted by the proposed action. All other impacts are the same as those discussed under Alternative I. The Installation will ensure that all work remains outside of the 25-foot buffer and potential impacts will be minimized through standard BMPs, to include adherence to site-specific policies, guidelines, and BMPs.

Surface Water Resources. Long-term, direct, minor, adverse impacts to surface waters are anticipated under this alternative. Impacts would occur primarily as discussed under Alternative I, but to a lesser degree as there would be no development of the lands south of the existing flightline. Instead, this facility construction will be shifted north to the existing cantonment area, as previously discussed. For the remaining projects proposed, impacts are as discussed under Alternative I. The Army will comply with EISA Section 438 and Georgia's CSS to maintain pre-development hydrology on a site-specific basis and will determine appropriate practices to protect the receiving environment. Compliance with required E&S measures, as well as project-specific permitting, will be required, to protect water resources from pollutant stresses.

Floodplains. Long-term, direct, minor adverse impacts to floodplains are anticipated under this alternative. Impacts would be slightly less than what is expected under Alternative I, as implementation of this alternative would avoid a branch of floodplain located just south of the existing flightline. The remaining impacts are the same as those discussed under Alternative I. For the projects proposed, the Army will comply with EO 11988, and new construction shall be designed to reduce the risk of flood loss and to minimize the impact of floods on human safety, health, and welfare. All other potential impacts, as well as minimization and mitigation, are the same as those discussed under Alternative I. As many of the proposed projects require situational/functional adjacency to one another, such as those associated with the 3rd CAB and 3/160th SOAR, resiting is not practicable. In addition, as discussed in Chapter 2.0, there is a finite amount of Buildable Land on HAAF and certain facilities are built only within certain Building Standards to avoid conflicts with adjacent land uses. Accordingly, this minimizes the availability of practicable siting alternatives on the Installation that are not within or adjacent to floodplains. However, Installation master planners and users work proactively during the siting phases of all projects to shift projects out of and/or away from floodplains, to the best of their ability.

Wetlands. Long-term, direct, minor adverse impacts to Wetlands on HAAF are anticipated under this alternative. Impacts would occur as discussed under Alternative I, but to a lesser degree as there would be no development of the lands south of the existing flightline. Instead, that facility construction would be shifted north to the existing cantonment area, where they will be accommodated through some renovation of their existing facilities and some new construction. This will result in no impacts to wetlands located south of the flightline. As discussed under Alternative I, all proposed projects in the ADP for HAAF will be designed and implemented to first avoid wetlands, and impact only where/when unavoidable. This will include ensuring the wetlands data layer is included on all drawings and the physical flagging of the buffer area on site prior to site clearing or construction.

Overall, this alternative is anticipated to result in short-term, indirect, minor adverse impacts to Groundwater; long-term, direct, minor adverse impacts to CZMA; long-term, direct, minor adverse impacts to Surface Waters; long-term, direct, minor adverse impacts to Floodplains; and long-term, direct, minor adverse impacts to Wetlands.

3.4.2.2.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Groundwater. Short-term, direct, minor impacts to groundwater are anticipated due to routine operations, repair and maintenance, and training on the Installation. None of the construction proposed under prior alternatives will occur, but routine activities do have the potential to result in runoff carrying sediments and chemicals trickling down and into groundwater resources. Adherence to Installation BMPs and standard operating protocols should minimize potential impacts and ensure they remain at a level of minor. . In addition, these routine activities

CZMA. Short-term, indirect, negligible, adverse impacts to coastal zones are anticipated as a result of routine operations, maintenance, and repair, to include renovation of its existing facilities. No direct impacts are anticipated as actions at this location would not include ground disturbing activities such as the construction proposed in the ADP for HAAF. Coastal zones are found only in the vicinity of Lott's Island Recreation Area on HAAF (Figure 18) and potential impacts at this location are minimized through standard BMPs currently utilized by Installation personnel for these actions, to include adherence to site-specific policies, guidelines, and BMPs. No training operations occur in the vicinity of the coastal zone on HAAF; accordingly, no impact from training activities is anticipated.

Surface Waters. Short-term, indirect, negligible adverse impacts are anticipated from routine operations, maintenance, and repairs (to include work on existing roads, grounds, and utility corridors). Although impacts are anticipated to be negligible, completion of routine operations, maintenance and repairs may occur directly adjacent to a stream or drainage-way, such as clearing the flow of a culvert, enabling sediments and/or contaminants to directly enter the water source or indirectly enter via runoff. Impacts associated with training actions on HAAF are also negligible in nature, to include small petroleum-oil-lubricant (POL) spills on the training lands and minor erosion on land navigation areas, and impacts are minimized and mitigated via the Installation's TAM process.

Floodplains. Short-term, indirect, negligible, impacts to floodplains are anticipated from operations, maintenance, and repairs (to include work on existing roads, grounds, and utility corridors) occurring on HAAF. Impacts may result indirectly as runoff from work being performed as part of these routine activities; however, impacts may be minimized through Installation-wide E&S BMPs, as utilized by Installation personnel. Impacts associated with training actions on HAAF are negligible in nature and minimized via the Installation's ITAM/LRAM process, as discussed in Section 3.5.

Wetlands. Short-term, direct, negligible impacts are anticipated as a result of demolition, and renovation activities on Post. Demolition and renovation actions, as part of routine operations, maintenance, and repairs (to include work on existing roads, grounds, and utility corridors), occur on sites that are previously disturbed and for which wetlands are either not present or can be easily identified and its boundaries avoided, with potential impacts easily avoided during the duration of these routine activities. Adherence to E&S BMP, as previously discussed, minimizes and/or prevents potential impacts to adjacent wetlands from

runoff during the demolition/renovation action. At most, short-term, indirect, negligible impacts are anticipated from training on Post, as training is not permitted within wetlands and all trainees are briefed on avoidance of these resources prior to entering the field. Some indirect impacts may occur, however, due to runoff of materials associated with this training, to include POLs from vehicles utilized in the field, as well as sediments from Soldiers' vehicles when crossing surface water sources.

Overall, this alternative is anticipated to result in short-term, direct, negligible adverse impacts to Groundwater; short-term, indirect, negligible adverse impacts to CZMA; short-term, indirect, negligible adverse impacts to Surface Waters; short-term, indirect, negligible adverse impacts to Floodplains; and short-term, direct, negligible adverse impacts to Wetlands.

3.4.2.3 CUMULATIVE IMPACTS

The ROI for Water Quality and Resources lies within the boundaries of HAAF and directly adjacent, as the streams and wetlands extend beyond the Installation's boundaries and onto adjacent lands, most noticeably to the west and southwest of the Installation where the saltwater marsh figures so prominently in the landscape (Figure 13). Past, present, and reasonably foreseeable future actions with the potential to result in cumulative impacts to Water Quality and Resources are discussed in the section below.

3.4.2.3.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Past actions in the ROI include the development of the City of Savannah and HAAF, as well as their associated infrastructure and transportation network. This included periodic iterations of timber harvest, development, routine operations, maintenance and repair, and implementation of the military mission on HAAF. The residential, commercial, and industrial activities associated with Savannah cradle HAAF to its northern, western, and southeastern boundaries, although some residential development also occurs along its southwestern boundary along the edges of the large marsh system it shares with the Installation. These past actions impacted the topography and hydrology of the region over time, but efforts have been implemented to maintain the vital functions these systems serve for flood control and maintaining water quality standards, thereby minimizing adverse cumulative impacts to surface waters and floodplains.

Present actions in the ROI consist of the same routine operations, repair and maintenance, and training on HAAF, as well as on adjacent City of Savannah lands. Specific recent projects of note include the Vegetative Obstruction Removal on HAAF, which removed around 15 acres of vegetation that impeded line of sight for aircraft taking off and landing at the airfield on Post. The site-specific ESPC Plan, including BMPs, ensured that implementation of this action resulted in no more than minor adverse cumulative impacts to water quality and resources in the ROI.

As shown on Table 3, Future Actions in the ROI, the Installation anticipates the implementation of the HAAF Stormwater Drainage System Improvements and Apron and Taxiway Reconstruction. Due to their operational adjacency, these repairs will occur concurrently, and FSGA/HAAF Master Planners will work with Airfield POCs to phase these actions in a manner that optimizes functionality of operations on the airfield. These actions are anticipated to result in minor beneficial cumulative impacts to water resources, as they will greatly improve the drainage environment on the airfield proper. They will not add to the amount of impermeable surfaces at this location, but will replace existing damaged or non-standard

pavement with new. The Savannah River Harbor Expansion Project also has the potential for adverse cumulative impacts to water quality on HAAF. Although this action will not directly impact water resources on HAAF, the Savannah River and Little Ogeechee River share tributaries in the southwestern portion of the Installation, specifically where the saltwater marsh/wetlands are located, and there is a potential for sediments dredged up from the river widening to reach this portion of the Installation. The Installation has an existing water quality testing regime in place and will continue to monitor the project's established website associated to determine what steps to take should turbidity become an issue of concern at this portion of the Installation.
Overall, these actions are anticipated to result in moderate adverse cumulative impacts to Water Quality and Resources under this alternative.

3.4.2.3.2 ALTERNATIVE II: IMPLEMENT 3/160TH SOAR INFILL

Under this alternative, past, present, and future actions within the ROI are primarily as discussed under Alternative I; however, under this alternative, there will be no development on the lands south of the flightline, resulting in 50-75 acres less ground disturbance and less potential impacts to Water Quality and Resources. Future actions may still occur, as discussed under Alternative I, to include ongoing routine operations on HAAF, ongoing commercial and residential development in the City of Savannah, as well as the HAAF Stormwater Drainage System Improvements, Apron and Taxiway Reconstruction, and Savannah River Harbor Expansion, and their associated potential impacts, as discussed under Alternative I. Overall, these actions are anticipated to result in minor adverse cumulative impacts to Water Quality and Resources under this alternative, as less lands will be impacted overall under this alternative.

3.4.2.3.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Past and present actions within the ROI are as discussed under Alternative I; however, under this alternative, none of the projects proposed in the ADP for HAAF will be implemented, and none of their associated potential impacts will be felt within the ROI. The remaining proposed future actions may still occur, to include ongoing routine operations on HAAF, ongoing commercial and residential development in the City of Savannah, and the proposed future projects discussed under Alternative I. Overall, this is anticipated to result in minor adverse cumulative impacts to Water Quality and Resources, as there will be much less ground disturbance, to include less tree clearance, site preparation, construction, demolition, and other actions associated with Alternatives I and II. Some potential adverse cumulative impacts may still occur, however, as a result of routine operations, repairs and maintenance, and implementation of the military mission, as well as ongoing activities off-Post.

3.4.3 AIR QUALITY

3.4.3.1 AFFECTED ENVIRONMENT

HAAF is located within the Savannah-Beaufort Air Quality Control Region and has an EPA rating of III, which is the Highest Air Quality level. Air quality in a given location is described by the concentration of various pollutants in the atmosphere. A region's air quality is influenced by many factors including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin in which

it is located, and its prevailing meteorological conditions. The significance of the pollutant concentration is determined by comparing it to those of the Federal and state ambient air quality standards.

National Ambient Air Quality Standards (NAAQS). The Clean Air Act (CAA) and its subsequent amendments (CAAA) established the NAAQS for six "criteria" pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns (PM_{10}), and lead (Pb). These standards represent the maximum allowable atmospheric concentrations that may occur while ensuring protection of public health and welfare, within a reasonable margin of safety. Short-term standards (1-, 8-, and 24-hour periods) are established for pollutants contributing to acute health effects, while long-term standards (quarterly and annual averages) are established for pollutants contributing to chronic health effects.

The CAA requires each state to develop a State Implementation Plan (SIP) that serves as its primary mechanism for ensuring that the NAAQS are achieved and maintained within that state. According to plans outlined in the SIP, designated state and local agencies implement regulations to control sources of criteria pollutants. The CAA provides that federal actions in non-attainment and maintenance areas do not hinder future attainment with the NAAQS and conform to the applicable SIP. The GA EPD adopted the NAAQS as the standards for the state of Georgia, and HAAF's air quality has proven consistently better than the NAAQS.

Prevention of Significant Deterioration (PSD). The CAA also establishes a national goal of preventing degradation or impairment in any federally-designated Class I area. As part of the PSD program, mandatory Class I status was assigned by Congress to all national parks, national wilderness areas, memorial parks greater than 5,000 acres and national parks greater than 6,000 acres. In Class I areas, visibility impairment is defined as a reduction in visual range and atmospheric discoloration. Stationary sources, such as industrial complexes, are typically an issue for visibility within a Class I PSD area. For new sources that may impair visibility or degrade air quality, applicants may be required to analyze potential impacts to Class I areas within 100 kilometers (62 miles) of the source; however, there are no PSD Class 1 areas or protected vistas within a 100-kilometer (standard review distance) radius of HAAF, with the closest being Cape Romaine Wilderness, South Carolina (85 miles away) and Okefenokee Wilderness, Georgia (110 miles away); accordingly, Class I requirements do not apply to HAAF and this will not be discussed further in this PEA.

CAA Title V Permitting. HAAF operates under the parameters of its Clean Air Act Title V Air Quality Permit (Permit Number 9711-051-0149-V-01-0 to 9711-051-0149-V-04-0) and is classified as an area source of hazardous air pollutants (HAPs) under PSD regulations (40 CFR 52.21) due to potential emissions of NO_x and SO_x. Stationary emission sources at HAAF include boilers for comfort heating, organic liquid storage tanks, vehicle fueling stations, solvent usage, surface coating operations, stack releases from the Central Energy Plant, wastewater treatment, and other miscellaneous general process operations. The NOx emissions are generated entirely from stationary sources and total more than 176 tons per year (tpy). . SOx emissions are generated from these same stationary sources and total approximately 5.6 tpy. As these potential emission rates total more than 100 tpy, HAAF is classified as a major source for criteria pollutants. HAAF assesses all new emission units installed and demolished on HAAF to determine if these actions require a modification to the Title V permit. Mobile source emissions at HAAF include aircraft operations, military vehicle engines, and weapons firing during military exercises; however, at this time, GA EPD does not

regulate the mobile sources at HAAF. Instead, data regarding these sources is tracked and maintained in records by the FSGA/HAAF Air Quality Program Manager.

Greenhouse Gas Emissions. Greenhouse gases (GHGs) are chemical compounds in the Earth's atmosphere that allow incoming short-wave solar radiation but absorb long-wave infrared radiation re-emitted from the Earth's surface, trapping heat in the atmosphere. Most studies indicate that the Earth's climate has warmed over the past century due to increased emissions of GHGs, and that human activities affecting emissions to the atmosphere are likely an important contributing factor. A warmer climate is expected to increase the risk of heat-related illnesses and death, worsen conditions for air quality, allow some diseases to spread more easily, and increase the frequency and strength of extreme events (such as floods, droughts, and storms) that threaten human health and safety.

Gases exhibiting greenhouse properties come from both natural and human sources. Water vapor, carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O) are examples of GHGs that have both natural and manmade sources, while other GHGs such as chlorofluorocarbons are exclusively manmade. In the U.S., most GHG emissions are attributed to energy use. Such emissions result from combustion of fossil fuels used for electricity generation, transportation, industry, heating, and other needs. Reduction goal requirements applicable to federal agencies are set forth in EO 13845, Efficient Federal Operations (May 17, 2018). The principal GHGs that enter the atmosphere due to human activities are:

- **Carbon Dioxide (CO_2):** CO_2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees, and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). CO_2 is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH_4):** Methane is emitted during the production, transport, and combustion of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide (N_2O):** Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- **Fluorinated Gases:** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone (O_3)-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as High Global Warming Potential gases.

Scientists have concluded that human activities are changing the composition of the atmosphere, and that increasing the concentration of greenhouse gases will change the planet's climate. There is uncertainty as to how much it will change, and at what rate it will change. FSGA/HAAF manages its forested acreage through a combination of regeneration, fire, insect, disease, and invasive species management, all of which are important for retaining carbon in the forested landscape.

3.4.3.2 ENVIRONMENTAL CONSEQUENCES

Overall impacts to Air Quality anticipated as a result of implementing the proposed action are discussed in this section. As each project in the ADP for HAAF enters the design phase, supplemental NEPA analysis

will occur and will be documented via a REC (if it falls within the scope of this PEA) or an EA (if it beyond the scope of this PEA), as necessary.

3.4.3.2.1 ALTERNATIVE I: IMPLEMENT ILLUSTRIATIVE PLAN

Overall, short-term, direct, minor, adverse impacts are anticipated to Air Quality under Alternative I, most of which is associated with timber harvest, site clearing/grading/stabilization, and construction (to include installation of new utility corridors, parking areas, and support/connector roads), and demolition. Implementation of these activities will result in the discharge of airborne particulates/fugitive dust. Implementation of standard air quality and Installation BMPs during all ground-disturbing activities can be implemented to minimize the potential for adverse impacts resulting from airborne particulates and fugitive dust, as well as the GHGs associated with the operation of the equipment utilized during the site clearing construction processes. Short-term, indirect, negligible, adverse impacts are anticipated from renovation activities, as these tend to be more focused around interiors of buildings and less on exteriors where adverse impacts to Air Quality would be experienced.

Minimization measures and BMPs to lower dust emissions include watering of exposed surfaces and covering of areas with exposed soils. Dust resulting from construction and maintenance traffic can also be minimized by limiting speed limits on unimproved roads, as well as by limiting vehicular access on these surfaces and/or times of usage on these unimproved vehicular networks. When there are periods of high wind during excavation and grading, temporary suspension of those activities would also reduce the volume of fugitive dust they emit. These minimization efforts will assist the Installation in ensuring it does not fall out of attainment status, and all such actions will be tracked by the Installation Air Quality Manager, none of which are anticipated to result in a non-attainment status.

Each action proposed in the ADP for HAAF will undergo individual project-level review (from concept through each iteration of design) and the Installation Air Program Manager will determine which project-specific requirements apply, to include required data tracking and associated air permitting, as/if applicable. This process will continue as each project is developed, with guidance provided at each stage of its development. Construction-related impacts to air quality are expected to be relatively minor, with impacts reduced through environmental protection measures, some of which may be required by construction permits, and include dust control measures (as previously discussed), emissions control devices, and vehicle maintenance. The nature and magnitude of these effects would vary by the project location and size. It is possible that air quality in the Study Area might actually improve, as older generators, HVAC systems, and chillers are replaced with more modern systems, specifically during the proposed renovation of facilities and the demolition of older buildings that are replaced with new facilities.

The actions proposed in the ADP for HAAF will contribute greenhouse gases to the earth's atmosphere by removing trees, which would otherwise absorb carbon dioxide. It is estimated that approximately 318 acres of round disturbance and approximately 110 acres of timber harvest may occur, resulting in an approximate 12% reduction of the Installation’s current forested acreage. Following each project involving vegetation clearance, permanent grasses will be established, and the Installation will continue managing its overall forested acreage in a manner that will compensate for the associated loss of trees that would otherwise

absorb carbon dioxide in this area. This will result in less carbon sequestration, and actions associated with the ADP are not anticipated to result in net increases in GHGs in this portion of the Study Area.

Short-term, negligible, direct adverse impacts are anticipated from routine operations, repairs and maintenance, as these typically do not involve substantial amounts of ground disturbance or chemical usage, neither of which would potentially impact Air Quality in the Study Area. In addition, these actions are implemented by users on Post who are familiarized with Installation policies and procedures, as well as state and federal law, prior to taking any action, thereby minimizing the potential for incidents and associated adverse impacts. Short-term, direct, negligible adverse impacts are anticipated as a result of training activities on Post. As with construction, units are instructed regarding minimization measures and BMPs prior to entering the field, to include limiting speed limits on unimproved roads, limiting vehicular access on these surfaces and/or times of usage on these unimproved vehicular networks. Implementation of the ITAM program on Post also aids in the minimization of adverse impacts. Overall, short-term, direct, minor, adverse impacts are anticipated to Air Quality under this alternative.

3.4.3.2.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Overall, short-term, direct, minor, adverse impacts are anticipated to Air Quality under this alternative. The lands south of the flightline will not be developed under Alternative II, resulting in approximately 25 acres less ground disturbance and timber harvest in that portion of the Installation. From an Air Quality perspective, this is not anticipated to result in a substantial difference in potential impacts, as the site disturbance associated with these projects will merely shift from south of the flightline to its north, within the cantonment area. The reduction in vegetation removal will be beneficial in the Study Area, as the remaining trees will continue their function in absorbing carbon dioxide in the environment. As discussed under Alternative I, this may result in less carbon sequestration. All other actions and impacts are as discussed under Alternative I. Overall, short-term, direct, minor, adverse impacts to Air Quality are anticipated under this alternative.

3.4.3.2.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Short-term, direct, negligible, adverse impacts are anticipated under Alternative III, all associated with routine operations, repairs and maintenance, and training. Typically, these activities do not involve substantial amounts of ground disturbance or chemical usage, neither of which would potentially impact Air Quality in the Study Area. In addition, these actions are implemented by users on Post who are familiarized with Installation policies and procedures, as well as state and federal law, prior to taking any action, thereby minimizing the potential for incidents and associated adverse impacts. Short-term, direct, negligible adverse impacts are anticipated as a result of training activities on Post. As with construction, units are instructed regarding minimization measures and BMPs prior to entering the field, to include limiting speed limits on unimproved roads, limiting vehicular access on these surfaces and/or times of usage on these unimproved vehicular networks. Implementation of the ITAM program on Post also aids in the minimization of adverse impacts. Overall, short-term, direct, negligible, adverse impacts to Air Quality are anticipated under this alternative.

3.4.3.3 CUMULATIVE IMPACTS

The ROI for Air Quality is the portion of the Savannah-Beaufort Air Quality Control Region that encompasses HAAF and the City of Savannah. Past, present, and reasonably foreseeable future events with the potential to result in cumulative impacts to Air Quality are discussed in the analysis below.

3.4.3.3.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Past and present actions in the ROI consist of the historical development of the City of Savannah, the airfield proper, and HAAF, as well the associated infrastructure and transportation network that supports them. This included periodic iterations of timber harvest, site clearing/grading/stabilization, and construction, which contributed to opacity and GHG emissions from both the ground disturbance associated with constructing facilities but also the eventual emissions associated with some of the industrial-level operations, vehicles, and other sources that accompanied this development. This was followed by periods of routine operations, maintenance and repair, as well as military training activity on HAAF. Although it is hard to quantify, it is anticipated that these past actions within the ROI contributed to minor adverse cumulative impacts to Air Quality in the ROI.

Present actions in the ROI consist of routine operations, repair and maintenance, and training on HAAF, as well as the ongoing commercial and residential development on adjacent City of Savannah lands. On HAAF, this includes ongoing military operations, support-related construction, maintenance of transportation support networks (roads, bridges, and railroads) and support of associated infrastructure actions (stormwater drainage systems, utilities). Impacts from present actions are negligible, as they are typically enacted by those who are familiarized with Installation policies and procedures, as well as state and federal law, and conducted in compliance with Installation permits, thereby minimizing the potential for incidents and associated adverse impacts.

Future actions in the ROI include the continuation of routine operations, repair and maintenance, and training on HAAF, and the ongoing commercial and residential development of adjacent City of Savannah lands. Future actions on the Installation have the potential for adverse cumulative impacts to Air Quality, most notably the construction of the new Flight Simulator on HAAF and Project DeRenne, adjacent (Table 3, Future Actions in the ROI), as they will require ground disturbance, and accordingly have the potential to contribute to minor adverse impacts to Air Quality in the ROI. As with all Installation actions, site-specific permits, BMPs and minimization measures will be enacted to ensure impacts are minimized. Overall, this alternative would result in minor adverse cumulative impacts to Air Quality.

3.4.3.3.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Under this alternative, past and present actions within the ROI are as discussed under Alternative I. Future actions in the ROI are primarily as discussed under Alternative I; however, under this alternative, the new taxiway and other identified facilities would not be constructed south of the existing flightline, but would instead shift north into the existing cantonment area. This shift in location would not result in a substantial difference to Air Quality, but the decision not to construct the new taxiway may result in a minor reduction in air impacts/associated emissions. Overall, this alternative would result in minor adverse cumulative impacts to Air Quality.

3.4.3.3.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Past and present actions within the ROI are as discussed under Alternative I, for both Installation and City of Savannah lands. However, under this alternative, the Installation would not implement the ADP for HAAF and there would be far less ground disturbance and potential emissions associated with construction, demolition, renovation, and other actions identified in that ADP. Future actions in the ROI may still be implemented and would be as discussed under Alternative I. Overall, from a cumulative impacts perspective, therefore, this alternative would result in negligible adverse cumulative impacts to Air Quality.

3.4.4 CULTURAL RESOURCES

3.4.4.1 AFFECTED ENVIRONMENT

Note: unless otherwise indicated, information in this section is taken from the FSGA/HAAF Integrated Cultural Resources Management Plan (ICRMP) (FSGA/HAAF, 2014).

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources are divided into three major categories: archaeological resources (prehistoric and historic), architectural resources, and areas of Tribal interest. Historic districts may fall within all three of the categories, depending upon what they contain. Studies and surveys completed on HAAF identified no areas of Tribal interest (i.e., Sacred Sites, Traditional Cultural Properties and/or items with Native American Graves Protection and Repatriation Act-related concerns) or areas of paleontological concern; accordingly, these cultural resources are not discussed further in this PEA, and only potential impacts to architectural and non-Tribal archaeological resources are discussed below. *Note: due to site sensitivity, minimal figures are provided in this section of the PEA.*

The FSGA/HAAF ICRMP incorporates federal and Army cultural resources laws and regulations into an internal document outlining how Fort Stewart manages its cultural resources. Utilizing this guidance, the Installation and the GA State Historic Preservation Office (SHPO) developed a Programmatic Agreement (PA) that provides the Installation with a flexible tool to manage its cultural resources, meeting the requirements of cultural resource review of undertakings with no effect or no adverse effect without waiting for the standard 30-day response from the SHPO on each Installation action. In short, the PA is the cultural resource program's regulatory backbone, guiding and streamlining the program's compliance with the National Historic Preservation Act (NHPA), while providing a timely, effective method of managing the Installation's cultural resources.

Under the NHPA, as amended, only historic properties warrant consideration of impacts from a proposed action and any associated proposed mitigation, and are defined by the NHPA as any districts, sites, buildings, structures, or objects included on or eligible for inclusion on the National Register of Historic Places (NRHP). Historic properties include traditional cultural properties and are associated with important national events or are "exceptionally significant" in another way. To be considered significant, archaeological or architectural resources must meet one or more specific NHPA criteria, which include: association with events that have made a significant contribution to the broad patterns of history; association with the lives of persons significant to our past; embody a distinctive characteristic of a type, period, or

method of construction; or that have yielded or may be likely to yield information important to history or prehistory.

In addition to consideration of impacts to historic properties in accordance with the NHPA, other cultural resource considerations are also taken into account in accordance with NEPA. These include, but are not limited to: impacts to Sacred Sites (i.e. properties or landscapes deemed sacred to the expression of religion by Native American Tribes); impacts to Native American burials and associated cultural items in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA); impacts to archaeological resources that are at least 100 years old and are of archaeological interest in accordance with the Archaeological Resources Protection Act (ARPA); and historical, scientific, or paleontological resources in accordance with the Archaeological and Historic Preservation Act (AHPA) and Archeological Data Preservation Act (ADPA).

HAAF encompasses 5,400 acres, of which approximately 1,600 have been excluded from survey by the PA due to either previous disturbance or the danger of surveyors encountering UXO (typically, range and training lands). As of 2011, 100% of the Installation has been either surveyed or is exempt from archaeological surveys. When the military acquired HAAF, it also took responsibility for cemeteries that had been previously established on the properties. The Army, subject to available resources, is dedicated to the preservation of the cemeteries on its lands, and there are six known and located cemeteries on HAAF. These six cemeteries include three that are actively managed (McNish, Belmont, and Wayne-Scottland) and three cemetery locations that have been relocated (to Belmont Cemetery) for protection against development on Post. Lincoln Memorial Cemetery, is a privately owned and operated cemetery completely surrounded by the HAAF boundaries and is not considered part of the official cemetery inventory. Regardless of NRHP-eligibility, all cemeteries on Post are managed and monitored as if they were potentially eligible archeological sites. A report of the year's cemetery monitoring program is submitted within the Installation's Cultural Resources Annual Report sent to the GA SHPO and Tribes each year. Over the course of each fiscal year, Cultural Resources Management (CRM) personnel program for monitoring of at least twelve randomly chosen cemeteries to inspect for vandalism, or general disturbance, in addition to conducting sign and paint maintenance at these sites. By doing so, all cemeteries on the Installation are typically inspected on a five-year cycle.

The first historic building and structure surveys at HAAF were limited and were more often than not lesser adjuncts of archeological investigations. In order to assess the precise extent of the Installation's historic structures, from 2001 to 2004 the Installation researched and wrote historic contexts and conducted comprehensive building surveys of Fort Stewart and HAAF with an emphasis on Cold War significance. Thus all buildings on Fort Stewart and HAAF constructed prior to 1990 have been surveyed for NRHP-eligibility. HAAF has historic structures dating back to the pre-military era and the World War II build-up on Post; however, the majority of the Installation's buildings post-date World War II and date from the Cold War era (1946-1990). Most of HAAF's NRHP-eligible historic structures are located within the cantonment area, and there are a total of 237 NRHP-eligible buildings at HAAF. The majority of these buildings have been previously mitigated by the Capehart-Wherry Program Comment[5] implemented in 2002 and 2007. On May 31, 2002, the Advisory Council on Historic Preservation (ACHP) approved a Program Comment that facilitates the Army's compliance with the NHPA with regard to its management of its inventory of Capehart and Wherry Era family housing, associated structures, and landscape features, all of which were constructed during 1949-1962. The Army formally requested, and was granted, the

manage these resources on a programmatic level in lieu of requiring separate reviews under sections 800.4 through 800.6 of the section 106 regulations for each individual undertaking. The Army identified the category of undertakings as maintenance and repair, rehabilitation, layaway and mothballing, renovation, demolition, demolition and replacement, and transfer, sale or lease out of Federal control. All remaining NRHP-eligible buildings on HAAF were mitigated for all NHPA Section 106 concerns by various MOAs between the Installation and the GA SHPO (Figure 19).

Image Redacted

Figure 19: National Register of Historic Places Buildings and Districts on HAAF (FSGA/HAAF, 2014).

There are 27 unmitigated NRHP-eligible buildings on HAAF, Buildings 711 and 721 (a World War II water tower complex), Building 1287 (Cold War-era Admin), and Buildings 8602-8609, 8611-8621, 8623, 8627, 8629, 8631, and 8632 (Cold War-era ASP support facilities). Facilities 711 and 721 are individually eligible, as part of the Air Corps' initial development of HAAF just before World War II, and are fine local examples of an early twentieth century water tower built for the military, and also as a distinctive feature of the HAAF landscape. Buildings 8602-8609, 8611-8621, 8623, 8627, 8629, 8631, and 8632 are not individually eligible but are part of a larger SAC Operations Historic District, directly related to early Cold War nuclear and thermonuclear deterrence strategy, and hence NRHP-eligible. In addition, Building 1287 has also been recommended eligible for the NRHP.

All lands that are non-cantonment are divided into either range or maneuver areas in the ICRMP, which total approximately 2,600 acres on HAAF. Generally, there are no cultural resource concerns on range and maneuver lands, as continued weapons-firing has rendered these areas too dangerous to survey for subsurface cultural resources and therefore are in almost all cases ineligible for the NRHP due to the lack of the site's potential to provide data in a safe manner. In addition to military training, routine on-Post activities involve range maintenance, road maintenance, low water crossing maintenance, fish and wildlife activities, forestry activities, and new construction of roads and other facilities supporting the overall military mission can adversely impact cultural resources. Adverse impacts to cultural resources occurring in Maneuver Areas may include maneuver damage from tracked or wheeled vehicles and vandalism or looting of archaeological sites, historic buildings, or cemeteries. These impacts create challenges in the management of cultural resources on the Installation, although these may be met through proper planning and coordination between the Installation's Divisions and Directorates.

As part of the ICRMP, CRM manages its day-to-day operations and long-term planning through the development of individual Cultural Resource Action Plans. These plans are revised and updated on a five-year cycle in a manner consistent with the Installation's ICRMP and INRMP. Each plan outlines the current survey status, location and nature of cultural resources, and the activities that remain to be carried out by CRM staff within each area assessed.

3.4.4.2 ENVIRONMENTAL CONSEQUENCES

Overall impacts to Cultural Resources anticipated as a result of implementing the proposed action are discussed in this section. As each project in the ADP for HAAF enters the design phase, supplemental NEPA analysis will occur and will be documented via a REC (if it falls within the scope of this PEA) or an EA (if it beyond the scope of this PEA), as necessary.

3.4.4.2.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Long-term, direct, minor-to-moderate, adverse impacts anticipated to cultural resources as a result of implementing this alternative. There is a potential for the individual demolition and/or renovation projects proposed under this alternative to impact existing buildings/structures on HAAF. The FSGA/HAAF CRM will consult with the GA SHPO to ensure all NHPA/other requirements are complete prior to implementing any action proposed in the HAAF ADP. The results of all consultation are considered during the development of the proposed action, to include development of the alternatives, analysis of the potential impacts, and implementation of the proposed action, to include minimization and mitigation measures. New

construction proposed may also impact existing buildings on HAAF, with regards to demolition of buildings/structures within the footprint of new construction, in addition to potentially impacting the viewshed of eligible/potentially eligible buildings and/or eligible/potentially eligible viewsheds on HAAF. For all projects, CRM will review each iteration of design, ensuring potential impacts are anticipated early and ensuring there is ample time to conduct required actions, to include additional surveys, consultation, and, if required, mitigation. Through this process, CRM will ensure eligible and potentially eligible buildings are not damaged or demolished prior to implementation of the proper NHPA Section 106 procedures, minimizing the potential for adverse impacts beyond minor-to-moderate impacts.

Per the terms of the Installation's PA with the GA SHPO, ground disturbance within the cantonment area qualifies for a categorical exclusion for archaeological resources, as the cantonment is viewed as a previously disturbed area. However, all archaeological sites are protected from unauthorized disturbance, in accordance with ARPA. Accordingly, with the exception of an accidental/inadvertent archeological discovery, no impacts to archaeological resources that are eligible for listing on the NRHP are anticipated within the cantonment area at HAAF.

If protection cannot be afforded because of mission essential requirements, such as those associated with training on range and training lands, then other treatments are devised to mitigate potential adverse impacts. Depending on the frequency of an area's use, physical barriers may be installed around a resource, such as fencing around on-Post cemeteries and painting physical boundaries on trees forming the boundary of protected sites. Not all sites are marked due to the potential for intentional looting, and Post personnel determine where high risk exists based upon Installation activities and/or other mission requirements. CRM coordinates with other on-post Divisions and Directorates in protecting eligible sites through reviewing Installation plans and work orders, reviewing Installation training activities**,** and instructing unit Environmental Compliance Officers on identifying and avoiding these sites.

In support of ARPA, CRM implements a monitoring program for its eligible/potentially eligible archeological sites. Reports of site damage are submitted to the Installation's Law Enforcement Division, DPW Environmental Division, and the GA SHPO. A report of the monitoring program is submitted within the Annual Report sent to the GA SHPO and Tribes. When an archaeological site or historic property protected under NHPA, ARPA, NAGPRA or other applicable federal or state regulations has been disturbed or damaged as a result of noncompliance with the Post environmental review process, CRM follows procedures outlined in the ICRMP. For example, if potential historic properties/resources are encountered during projects on HAAF, all work stops and the Installation CRM POC is contacted to ensure these resources are protected while decisions are made regarding next necessary steps, to include consultation and coordination requirements with the regulatory community.

As part of routine operations and maintenance activities on Post, the Fort Stewart DPW Operations and Maintenance Division conducts annual inspections of all Installation buildings as part of the Army Installation Status Report (ISR). Buildings determined eligible for listing on the NRHP are maintained according to the Secretary of the Interior's Standards for Rehabilitation, unless otherwise mitigated for adverse effects in accordance with the PA. Prior to any work conducted on NRHP-eligible buildings, CRM coordinates with the Customer Support Branch (CSB) or Master Planning Division to disseminate these standards through official memoranda prior to beginning work. In a similar manner, the Installation's

ITAM/LRAM office conducts routine inspections of range and training lands. Archeological sites that have been determined eligible or potentially eligible for inclusion in the NRHP and that are located in an area with a high risk of unintentional damage caused by training or construction will be marked minimally by the use of teal-colored boundary paint. When appropriate, additional markings are utilized such as orange reflective tape, seibert stakes, and signage. CRM works to ensure these sites are in good shape and that no remedial activities or follow up work is required. Collectively, these measures ensure no more than negligible adverse impacts to cultural resources on HAAF.

Per the terms of the Installation's PA, FSGA/HAAF consults with the GA SHPO on all determinations of effect; findings of no adverse effect to historic properties are summarized within an Annual Report to the SHPO for all NHPA Section 106 undertakings executed by the Installation. Impacts are anticipated to be less than significant as a result of this proposed action; consultation with the GA SHPO will be initiated and the record of this consultation included as Appendix C to this PEA. A copy of the Installation's PA is available in Appendix C.

3.4.4.2.2 ALTERNATIVE II: IMPLEMENT 3/160TH SOAR

Long-term, direct, minor-to-moderate, adverse impacts are anticipated to Cultural Resources as a result of implementing this alternative. This alternative would result in no disturbance to lands south of the existing flightline and no impacts to any CRM sites at that location. Although this would result in fewer direct adverse impacts to Cultural Resources at this location, it does not represent a substantial difference in CRM impacts overall, as the projects associated with the 3/160th SOAR will merely be shifted north into the cantonment area and potentially impact CRM resources at that location versus south of the flightline. In essence, impacts will merely shift from one location to another. Impacts at either location (south of the flightline or north) are anticipated to be less than significant.

The Installation will conduct its internal analysis on projects proposed in the ADP for HAAF on a project-by-project basis, and compile all results in its annual report, which will be submitted to the GA SHPO to ensure all NHPA/other requirements are complete. The Installation will adhere to its existing analysis and consultation process with regards to potential impacts to the viewshed of eligible/potentially eligible buildings and/or eligible/potentially eligible viewsheds on HAAF. For those structures that will be adversely affected and no existing MOA or PA exists, a mitigation plan (through an MOA or PA) will be implemented in accordance with 36CFR800 and the National Historic Preservation Act. All other potential impacts are as discussed under Alternative I.

3.4.4.2.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Short-term, direct, negligible-to-minor, adverse impacts to Cultural Resources are anticipated under this alternative. Potential impacts are associated with the Installation adhering to its established process for analyzing the potential impacts associated with routine repairs, maintenance, daily operations, and training activities, as discussed under Alternative I. The Environmental Division's own routine monitoring and inspections process is effective in minimizing potential adverse impacts, and results in at-most negligible to minor potential for adverse impacts to these resources. As with all actions, the CRM will conduct its

internal analysis on a project-by-project basis, and compile all results in its annual report, which will be submitted to the GA SHPO. This will ensure all NHPA/other requirements are complete.

3.4.4.3 CUMULATIVE IMPACTS

The ROI for Cultural Resources lies within the boundaries of HAAF, as none of these actions on/within the City of Savannah were deemed sufficiently proximate in time or location to the proposed action to result in potential cumulative impacts to cultural resources. Past, present, and reasonably foreseeable future events with the potential to result in cumulative impacts are considered in the analysis below.

3.4.4.3.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Past actions within the Study Area include the construction of the Installation and its various components, a great deal of which occurred prior to the institution of cultural resources laws and regulations. Accordingly, it is possible that cultural resources were lost, damaged, and/or destroyed during this time, resulting in potential adverse cumulative impacts to cultural resources. Present actions within the ROI are reviewed by Installation CRM personnel prior to implementation, and this will continue for those actions proposed under Alternative I, thereby minimizing the potential for adverse cumulative impacts to a level of negligible (at most minor), and short-term, as they would dissipate once consultation is complete and all required mitigation has been completed and agreed upon by all parties involved in the consultation and mitigation.

Future actions include the continuation of routine operations, repair and maintenance, and training on HAAF. Future actions on the Installation have the potential for adverse cumulative impacts to Cultural Resources, most notably the HAAF Stormwater Drainage System Improvements and HAAF Apron and Taxiway Reconstruction (Table 3, Future Actions in the ROI). Preliminary review of these actions have determined there is no potential to adversely affect cultural resources; however, due to the adjacency of these actions to known historic resources on the airfield proper, CRM will continue to review subsequent design iterations for these projects, to ensure these finding hold during the completion of work. If impacts occur, consultation, mitigation, and monitoring, if required, will be implemented and continue until agreed upon by all parties involved. For all actions the CRM will conduct its internal analysis on a project-by-project basis, or programmatically, if required, and compile all results in its annual report, which will be submitted to the GA SHPO, to ensure all NHPA/other requirements are complete. Overall, these efforts should ensure that no more than minor to moderate adverse cumulative impacts to cultural resources occur.

3.4.4.3.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Under this alternative, past, present, and future actions within the ROI are as discussed under Alternative I. Future actions in the ROI are also as discussed under Alternative I, with the exception of the development south of the existing flightline under Alternative I. Under Alternative II, the new taxiway and facilities to support the 3/160th SOAR would not be constructed south of the existing flightline, but would instead shift north into the existing cantonment area. As discussed previously, CRM will review all projects as they are submitted and, if impacts are anticipated, will initiate the consultation, mitigation, and monitoring, process as required, which continue until agreed upon by all parties involved, to ensure all NHPA/other

requirements are complete. Overall, these efforts should ensure that no more than minor to moderate adverse cumulative impacts to cultural resources occur.

3.4.4.3.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Under this alternative, past and present actions within the ROI are as discussed under Alternative I. However, future actions consist only of the continuation of routine operations, repair, maintenance, and training on HAAF, and those actions identified on Table 3, and do not include construction of the actions proposed in the ADP for HAAF. As discussed previously, CRM will review all projects as they are submitted and, if impacts are anticipated, will initiate the consultation, mitigation, and monitoring, process as required, which continue until agreed upon by all parties involved, to ensure all NHPA/other requirements are complete. Overall, these efforts should ensure that no more than negligible to minor adverse cumulative impacts to cultural resources occur.

3.4.5 LAND USE

3.4.5.1 AFFECTED ENVIRONMENT

Land use generally refers to human modification of land for a specific use, but may also refer to the specific or primary use that a community has set aside for a parcel of land. Land use is guided by management plans, policies, ordinances, and/or regulations that determine the types of activities that are allowed on that specific parcel of land, as well as established guidelines for implementing said activities and the process through which new activities may be added over time. As discussed in Chapter 1 of this PEA, the Army Real Property Master Planning process determines the types of activities that are allowed on specific portions of Army land and the Installation utilizes the master planning process to efficiently and appropriately manage land uses and development decisions across the Installation (FSGA 2009). Compatibility of land use adjacent to military installations is encouraged at the federal, state, and local levels, and several encroachment prevention efforts may be used, including conservation partnerships, regional and county comprehensive plans, zoning codes, state or federal legislation, and financial assistance.

As discussed in Section 2.1 (and shown on Figure 4, Regulating Plan), the main categories of developed land uses on HAAF are airfield support, airfield operations, industrial, residential, community support, training, recreation, mission, flex, and town center. The Regulating Plan establishes what can and cannot be implemented within each category, as well as what may be conflicting land uses. Undeveloped lands, commonly called open space in planning documents, may include natural or cultural resource preservation sites, safety buffers, or other similar land uses. Off-Post land uses consist of residential components of the City of Savannah to the north and south and industrial/commercial components of the City of Savannah to the north, east, and south. Lands to the immediate west of HAAF consist of an undeveloped salt water marsh system and are primarily undeveloped.

Joint Land Use Study (JLUS). The JLUS is collaborative, compatible use planning effort involving military installations and adjacent local governments. It provides land use and developmental control recommendations that support and encourage acceptable development near military installations. Its goal is to protect the public health, safety, and welfare by guiding the long-term development decisions made

by neighboring governmental entities to ensure that the Installation mission is not compromised by unacceptable development. The JLUS program is centrally managed by the Department of Defense Office of Economic Adjustment (OEA) (DoDD 3030.1).

Finalized in 2005, the FSGA/HAAF JLUS is a cooperative land use planning initiative between the U.S. Army and surrounding cities and counties, to include Bryan, Effingham, Chatham, Liberty, Long, Tattnall, and Evans counties; the cities of Hinesville, Savannah, Pooler, Bloomingdale, Pembroke, Richmond Hill, Glennville, Gum Branch, Allenhurst, Flemington, and Walthourville; the Coastal Georgia Regional Development Center; as well as the Heart of Georgia-Altamaha Regional Development Center (http://hogarc.org/). It guides local government and Army actions to enhance compatibility and strengthen the civilian-military relationship.

Army Compatible Use Buffer (ACUB). The ACUB program is an integral component of the Army sustainability triple bottom line: mission, environment, and community. In recent years, Army installations have been experiencing increasing encroachment from a variety of sources, including population growth, urban land use, and environmental requirements. The ACUB program proactively addresses encroachment, and is a powerful tool that allows the military to contribute funds to the partners' purchase of these easements and properties for willing landowners. These partnerships preserve high-value habitat and limit incompatible land use near military installations.

Title 10, Section 2684a, of the United States Code authorizes the DoD to partner with nonfederal government or private organizations to limit encroachment and protect habitat around installations. The Army implements this authority through the ACUB program, which is managed at Army headquarters level by the office of the Assistant Chief of Staff for Installation Management based on priorities established by the DPTMS. The Army Environmental Command provides technical assistance, facilitates ACUB proposal development, and monitors program execution and advancement. The Georgia Alabama Land Trust is FSGA/HAAF's ACUB partner and works with Ft. Stewart to protect neighboring properties from incompatible development that might hamper the military mission. The ACUB will ultimately protect approximately 120,000 acres using conservation easements that limit development and protect sensitive environments. Additionally, The Georgia Sentinel Landscape (GSL) is a coalition of federal and state agencies, NGOs, and private parties that seek to limit development that would negatively impact the mission of military installations in the Coastal Plain of Georgia. Another goal of GSL is to conserve sensitive species, particularly the gopher tortoise[6], on federal, state, and private lands in order to prevent listing under the Endangered Species Act.

6 Not present on HAAF.

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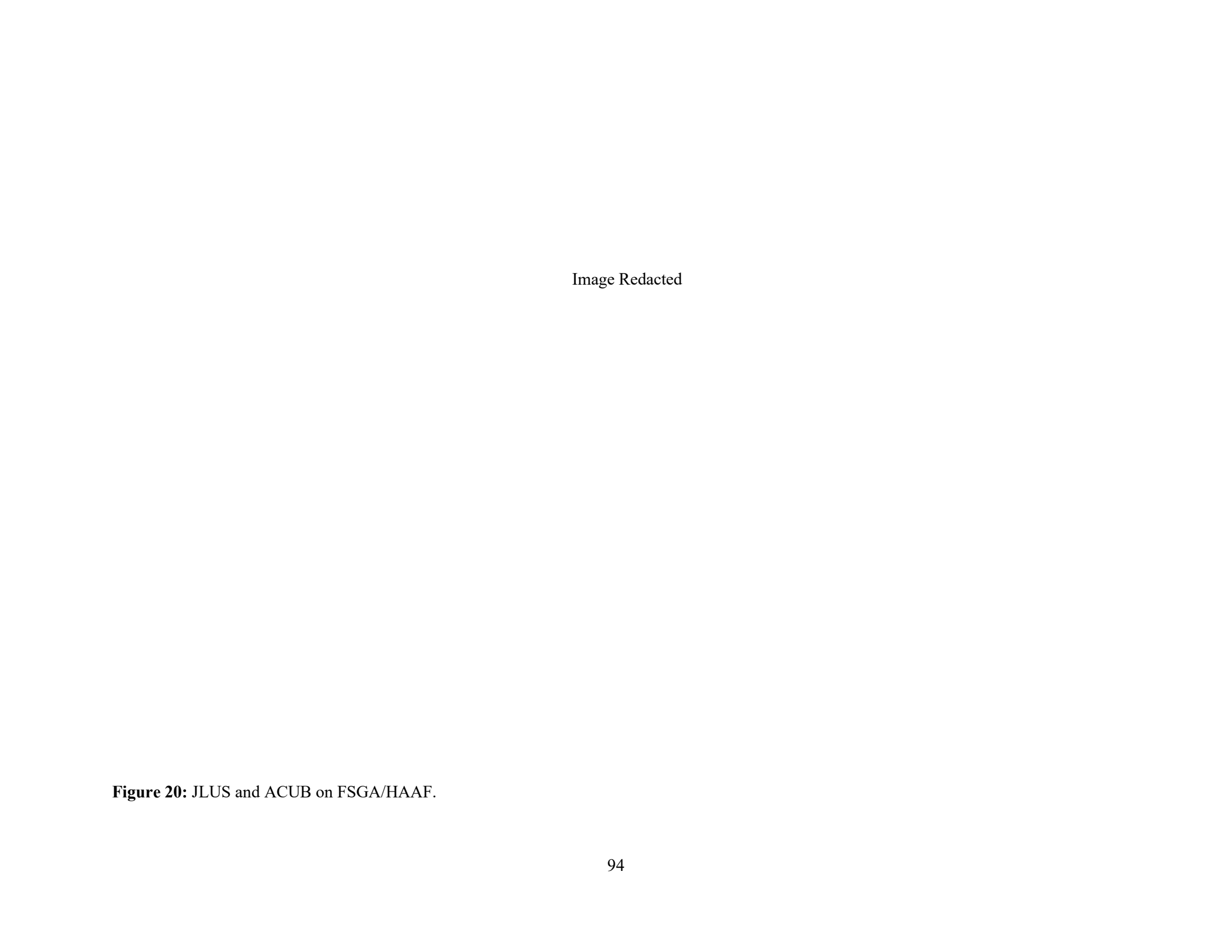

Figure 20: JLUS and ACUB on FSGA/HAAF.

Installation Compatible Use Zone (ICUZ) Study. The Army has also implemented an Operational Noise Management Program that provides a method for evaluating the effect of noise and the hazards associated with training operations that stem from activities at military installations. The purpose of the program is to identify land areas that are exposed to generally unacceptable noise levels and aircraft accident potential and then recommend uses for the land within these areas that are compatible with the needs of the civilian community and the Army.

One focus of the Army's Operational Noise Program has been to develop the ICUZ Study. In addition to the focus on maintaining land use compatibility, the plan includes information to educate Installation personnel, surrounding residents and local government officials, provide recommendations on the management of noise complaints, strategies for the mitigation of the noise, noise abatement procedures, and advice on steps to take when the noise environment is already incompatible. Note: this program is discussed more fully in Section 3.14, Noise.

Local government officials, including the zoning and planning boards, are informed regarding future activities on Post (and an open dialogue maintained) so they will be able to accurately assess both sides of issues before them and factor such information into any decision-making process concerning urban development and land use. In this manner, potential land use conflicts and/or incompatibilities are identified early and issues of concern resolved prior to coming to fruition.

Training. HAAF is an active training Installation and Soldiers utilize a variety of training ranges, Installation lands, and the airfield proper for these purposes. All training is conducted in compliance with the provisions of AR 385-63, DA Pam 385-63, AR 350-19, weapons system Technical Manuals (TMs), the FSGA/HAAF Aviation Procedures Guide (2015), and the Post Range Guide (2019). There are no artillery, gunnery, aircraft-to-ground-based training ranges, or maneuver corridors located on HAAF, and units requiring those tasks are transported to Fort Stewart to complete those tasks. Flight simulator training, aircraft touchdown/takeoff training, and FARP activities are conducted on the airfield proper, and units conduct training on the Installation's Helicopter Landing Zones (HLZs) in TAs H5, H9, and H11. Some units also conduct minor training activities within the cantonment area, although this is limited primarily to unit-sized physical training tasks and obstacle courses. All training is managed and maintained by the FSGA/HAAF DPTMS.

The Army Range Requirements Model (ARRM) is the official source of doctrinal requirements for range and training land assets in accordance with Army Regulation 350-19, The Army Sustainable Range Program. Factors that drive the ARRM include unit stationing, unit weapons authorizations, training doctrine, and training loads caused by tenant and non-tenant units that habitually train at a given Installation. To help ensure the Army has the lands and ranges it needs to meet future training requirements, the Army has implemented a "Sustainable Range Program (SRP)." Army Training Circular (TC) 25-8, "Training Ranges," describes the standard designs and requirements of the Army's Sustainable Range Program for training Army units to doctrinal standards.

To ensure Soldiers are operationally deployed, at a minimum they must continually meet semi-annual weapons marksmanship proficiency requirements and conduct realistic maneuver rehearsals. Without adequate ranges and maneuver lands, Soldiers cannot meet these requirements. The HAAF training

resources are schedulable 24 hour a day, seven days a week, via the RFMMS system, the Army/Marine Corps standard web-based database application which automates the scheduling, operations and management functions of the DPTMS Range Branch. Ranges and training lands are maintained via the SRP and the ITAM/LRAM program, as discussed in Water Quality, which are Army-wide programs that provide quality training environments to support the Army's military mission. Ranges and training lands on HAAF do not experience substantial damage at present, due to the lack of maneuver, artillery, aerial gunnery, etc., training that occurs on the Installation.

Training facilities on HAAF consist of the Small Arms (SA)/Baffled Range, Bradley Crose Shoothouse and Breach Facility Site, and Sleepy Hollow Training Facility (Figure 21). The SA Range is a baffled range, and all rounds are fired from specified locations, and that steel, rubber, and dirt mechanisms catch and contain projectiles so they do not leave the range footprint. The SA Range supports small arms weapons zeroing, concept-driven scenarios, and weapons qualification. As indicated by Figure 22, the doctrinal Surface Danger Zone (SDZ) associated with this range extends off-Post; however, the Installation has a deviation in place signed by the Senior Commander that allows for live fire training at this location in accordance with the guidance and requirements identified in that deviation, the Installation's Standing Operating Procedures (SOPs), and the on-range briefings that occur prior to all training events. The Installation must re-apply for this deviation for this range each year. There are no designated Impact Areas (IAs) on HAAF, although there are small "catch basins" for bullets potentially escaping the enclosed system at the far end of the SA Range.

The Bradley Crose Shoothouse and Breach Facility Site are co-located, individual, training facilities that provide authorized users a 3,000 square foot, two story facility with observation decks for training in an urban environment. The sites support a variety of ammunition, and are also are compatible with the close combat mission capability kit (CCMCK), a weapon conversion kit that is listed on units' Standards in Training Commission accounts. Training at these facilities provide the units the ability to move tactically, engage targets, and practice target discrimination in an urban environment. There is also a SDZ associated with this training site, which is fully enclosed within the Installation boundary (Figure 23), but no IA.

The Sleepy Hollow Training Facility supports military operations on urban terrain (MOUT) training events. Composed of long lasting, fire-retardant, fiberglass reinforced plastic beams, cut to replicate the look and texture of various building materials such as brick, cinder block, wood, etc., the MOUT site can be configured in array of floor plans, and all panels can be moved without heavy duty construction equipment. Due to its composition, it can be utilized in all weather conditions and at all times of the year. There is an SDZ associated with this training site, which is also fully enclosed within the Installation boundary (Figure 24), but no IA.

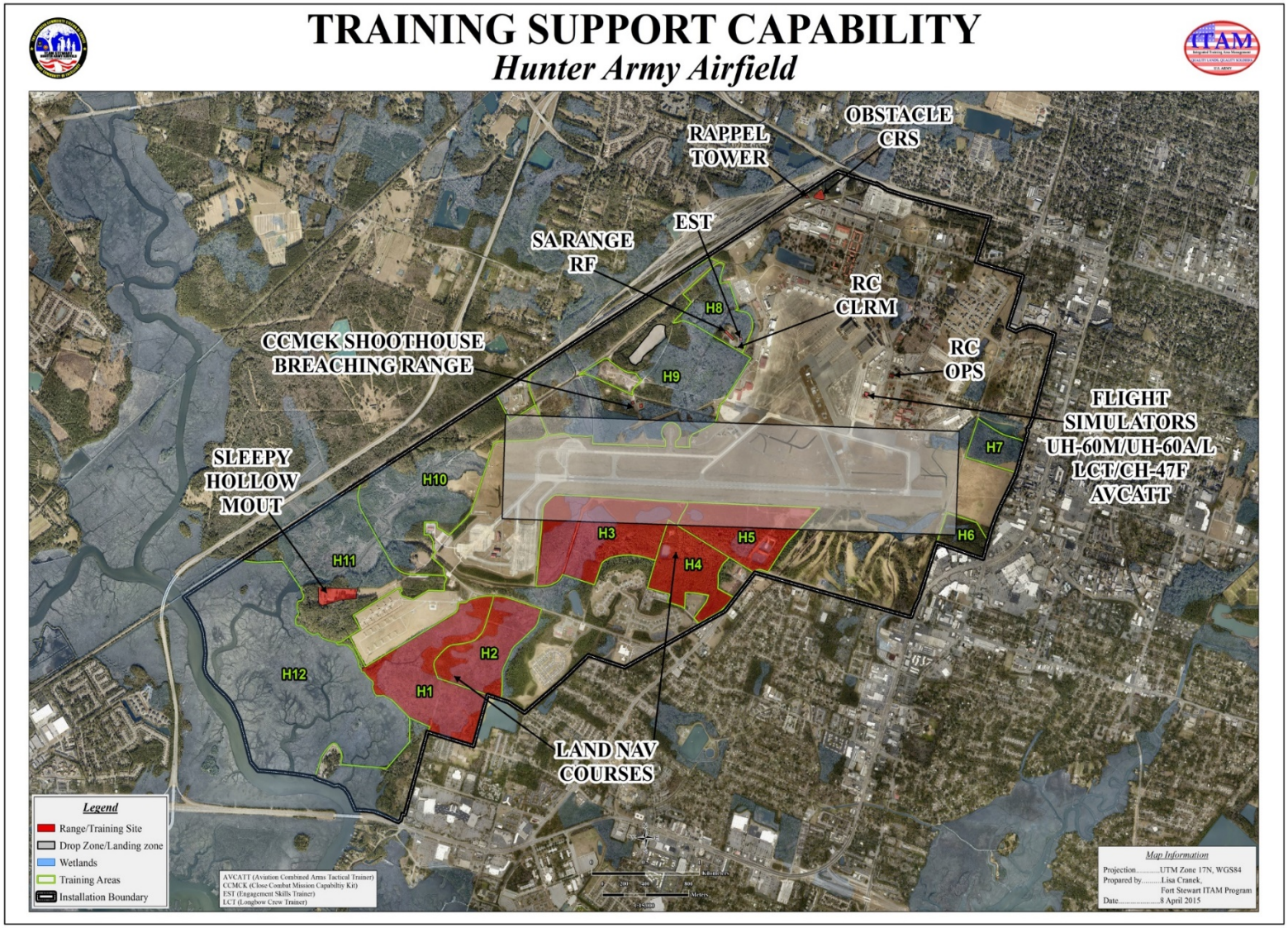

Figure 21: Training Resources on HAAF.

Image Redacted

Figure 22: Surface Danger Zone for Small Arms Range on HAAF, GA.

Image Redacted

Figure 23: Surface Danger Zone for Shoothouse and Breach Facility on HAAF, GA.

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Figure 24: Surface Danger Zone for Sleepy Hollow Training Facility on HAAF, GA.

The Land Navigation Course is located in the southwestern portion of Post and is an open, forested area in which Soldiers are taught navigation skills without the aid of a compass or other technical tools. There is no SDZ or IA associated with this course, as there is no ammunition utilized. Land navigation training is occasionally taught in the other open, forested portions of the Installation as well; however, the primary location for this activity is the designated site in the southwest portion of HAAF. There is no SDZ or IA associated with this training resource. There also other, smaller training resources on Post, such as the Rappel Tower and numerous obstacle courses; however, many of these are unit specific and must be coordinated through the unit responsible for the specific resource.

Solid Waste and Landfill Sites. Solid waste is generated on HAAF in a variety of ways, including routine day-to-day activities at offices, barracks, schools, and construction sites. Construction and demolition (C&D) debris is maintained as a separate solid waste stream and includes excavated soil as well as scrap from the constructed or demolished site. HAAF operated one inert landfill for the deposition of C&D debris, which underwent formal closure procedures in 2015, in accordance with the Georgia Rules for Solid Waste Management Chapter 391-3-4-.06(3)(c), as amended. There are no plans to re-open the landfill or to construct any facilities on or in its immediate vicinity. Currently, all municipal and inert waste generated on HAAF is collected and transported to existing landfills on FSGA and these materials do not enter the waste stream within the Study Area.

Fort Stewart has three active landfills: the South Central Sanitary Landfill, Non-Putrescible Landfill, and Inert (Yard Waste) Landfill. All are located in the South Central Landfill Complex in the northwest corner of the cantonment area. These landfills are inspected in accordance with all federal, state, and Installation laws and regulations and were found to be fully in compliance during a January 2020 inspection by the GA EPD.

HAAF owns and operates an on-Post wastewater treatment system that includes a central wastewater treatment plant (WWTP) and 43 sewage lift stations (pumping stations). WWTP is an activated sludge plant that receives and treats all wastewater generated on HAAF, including minor industrial wastewater from wash racks. Liquid effluent produced on HAAF joins with the City of Savannah's effluent and discharges into the Savannah River, whereas sludge generated on Post is dried on site and delivered off-Post to Superior Landfill and Recycling Center, a commercial Subtitle D landfill in the City of Savannah (see Chapter 3.17, Utilities, for full discussion of wastewater on HAAF).

Recycling. Fort Stewart/HAAF operates under the Solid Waste and Recycling SOP and Recycling Clause (52.000-4061) (Appendix D), which states that all Army personnel, on-Post housing, and other community members and contractors are required to actively participate in the recycling program, and all contracts issued work must include participation in the recycling program. Achievement of at least 60 percent diversion, by weight, of all non-hazardous construction and demolition waste debris is required and all working projects on the Installation must track and report all potentially recyclable materials, to include excess soils, cardboard, concrete, asphalt, and scrap metal. The data collected plays an important role in the Installation achieving the measures of merit established by Federal mandates. This data is consolidated with other solid waste data and reported to the Department of the Army in the Solid Waste Annual Reporting System (SWARS). All recyclables generated through construction projects must be kept separate from other waste and may be delivered to the Processing Station/Building 1384 (cardboard) or the Recycling

Center/Building 1143 (scrap metal). Curb-side recycling from on-Post activities, to include offices and residences, is collected weekly by the Installation waste management contract.

The recycling center on HAAF is located off North Perimeter Road on Westley Avenue. HAAF has a Recycling Policy that is mandatory and governs the management of material recycling; unless otherwise specified, the Government maintains all salvage rights to recyclable materials. Waste concrete, for example, is crushed and reused in various projects. Typical materials recycled from projects are timber, steel and other metals, concrete, brick, and asphalt materials. All projects occurring on Post must have a written Construction and Demolition Waste Management Plan that specifically outlines the activities the contractors will take to salvage or recycle as much of their materials as possible. To ensure adherence to the Installation's requirements, the plan must be approved by the Installation in advance of any action's start.

Recyclables gleaned from on-Post operations include paper products, CD Rom disks, aluminum cans, food and beverage cans, glass, plastic bottles, and toner cartridges. Textiles, metals, military tires, tree waste, wood boxes, wood pallets, used antifreeze, used oil, horse manure, and yard waste are also recycled to the greatest extent possible. This is accomplished via dumpsters and bins at Installation offices, while contractors collect and transport recyclables from the housing areas via curb-side recycling bins at the homes of persons residing on HAAF. In all actions, HAAF ensures compliance with EO 13834, Efficient Federal Operations, guidance for HAAF on how to increase energy efficiency; eliminate waste, recycle, and prevent pollution; acquire sustainable and environmentally preferable materials, products, and services; and design, construct, maintain, and operate high-performance, sustainable buildings.

Borrow Pits/Fill Materials. The Installation's Borrow Pit Program is responsible for overseeing and permitting all borrow pit activities performed on the Installation. The Program's management of these activities supports FSGA/HAAF's efforts to conserve resources and provide the Installation with an onsite source of suitable soils for use as fill material. These onsite borrow sources support forestry, construction, maintenance, and range activities/projects. All borrow pit design and excavation actions support the objective of the pit eventually becoming a fishpond/recreation area for Soldiers and their Families to enjoy. There are no open borrow pits on HAAF, and there are no plans to re-open any of the Installation's closed borrow pits on Post.

Currently, all sources of fill/borrow required to assist ongoing or future projects on HAAF must be obtained from off-Post sources. Prior to their use, all borrow/fill materials must be tested and approved by the FSGA/HAAF Borrow Pits/Fill Materials POC to ensure their suitability for use on Installation lands, to include testing for Total Petroleum Hydrocarbons, Benzene, Toluene, Ethyl Benzene, and Xylene (BTEX) and full Toxicity Characteristic Leaching Procedure (TCLP) including ignitability, corrosivity and reactivity. Materials proposed for use must pass the TCLP test, performed in accordance with EPA SW-846.3-3 Method 1311, and tests are performed from a composite sample of fill material from the proposed borrow site.

3.4.5.2 ENVIRONMENTAL CONSEQUENCES

As each project in the ADP for HAAF enters the design phase, supplemental NEPA analysis will occur and will be documented via a REC (if it falls within the scope of this PEA) or an EA (if it beyond the scope of this PEA), as necessary.

3.4.5.2.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

JLUS, ACUB, and ICUZ Study. Long-term, direct, minor, beneficial impacts are anticipated to Land Use under this alternative. Implementation of the ADP for HAAF promotes thoughtful development on the Installation in accordance with the real property vision, goals, and objectives, as well as the appropriate building standard. This minimizes the potential for incompatible land uses on the Installation. Future construction will be mindful of the Installation's JLUS, ACUB, ICUZ Study, and other management plans, to ensure consistency in land use compatibility when siting projects in the Study Area. No adverse impacts to land use are known as a result of routine operations, maintenance, and repair of existing facilities or the military training mission on HAAF, as all activities are conducted in accordance with existing Installation management plans, including the JLUS, ACUB, and ICUZ Study, and Installation activities and proposed activities are mindful of requirements in these plans.

Local government officials, including the zoning and planning boards, are informed regarding future activities on Post (and an open dialogue maintained) so they will be able to accurately assess both sides of issues before them and factor such information into any decision-making process concerning urban development and land use. In this manner, potential land use conflicts and/or incompatibilities are identified early and issues of concern resolved prior to coming to fruition. For example, nearby residents and communities are made aware of HAAF's mission and its by-products, including noise, through newspaper articles, community displays, public presentations, information brochures, and other information released to the community that addresses their concerns. Adjacent communities also implement development in accordance with their own city and county development plans, as well, and these efforts are shared with HAAF to ensure a two-way communication and planning process is established.

Training. Long-term, direct, minor, beneficial, impacts to training are anticipated under this alternative. Construction of an Indoor Range and Driving Course and improvements to the Land Navigation Course are proposed and programmed in the ARRM for HAAF, and will directly benefit the training environment on HAAF. Although the construction of a Live Fire Facility and Urban Assault Course (UAC) are not listed in the ARRM for HAAF, they were identified in the ADP for HAAF Workshop as desired future facilities by the units attending the workshop and there is a potential for these training assets to be implemented on HAAF at some point in the future, should funding and a validated need arise. All proposed training facilities and improvements are sited within the appropriate Building Standard, in which military training activity is appropriate and which does not conflict with adjacent land uses.

The Indoor Range is an enclosed, 100-meter range with 25 firing lanes, ammunition auger system (which empties into drum for recycling), with baffles suspended above the range and angled to prevent bullets from exiting. This range will be utilized by units to meet METL requirements on small arms qualifications tasks. The Driving Course is proposed to exercise tracked vehicles as part of rapid deployment preparation; its

construction, though not a mission essential task, will provide this vital training task for track vehicle users as part of rapid deployment preparation, an important skill for units to maintain while at home station.

The UAC consists of five separate stations designed for small unit training in urban operations; it is used to train and test individuals, teams, squads, and/or platoons on individual and collective tasks associated with military operations in urban terrain. The Live Fire Facility is also utilized to qualify Soldiers on small arms firing tasks, and an exact METL purpose has not been identified at this time. Land Navigation Area Improvements will consist of conducting selective tree thinning, as well as moderate to heavy mowing, where necessary, to ensure land navigation activities can be conducted without impediment. Work will not require substantial tree removal, as this training environment shall remain as natural as possible to replicate the "real word scenario" sought by trainers. These improvements (thinning and mowing) will enhance the land navigation skills currently developed on this existing training resource. All training on the existing and new range facilities is conducted in accordance with ARs, TM, TCs, and the FSGA/HAAF Post Range Guide (2019), and all operations will be managed through the Installation's existing range scheduling process (RFFMS), ensuring the requirements for Soldiers on HAAF are met to standard.

New range construction is not anticipated to require a change in the Installation's SDZs or IAs, nor will it result in the creation of any new SDZs or IAs. Construction of the new Indoor Range will be to the south of the existing SA Range; however, it will also be baffled and its training regimen will be factored into the requested deviation filed by FSGA/HAAF each year. Impacts to training resources, and subsequent repairs by the SRP and ITAM programs, are not anticipated to be more than at present levels, as no new impacts (above current levels) is anticipated, even with the new ranges and improvements proposed. Construction of the new training resources will not hinder or impede training on the existing ranges, as they are all sufficiently distant from the sites of proposed construction to not result in conflicts in either siting or scheduling.

Construction under this alternative will remove 318 acres of land that are currently available for training on HAAF, which equals 0.05% of available acreage on HAAF. Review by Installation DPTMS personnel determined this will result in negligible adverse impacts to training capabilities on HAAF. Many of the construction projects are located in previously disturbed areas that are not dedicated to training, such as in or close to the cantonment area. Other construction projects are located where the acreage is dedicated to land navigation (such as south of the existing flightline), and DPTMS determined there will be substantial existing forested areas remaining available on HAAF following construction. There are also localized training resources within the cantonment area, such as obstacle courses, that are utilized for physical fitness of the nearby units. Negligible-to-no impacts to training on the Installation's Helicopter LZs and on the airfield proper are anticipated, as measures will be put in place to ensure these resources are not impacted by adjacent construction, to include fencing them off and making construction contractors aware of their location.

No impacts to training resources are anticipated as a result of renovation, operations, repairs, and maintenance proposed in the ADP for HAAF. Maintenance (to include mowing and general repairs) will also be scheduled through RFFMS, and all training lands will be maintained on an as-needed basis through mowing, prescribed burning, and/or herbicide treatment. No impacts to the existing training regime are

anticipated, as this is a well-managed and maintained process on Post and is coordinated in accordance with existing procedures and protocols.

Solid Waste and Landfills. Long-term, direct, minor, adverse impacts are anticipated to Solid Waste and Landfills. There are no plans to reopen the closed inert landfill on HAAF, nor are there any plans to create a new landfill on the Installation and designate or set aside land for this use. All municipal solid waste generated on HAAF will continue to be collected in accordance with existing policies and protocols and transported to landfills on FSGA. Impacts are anticipated to be long-term, as solid waste deposited at these landfills is not recycled, removed, or reutilized in any other way at these locations. However, based on currently available data from the FSGA/HAAF Environmental Division, these landfills have an expected life/capability through 2041. The additional materials resulting from construction, demolition, and renovation projects proposed in the ADP for HAAF will add to the volume deposited in these landfills; however, it is not anticipated to be significant, correlating to the time associated with each project's implementation. The Installation does not anticipate the life of the landfills being significantly impacted, as its diversion rate continues to grow each year and it is anticipated this will help offset the additional input generated by Installation construction, demolition, renovation, and other actions on Post.

Sludge generated at the WWTP on HAAF will continue to be collected and transported to Superior Landfill and Recycling Center in Savannah. Although no data regarding the current status of this landfill was available, the projects proposed in the ADP for HAAF are not anticipated to result in a substantial increase in personnel on HAAF and, accordingly, no substantial increase in deposits to this landfill. All of these landfills will continue to be managed in accordance with existing federal, state, and local laws and regulations.

Recycling. Short-term, direct, minor, beneficial impacts to Recycling are anticipated under this alternative. All contractors performing construction, demolition, and other actions generating wastes/debris on Post are required to salvage or recycle as much of the materials as possible; however, this is not a substantial change for the existing environment, in which this is already a current requirement. The additional materials resulting from construction, demolition, and renovation projects proposed in the ADP for HAAF will add to the volume being transferred to the FSGA Recycling Center; however, it is not anticipated to be significant and will be short-term in nature, correlating to the time associated with each project's implementation. Short-term, beneficial impacts may occur as each construction, demolition, and/or other project in the ADP for HAAF is implemented and recyclable materials are salvaged by the Installation, which in turn can be incorporated into the diversion rate on HAAF. No impacts are anticipated due to routine operations, repairs and maintenance, and military training on Post.

Borrow Pits/Fill Materials. No impacts to borrow pits/fill materials are anticipated under this alternative. No new borrow pits are proposed as part of this alternative and none of the closed borrow pits will be reopened to support the projects proposed in the ADP for HAAF. All project requiring borrow/fill material will obtain these materials from off-Post sources, and these sources will require testing in accordance with existing Installation policies and protocols, all of which shall be coordinated through the Borrow Pitt POC for the Installation. No changes to these existing protocols and procedures by which the Installation manages borrow pits/fill materials will be implemented as a result of the proposed action. No impacts are anticipated due to routine operations, repairs and maintenance, and military training on Post.

3.4.5.2.2 ALTERNATIVE II: IMPLEMENT 3/1609TH INFILL

JLUS, ACUB, and ICUZ Study. Long-term, direct, minor, beneficial impacts are anticipated to Land Use under this alternative, as discussed under Alternative I. Implementation of the ADP for HAAF promotes thoughtful development on the Installation in accordance with the real property vision, goals, and objectives, as well as the appropriate building standard. This minimizes the potential for incompatible land uses on the Installation, and future construction will be mindful of the Installation's JLUS, ACUB, ICUZ Study, and other management plans, to ensure consistency in land use compatibility when siting projects in the Study Area. No adverse impacts to land use are known as a result of routine operations, maintenance, and repair of existing facilities or the military training mission on HAAF, as all activities are conducted in accordance with existing Installation management plans, including the JLUS, ACUB, and ICUZ Study, and Installation activities and proposed activities are mindful of requirements in these plans.

Local government officials, including the zoning and planning boards, are informed regarding future activities on Post (and an open dialogue maintained) so they will be able to accurately assess both sides of issues before them and factor such information into any decision-making process concerning urban development and land use. In this manner, potential land use conflicts and/or incompatibilities are identified early and issues of concern resolved prior to coming to fruition. Adjacent communities also implement development in accordance with their own city and county development plans, as well, and these efforts are shared with HAAF to ensure a two-way communication and planning process is established.

Training. Long-term, direct, minor, beneficial, impacts to training are anticipated under this alternative. Impacts are primarily as discussed under alternative I; however, under this alternative, construction in other parts of the Installation will result in the removal of 293 acres from the total acres available for training on HAAF, just slightly less than under Alternative I. Land south of the existing flightline will not be cleared to accommodate a new taxiway and the facilities proposed to support the relocation of the 3/160th SOAR. This is not a substantial reduction in acreage compared to Alternative I, and the removal of these lands from the training total was not determined to be a substantial adverse impact; however, their remaining within the remaining training acreage will be beneficial to the training environmental on Post. All other impacts are as discussed under Alternative I.

Solid Waste and Landfills. Long-term, direct, minor, adverse impacts are anticipated to Solid Waste and Landfills, for reasons discussed under Alternative I. There are no plans to reopen the closed inert landfill on HAAF, nor are there any plans to create a new landfill on the Installation and designate or set aside land for this use. All municipal solid waste generated on HAAF will continue to be collected in accordance with existing policies and protocols and transported to landfills on FSGA. The Installation does not anticipate the life of the landfills being significantly impacted, as its diversion rate continues to grow each year and it is anticipated this will help offset the additional input generated by Installation construction, demolition, renovation, and other actions on Post. Sludge generated at the WWTP on HAAF will continue to be collected and transported to Superior Landfill and Recycling Center in Savannah, and it is anticipated to be able to accommodate this additional deposition. All of these landfills will continue to be managed in accordance with existing federal, state, and local laws and regulations.

Recycling. Short-term, direct, minor, beneficial impacts to Recycling are anticipated under this alternative, as discussed under Alternative I. All contractors performing construction, demolition, and other actions generating wastes/debris on Post are required to salvage or recycle as much of the materials as possible. The additional materials resulting from construction, demolition, and renovation projects proposed in the ADP for HAAF will add to the volume being transferred to the FSGA Recycling Center; however, it is not anticipated to be significant and will be short-term in nature, correlating to the time associated with each project's implementation. Short-term, beneficial impacts may occur as each construction, demolition, and/or other project in the ADP for HAAF is implemented and recyclable materials are salvaged by the Installation, which in turn can be incorporated into the diversion rate on HAAF. No impacts are anticipated due to routine operations, repairs and maintenance, and military training on Post.

Borrow Pits/Fill Materials. No impacts to borrow pits/fill materials are anticipated under this alternative, as no new borrow pits are proposed and none of the closed borrow pits on HAAF will be reopened to support the projects proposed in the ADP for HAAF. All projects requiring borrow/fill material will obtain these materials from off-Post sources, and these sources will require testing in accordance with existing Installation policies and protocols, all of which shall be coordinated through the Borrow Pitt POC for the Installation. No changes to these existing protocols and procedures by which the Installation manages borrow pits/fill materials will be implemented as a result of the proposed action. No impacts are anticipated due to routine operations, repairs and maintenance, and military training on Post.

3.4.5.2.3 ALTERNATIVE III: NO ACTION/STATUS QUO

JLUS, ACUB, and ICUZ Study. No impacts are anticipated to Land Use under this alternative. The Installation will manage current and future development in accordance with the JLUS, ACUB, ICUZ Study, and other management plans, which is the existing condition/status quo for the Installation. This aids in land use compatibility for future project siting. No adverse impacts to land use are known as a result of routine operations, maintenance, and repair of existing facilities or the military training mission on HAAF, as all activities are conducted in accordance with existing Installation management plans and proposed activities are mindful of requirements in these plans.

Local government officials, including the zoning and planning boards, will continue to meet and share their information with the Installation, ensuring potential land use conflicts and/or incompatibilities are identified early and issues of concern resolved prior to coming to fruition. Adjacent communities also implement development in accordance with their own city and county development plans, as well, and these efforts are shared with HAAF to ensure a two-way communication and planning process is established.

Training. Short-term, direct and indirect, negligible-to-minor, beneficial impacts to training are anticipated under this alternative. As discussed under Alternative I, all training on existing ranges is conducted in accordance with ARs, TM, TCs, and the FSGA/HAAF Post Range Guide (2019), and all operations are managed through the Installation's existing range scheduling process (RFFMS), ensuring the training requirements of Soldiers on HAAF are met to standard. Maintenance (to include mowing and general repairs) is also scheduled through this established process, and all training lands are maintained on an as-needed basis through mowing, prescribed burning, and/or herbicide treatment. However, under this alternative, the new ranges and other training-focused projects proposed in the ADP for HAAF would not

occur, negating the potential beneficial impacts these projects would provide to the training environment. Although the Army at FSGA/HAAF would still train these Soldiers to Army standards, not implementing these proposed projects may reduce potential beneficial impacts to levels below minor until such time as projects commensurate to those proposed may be implemented.

Solid Waste and Landfills. Long-term, direct, negligible, adverse, impacts are anticipated as a result of routine operations, repairs, and maintenance actions only on Post. All municipal solid waste generated on HAAF will continue to be collected in accordance with existing policies and protocols and transported to landfills on FSGA. Based on currently available data from the FSGA/HAAF Environmental Division, these landfills have an expected life/capability through 2041. The Installation does not anticipate the life of the landfills being significantly impacted from current activities at current levels, as its diversion rate continues to grow each year.

Sludge generated at the WWTP on HAAF will continue to be collected and transported to Superior Landfill and Recycling Center in Savannah. Although no data regarding the current status of this landfill was available, no substantial increase in deposits to this landfill are anticipated under this alternative. All of these landfills will continue to be managed in accordance with existing federal, state, and local laws and regulations.

Recycling. Short-term, direct, negligible, beneficial impacts are anticipated to Recycling under this alternative. All contractors performing construction, demolition, and other actions generating wastes/debris on Post are required to salvage or recycle as much of the materials as possible, regardless of the proposed action and this will continue under all alternatives.

Borrow Pits/Fill Materials. No impacts to borrow pits/fill materials are anticipated under this alternative. No new borrow pits are proposed as part of this alternative and none of the closed borrow pits will be reopened to support the projects proposed in the ADP for HAAF. All project requiring borrow/fill material will obtain these materials from off-Post sources, and these sources will require testing in accordance with existing Installation policies and protocols, all of which shall be coordinated through the Borrow Pitt POC for the Installation. No changes to these existing protocols and procedures by which the Installation manages borrow pits/fill materials will be implemented as a result of the proposed action. No impacts are anticipated due to routine operations, repairs and maintenance, and military training on Post.

3.4.5.3 CUMULATIVE IMPACTS

The ROI for Land Use lies within the boundaries of HAAF and the City of Savannah lands immediately adjacent. Activities discussed in this section were deemed sufficiently proximate in time or location to the proposed action to result in potential cumulative impacts. Past, present, and reasonably foreseeable future events with the potential to result in cumulative impacts to Land Use are considered in the analysis below.

3.4.5.3.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Past and present actions in the ROI consist of the historical development of the City of Savannah, the airfield proper, and HAAF, as well the associated infrastructure and transportation network that support them.

Periodic iterations of timber harvest, site clearing/grading/stabilization, and construction/demolition in the ROI were followed by periods of routine operations, maintenance and repair, as well as military training activity on HAAF. These past actions contributed to changes in Land Use as the ROI transformed from forested to agricultural, residential, commercial, and military, all uses seen currently in the ROI. Solid Waste Areas (landfills), Recycling Centers, and Borrow Pit development were also among the land uses implemented in the ROI. These changes did not occur in an ordered and systematic method, as is typically preferred today, and accordingly resulted in minor adverse cumulative impacts to Land Use in the ROI. Present actions consist of these same uses, but more in accordance with Installation, City, and County planning documents, and result in negligible adverse cumulative impacts to Land Use in the ROI.

Future actions on the Installation, as identified in Table 3, are anticipated to result in minor adverse cumulative impacts to Land Use. The Installation will manage all future development in accordance with the JLUS, ACUB, ICUZ Study, and other management plans, per the existing condition/status quo for the Installation. FSGA/HAAF will coordinate with local government officials, including the zoning and planning boards, ensuring potential land use conflicts and/or incompatibilities are identified early and issues of concern resolved prior to coming to fruition. All municipal solid waste generated on HAAF will continue to be collected in accordance with existing policies and protocols and transported to landfills on FSGA. Based on currently available data from the FSGA/HAAF Environmental Division, these landfills have an expected life/capability through 2041, and the Installation does not anticipate the life of the landfills being significantly impacted from proposed future current activities. Sludge generated at the WWTP on HAAF will continue to be collected and transported to Superior Landfill and Recycling Center in Savannah, all of which will continue to be managed in accordance with existing federal, state, and local laws and regulations.

All contractors performing construction, demolition, and other actions generating wastes/debris on Post will salvage or recycle as much of the materials as possible, and this will continue under all alternatives. All projects requiring borrow/fill material will obtain these materials from off-Post sources, and these sources will require testing in accordance with existing Installation policies and protocols, all of which shall be coordinated through the Borrow Pitt POC for the Installation. No impacts are anticipated due to routine operations, repairs and maintenance, and military training on Post, as all training on existing ranges is conducted in accordance with ARs, TM, TCs, and the FSGA/HAAF Post Range Guide (2019), and all operations are managed through the Installation's existing range scheduling process (RFFMS), ensuring the training requirements of Soldiers on HAAF are met to standard. Overall, minor adverse cumulative impacts are anticipated to land use under this alternative.

3.4.5.3.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Past and present actions and impacts are as discussed under Alternative I; however, under this alternative there will be no development of a new taxiway (or its associated facilities) south of the existing flightline. This is not a substantial reduction in acreage, compared to Alternative I, although this does result in these lands remaining within the remaining training acreage, which will be beneficial to the training environmental on Post. All other impacts are as discussed under Alternative I. All new, future development will be required to comply with all Installation requirements associated with JLUS, ACUB, ICUZ Study, Solid Waste (landfills), Recycling, and Borrow Pits, as discussed under Alternative I. Overall, this alternative will result in minor adverse cumulative impacts to Land Use under this alternative.

3.4.5.3.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Under this alternative, past and present actions within the ROI are as discussed under Alternative I. Future actions on the Installation do not include implementation of the ADP and its associated projects, but do have the potential to include the proposed actions identified in Table 3. All actions will occur in accordance with the Installation's JLUS, ACUB, and ICUZ Study, resulting in an orderly development of Installation lands, as well as the responsible use of Installation landfills, recycling requirements, and borrow pits. Likewise, the Installation will remain mindful of adjacent city and county development plans and maintain the valuable two-way communication and planning process it has established within these communities.

This alternative would also result in the clearance of far fewer forested lands in the ROI as compared to Alternatives I and II, due to much less proposed construction. This would result in much more training lands remaining within that land use category, as well as that land not being disturbed or cleared for development, as well as the associated environmentally adverse impacts, to include erosion. The Installation will continue its ongoing maintenance of existing training lands by the ITAM/LRAM section within DPTMS and the Environmental Division following all training events will ensure the lands available are sufficient to support this valuable training resource. As with all Installation actions, site-specific BMPs and minimization measures will be enacted to ensure that training lands on the Installation remain sufficient to meet the military mission. Overall, this alternative will result in negligible beneficial cumulative impacts to Land Use.

3.4.6 SOCIECONOMICS

The Socioeconomic environment for HAAF lies within Chatham County, GA, and the geographic area for the analysis was selected as the basis on which the social and economic impacts of the proposed action and its alternatives were analyzed. The criteria used to determine the Study Area, as well as the ROI for cumulative impacts, are the geographic location of HAAF, the residency distribution of military and civilian personnel, commuting distances and times, and the location of businesses providing goods and services to the Installation, its personnel, and their dependents. Information presented in the section is from the FSGA/HAAF 2018 Command Data Summary and DataUsa.com; the baseline data presented ranges from 2016-2018 (most recent data available).

3.4.6.1 AFFECTED ENVIRONMENT

Employment. As of 2018, Chatham County was home to a population of almost 289,000 people, of which 140,000 were employed in Chatham County. Approximately 4,100 were civilian service personnel and 2,500 were military personnel who worked on HAAF. From 2015 to 2016, employment within the County grew at a rate of 4.34%, from 133,525 employees to 139,326 employees during a one-year period. The local economy specializes in Real Estate (Rental and Leasing), Accommodation and Food Service (via Tourism), and Transportation and Warehousing**,** and the highest paying jobs held by residents of Chatham County, by median earnings, are Architecture and Engineering**;** Health Practitioners; and Life, Physical, and Social Science. The median household income in Chatham County is $53,964 in 2016, and military pay contributes substantially to the local economy, totally $26,569,784 in 2018 alone.

Housing. The median property value in Chatham County is $176,200, which is 0.86 times smaller than the national average of $205,000. The median home ownership rate is 53.8%, only slightly lower than the national average of 63.1%, resulting in a healthy buyer and seller market. As of 2018, approximately 68% of military personnel stationed on HAAF live off-Post in Savannah and its vicinity, another 1,662 live on Post in Army Family Housing Areas (AFHAs), and 1,189 single Soldiers live on-Post in military barracks (CDS, 2018). In 2003, HAAF transferred responsibility for providing AFHAs services and ancillary supporting facilities, to include unaccompanied personnel housing (barracks) to a private entity, in accordance with the Residential Communities Initiative (RCI). Accordingly, the Army's RCI partner, Balfour Beatty Communities, has all ownership, maintenance, and repair responsibilities for these properties.

Schools. The U.S. Department of Education provides federal impact aid to school districts that have federal lands within their jurisdiction. This federal impact aid is authorized under Public Law 103-382 as payment in lieu of taxes that would have been paid if the land was not held by the federal government. School districts receive federal funding for each student whose parent or parents live on or work on federal property. The amount of federal aid a school district receives is dependent on the number of "federal" students the district supports in relation to the total district student population. Schools receive more funding for students whose parents both live and work on federal property, although total funding varies annually according to congressional appropriations for the program. Funding has ranged from $200 to $3,000 per pupil. There are no schools located on HAAF, although there are Child Development Centers (CDCs) for the Post's pre-school aged children, and its school-aged children may attend Chatham County public school district schools or private schools within the study area.

The FSGA/HAAF Army Education Centers provide adult and continuing education services to active duty soldiers and their family members, Army civilians, reserve personnel, and retired personnel. The center provides counseling, an English as a second language program, high school completion preparation, on-duty performance enhancement programs, and testing and professional development programs. Associate's, Bachelor's, and Master's degrees programs are offered on-post through a consortium of area colleges and universities offering a variety of degree programs. Armstrong Atlantic State University, Coastal Georgia Community College, Georgia Southern University, East Georgia College, and Savannah State University are the institutions that compose the Liberty Center. There are a number of universities and colleges in the ROI and nearby Savannah, including the Brewton-Parker College Hinesville campus, St. Leo College in Savannah, the Savannah College of Art and Design, South College in Savannah, Altamaha Technical Institute in Jessup in Wayne County, and the Savannah Technical Institute.

Environmental Justice. On February 11, 1994, President Clinton issued Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. The Executive Order is designed to focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities. Environmental justice analyses are performed to identify the disproportionate placement of high and adverse environmental or health effects from proposed federal actions on minority or low-income populations and to identify alternatives that could mitigate these effects. Minority populations are identified as Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and other Pacific Islander, persons of two or more races, and persons of

Hispanic origin. Chatham County's population of 289,082 are 97.2% are American citizens. The ethnic composition is composed of 141,346 White residents (48.9%), 112,723 Black residents (39%), 18,300 Hispanic residents (6.33%), and 6,170 Asian residents (2.13%). There is no data available regarding the ethnic composition of Soldiers, Civilians, and Family members residing on Post, however, the ethnic composition for Soldiers and Civilians who work on FSGA/HAAF is 15,164 White (63%), 6,796 Black (28%), 597 Hispanic (2.5%), 722 Asian (3%) residents, and Other (3.5%).

Other Areas of Concern in the Socioeconomic Study Area. Although not resource areas within the socioeconomic environment, FSGA/HAAF also ensures compliance with the following areas of concern, as they often address sensitive members of the community.

Protection of Children. Executive Order 13045, *Protection of Children from Environmental Health and Safety Risks*, requires federal agencies, to the extent permitted by law and mission, to identify and assess environmental health and safety risks that might disproportionately affect children. Historically, children have been present at HAAF as residents and visitors; for example, they have lived in the family housing and used the recreational facilities. The Army has taken precautions for their safety by a number of means, such as installing fencing, limiting their access to certain areas, and providing adult supervision.

Children are present at Fort Stewart as residents and visitors (e.g., family housing, schools, users of recreational facilities, etc.). The Army takes precautions for their safety through a number of means, including, but not limited to, the use of fencing, limitations on access to certain areas, and provision of adult supervision. The Family Advocacy Program at Fort Stewart provides classes on child abuse prevention and personal safety for children. A curfew is enforced for children on Fort Stewart. Children under the age of 14 must be inside between the hours of 9 p.m. and 6 a.m., and children age 14 to 17 years must be inside between 11 p.m. and 5:30 a.m. unless accompanied by a parent, guardian, or responsible adult 21 years of age or older (DMDC, 2001a).

Provision for the Handicapped. The Americans with Disabilities Act (ADA) guarantees equal opportunity for individuals with disabilities in public accommodations, employment, transportation, state and local government services, and telecommunications. All construction and renovation actions on HAAF occur in accordance with the ADA, where applicable, unless there is a specific exclusion, such as for ranges and other areas where the disabled are not reasonably anticipated to be present.

Homeless and other special programs. The region has a number of shelters and assistance programs for individuals and families in need of temporary placement due to lack of fixed, regular, or adequate residence. A mix of government and private funding supports these programs, to include the Fort Stewart/HAAF Family Advocacy Program, which provides shelter and referral information in the Study Area.

No changes to existing protocols and procedures by which the programs concerning protection of/provisions for children, the handicapped, and/or the homeless are implemented on HAAF are proposed or anticipated as result of implementing the proposed actions in the ADP for HAAF. Therefore, they will not be affected in anyway, no impacts are anticipated, and this topic will not be discussed further in the PEA.

3.4.6.2 ENVIRONMENTAL CONSEQUENCES

Overall impacts to Socioeconomic Resources anticipated as a result of implementing the proposed action are discussed in this section. As each project in the ADP for HAAF enters the design phase, supplemental NEPA analysis will occur and will be documented via a REC (if it falls within the scope of this PEA) or an EA (if it beyond the scope of this PEA), as necessary.

3.4.6.2.1 ALTERNATIVE I: IMPLEMENT ILLUSTRIATIVE PLAN

Short-term, direct, minor, beneficial impacts to socioeconomic resources in the Study Area are anticipated due to implementation of projects proposed in the ADP for HAAF, especially in real estate, accommodation and food services, and transportation sectors, which are the three highest specializations in the Study Area. Specifically, workers drawn to the Study Area for jobs associated with projects in the ADP will require housing, eat in local restaurants, shop in local grocery/other stores, purchase fuel from local gas stations, and require local transportation services, resulting in beneficial impacts in the Study Area. There are also beneficial impacts associated with the jobs created by implementing the actions proposed in the ADP. It is anticipated that these beneficial impacts will be temporary, as they will be associated with each project as it is implemented and are not anticipated to be long-term, as they are not associated with a long-term action such as the permanent realignment of permanent personnel, which often presents the local community with a more sustained source of income. Even on a short-term basis, however, the proposed action will provide beneficial impacts to Socioeconomics in the Study Area. No change is anticipated to military contributions to the local economy, which should remain steady under this alternative and continue to present long-term, direct, moderate beneficial impacts to the local community, as military pay alone contributed $26,569,784 in 2018 to the local economy in Chatham County in 2018 alone.

No changes to Housing, Schools, or Environmental Justice are anticipated under this alternative. The ratio of Soldiers and/or their Families residing on Post-to-off Post is not anticipated to change and none of the projects in the ADP are anticipated to result in population surges sufficient to require construction of new housing, either on or off-Post. Soldier transfer rates on/off the Installation associated with permanent change of station (PCS) actions are anticipated to remain as-is and will not change from the status quo. There are no schools located on the Installation and no actions are anticipated to require their construction. There are no known minority or low-income populations on or adjacent to HAAF that would be impacted by any of the proposed actions, but the Installation maintains data and conducts appropriate analysis via the NEPA process to ensure it complies with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. Overall, long-term, direct, moderate, beneficial impacts to Socioeconomics are anticipated under this alternative.

3.4.6.2.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Short-term, direct, minor, beneficial impacts to socioeconomic resources in the Study Area are anticipated under this alternative, for reasons disused under Alternative I. Although this alternative does not include development of the acreage south of the existing flightline, this does not change the finding of effect for socioeconomics, as the location of the job does not impact its economic benefit. As discussed under Alternative I, an increase in jobs and associated expenditures is anticipated in the Study Area and will provide a beneficial impact to the local economy, although temporary. No changes are anticipated to housing, schools, or Environmental Justice, also as discussed under Alternative I, and the beneficial input

of military pay to the local community is anticipated to remain steady. Overall, long-term, direct, moderate, beneficial impacts to Socioeconomics are anticipated under this alternative.

3.4.6.2.3 ALTERNATIVE III: NO ACTION/STSTUS QUO

No change to socioeconomic resources in the Study Area are anticipated under this alternative. None of the projects proposed in the ADP for HAAF will occur, which may have introduced a positive economic impact in the Study Area, although to a negligible degree only. However, there will continue to be long-term, direct minor, beneficial, impacts to the local economy due to Military contributions and expenditures in the Study Area, as discussed under Alternative I.

No changes are anticipated to Housing either on-Post or off-Post as a result of this alternative, and there are no schools located on the Installation. Housing is maintained by the Installation's RCI contractor and none of the projects in the ADP will result in population surges sufficient to increase attendance at off-Post schools. There are no projects planned for implementation that may impact a minority or low-income population either on or adjacent to HAAF, ensuring the Installation continues to comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. Overall, long-term, direct, moderate, beneficial impacts to Socioeconomics are anticipated under this alternative.

3.4.6.3 CUMULATIVE IMPACTS

The ROI for Socioeconomics lies within the boundaries of Chatham County, GA, and the geographic area for the analysis which follows was selected as the basis on which the social and economic impacts of the proposed action and its alternatives were analyzed. Activities discussed in this section were deemed sufficiently proximate in time or location to the proposed action to result in potential cumulative impacts. Past, present, and reasonably foreseeable future events with the potential to result in cumulative impacts are considered in the analysis below.

3.4.6.3.1 ALTERNATIVE I: IMPLEMENT ILLUSTRIATIVE PLAN

Past and present actions in the ROI consist of the historical development of the City of Savannah, HAAF and the associated smaller communities throughout Chatham County. Development over time defined social and economic structure of these communities, leading to the City of Savannah and HAAF as we now know it today. These routine operations, repair, maintenance, and training on HAAF continue, as do the residential, commercial, and industrial activities in the City of Savannah and overall area comprising Chatham County and its smaller communities. Together, these resulted in beneficial cumulative impacts in the ROI.

Future actions in the ROI consist of the continuation of routine operations, repair, maintenance, and training on HAAF, as well as ongoing commercial and residential development on adjacent City of Savannah lands. Future actions, as identified on Table 3, Future Actions in the ROI, all have the potential for beneficial cumulative impacts to socioeconomics in the ROI. In particular, implementation of Project DeRenne is anticipated to improve the transportation system along the northern boundary of HAAF and the southern portion of Savannah. This project will create jobs in the ROI, and an improved transportation network may

facilitate easier/more efficient access on/off the Installation by those who live/work on HAAF but live/work in Savannah. Economic benefit may likewise be found via continued improvements associated with the Savannah Harbor Extension Project, which is facilitating the travel of larger ships with more goods and services to the area, including more jobs to conduct the work, some of whom may live on HAAF. This potential increase in economic activity is anticipated to result in long-term, beneficial impacts to the ROI. Overall, this alternative is anticipated to result in moderate beneficial cumulative impacts to Socioeconomic resources.

3.4.6.3.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Past and present actions in the ROI are as discussed under Alternative I; however, the construction proposed south of the existing flightline would not occur under this alternative. As discussed previously, however, potential socioeconomic impacts are not associated with the exact location of the development and this does not impact the determination of impacts under this alternative. Future actions, are as discussed under Alternative I, and all have the potential for beneficial cumulative impacts to socioeconomics in the ROI. In particular, implementation of Project DeRenne is anticipated to improve the transportation system along the northern boundary of HAAF and the southern portion of Savannah. This project will create jobs in the ROI, and an improved transportation network may facilitate easier/more efficient access on/off the Installation by those who live/work on HAAF but live/work in Savannah. Economic benefit may likewise be found via continued improvements associated with the Savannah Harbor Extension Project, which is facilitating the travel of larger ships with more goods and services to the area, including more jobs to conduct the work, some of whom may live on HAAF. Overall, this alternative is anticipated to result in moderate beneficial cumulative impacts to Socioeconomic resources.

3.4.6.3.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Past and present actions are as discussed under Alternative I; however, future actions would not include development proposed in the ADP for HAAF, and would consist primarily of the continuation of routine operations, repair, maintenance, and training on HAAF, as well as ongoing commercial and residential development in the City of Savannah. Future projects may still be implemented, as discussed under Alternative I, and have the potential to result in the same beneficial economic impacts in the ROI, as discussed under Alternative I. Overall, this alternative is anticipated to result in moderate beneficial cumulative impacts to Socioeconomic resources.

3.4.7 VISUAL RESOURCES AND RECREATION

3.4.7.1 AFFECTED ENVIRONMENT

Visual Resources. Visual resources are the natural and man-made features that make up the landscape of an area. Natural features include water surfaces, vegetation, and topography, and man-made features include buildings, towers, roads, and airfields. These features combine to give an area its unique characteristics and are inherent to the structure and function of that landscape. The relative importance of a change to these visual resources is influenced by the value it has to the viewer, public awareness of the area, and general community concern for visual resources in the area.

A substantial portion of HAAF is utilized as a cantonment area, which occupies the north, northeastern, and eastern portions of the Installation, dedicated to military support facilities, as well as military and Army Family Housing Areas (AFHAs). Although primarily developed, care is taken to plant trees, grasses, shrubs, and flowers to ensure the cantonment area has a pleasing overall visual appearance. The southeastern portion of the Installation is both forested and developed, consisting of the HAAF golf course, scattered military facilities along the southern flightline, and forested tracts of land utilized for land navigation training. The northwestern, western, and southwestern portions of the Installation are primarily an open, forested, marsh system. These areas are utilized both for land navigation training and as a recreational resource for fishing, hiking, and camping.

Recreation. Recreational resources consist of the activities, both indoor and outdoor, that are available to a population in a certain area, and potential impacts to this resource are evaluated by the effect of a proposed action to the facilities or natural resources that support these activities. There are several sources of recreation on HAAF, the most prominent of which include Lott's Island Recreation Area on the southwest side, the Installation Golf Course to the southeast, and a baseball/athletic field, Skeet Range, and Flight Simulator in the cantonment area, all open to Soldiers, Civilians, and Family members (Figure 25). There are also several playgrounds throughout the cantonment area and Army Family Housing Areas (AFHAs).

Fort Stewart/HAAF has over 2,500 hunting permit holders, who take 40,000-50,000 trips to the field annually, and 3,000-4,000 fishing permit holders, who make over 30,000 fishing trips annually, which add about $4,000,000 annually to local economies. All of these resources are managed and maintained by the Directorate of Public Works (DPW), Environmental Division's Fish & Wildlife Branch through the iSportsman program.

Image Redacted

Figure 25: Recreational Resources on HAAF.

Research indicates that people will walk for recreational purposes if a facility is provided, with a 70-76% of the 2040 Savannah Chatham County Comprehensive Plan survey respondents supporting increasing the amount of land for "Parks" and "Protected Natural Areas. In addition, other surveys have noted that recreational walking is one of the easiest ways for people to get the recommended allotment of physical exercise each day. Moderate exercise, such as walking, contributes to both physical and mental wellbeing (DataUSA, 2019).

3.4.7.2 ENVIRONMENTAL CONSEQUENCES

Overall impacts to Visual Resources and Recreational Resources anticipated as a result of implementing the proposed action are discussed in this section. As each project in the ADP for HAAF enters the design phase, supplemental NEPA analysis will occur and will be documented via a REC (if it falls within the scope of this PEA) or an EA (if it beyond the scope of this PEA), as necessary.

3.4.7.2.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Visual Resources. Long-term, direct, moderate, adverse impacts to Visual Resources are anticipated as a result of implementation of Alternative I. Impacts are primarily anticipated due to timber harvest of 110.7 acres of forested land (and visual buffers) on HAAF to support the projects identified in the ADP for HAAF. Following timber harvest, the site clearing/grading/stabilization, and construction (to include installation of new utility corridors or connecting to an existing corridor from a new site), follow, which remove vegetation or physical structures currently serving as a visual as well as physical buffer between each project and another location. In most cases, vegetative buffers will be restored, in accordance with the Installation Tree Management Policy and Plan, minimizing potential impacts to less than significant, particularly in areas located adjacent to the cantonment area, airfield, roads, etc. Should the buffer removed consist of a facility, such as in a cantonment area demolition project, Installation stakeholders will work to facilitate a remedy for the impacted agency/organization should the removal of this visual buffer be determined an adverse impact. Impact minimization measures could include planting buffers of trees or other vegetation, for example. Much of the higher-volume tree removal (more than five acres per project) will occur in the forested, undeveloped lands on HAAF, which are not frequently accessed by the public, Army Civilians, and others, and which will accordingly not result in associated adverse impacts to visual resources in these locations. Although the public and others may access the forested lands within and adjacent to Installation recreational resources, these projects do not entail a large amount of tree clearances and, accordingly, no significant impacts to visual resources at those locations.

Proposed renovations to facilities and grounds on Post are anticipated to result in long-term, direct, negligible, beneficial impacts, as each will improve the physical appearance of the facility impacted. Indirect beneficial impacts may also occur to facilities adjacent to these improvements. As indicated earlier, vegetation will be reestablished to offset any adverse impacts. In addition, the ACUB Buffer program ensures the protection of the visual resources associated with the large marshlands system in the western portion of HAAF via land use controls it contains, which minimize potential encroachment from off-Post construction and subsequent adverse impacts to these visual resources.

Short-term, indirect, negligible adverse impacts are anticipated to visual resources due to routine operations, maintenance, repairs (to include work on existing roads, grounds, and utility corridors), and training on

Post. The majority of these actions center on facilities, grounds, and the associated transportation network, the majority of which do not contain the potential for directly impacting visual resources on Post such as the marsh and forested areas valued for those purposes. Where impacts may occur, restoration of visual buffers and other standard protocols will minimize potential impacts. Impacts to visual resources due to training on Post is likewise short-term and negligible, as units training within the forested areas of Post primarily take brushy vegetation for camouflage, conduct land navigation on existing roads and paths, and other actions which do not present a high potential for adverse impacts.

Recreation. Long-term, direct and indirect, minor, beneficial impacts to Recreation are anticipated under Alternative I, primarily due to construction of recreation-focused projects such as *Paving the RV Parking Lot and Constructing the Bathhouse* at Lott's Island Marina, *Constructing the Multi-Use Path Improvements* around the HAAF boundary, *and Construct POV Parking*. Construction of the multi-path improvements will connect recreational resources, AFHAs, fishing and hiking areas, and other resources on Post to one another, all of which previously did not have a connection. This will be of great benefit to persons who live, work, or are visiting the Installation. Implementation of the *POV Carwash* planned for long-range construction would also be beneficial to on-Post residents, workers, and visitors as well. Short-term, direct, and minor adverse impacts to adjacent recreational resources may occur as the timber harvest, site clearing/grading/stabilization, demolition, and construction process is underway (to include installation of new utility corridors or connecting to an existing corridor from a new site); however, these adverse impacts will stop once the project is complete, and the beneficial impacts associated with the new and/or improved recreational resources will begin.

Short-term, indirect, negligible adverse impacts may occur due to the construction, demolition, or renovation projects in the vicinity of the existing recreational resources on Post (Golf Course, Marsh System, other); however, these impacts will be temporary and these recreational resources may benefit overall in having these projects in their vicinity, as visitors to one resource may use the others as well. Short-term, direct and indirect, negligible adverse impacts are anticipated due to routine operations, maintenance, repairs (to include work on existing roads, grounds, and utility corridors), and training on Post. Routine operations, maintenance and repair of facilities and grounds associated with recreational facilities is conducted by personnel familiarized with the Installation policies, protocols, and federal and state law, and this minimizes the potential for direct adverse impacts to these resources. No impacts due to training on Post are anticipated as units do not train at or on the Installation's recreational resources.

Overall, this alternative is anticipated to result in long-term, direct, moderate, adverse impacts to Visual Resources and long-term, direct and indirect, minor, beneficial impacts to Recreation.

3.4.7.2.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Visual Resources. Long-term, direct, minor, adverse impacts to Visual Resources are anticipated as a result of implementation of Alternative II. Under this alternative, the lands south of the flightline will not be cleared and developed, resulting in 50-75 acres more forested lands remaining a forested visual buffer at this location and a total approximate removal of 80.16 acres of forested lands/visual buffer from HAAF. As Discussed under Alternative I, impacts are primarily anticipated due to timber harvest, site clearing/grading/stabilization, construction (to include installation of new utility corridors or connecting to an existing corridor from a new site), and demolition activities that temporarily remove vegetation or

physical structures currently serving as a buffer between that project and another location. Measures in Installation policies and plans will ensure tree removal from forested areas located adjacent to the cantonment area, airfield, roads, etc., will also maintain sufficient acreage to minimize potential adverse impacts. Minimization measures could include planting buffers of trees or other vegetation, for example. Much of the higher-volume tree removal (more than five acres per project) will occur in the forested, undeveloped lands on HAAF, which are not frequently accessed by the public, Army Civilians, and others, and which will accordingly not result in associated adverse impacts to visual resources in these locations. Although the public and others may access the forested lands within and adjacent to Installation recreational resources, these projects do not entail a large amount of tree clearances and, accordingly, no significant impacts to visual resources at those locations. All other impacts are as discussed under Alternative I.

Recreation. Long-term, direct and indirect, minor, beneficial impacts to Recreational are anticipated under Alternative II, as discussed under Alternative I; however, under this alternative no timber harvest will occur south of the existing flightline, leaving this forested area open for hiking and other potential recreational uses. This area is also utilized by the Installation for land navigation purposes, so there is potential competition for this usage; however, it is a beneficial impact for this resource to have this acreage remain. All other impacts are as discussed under Alternative I.

Overall, this alternative is anticipated to result in long-term, direct, minor, adverse impacts to Visual Resources and long-term, direct and indirect, minor, beneficial impacts to Recreation.

3.4.7.2.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Visual Resources. Under this alternative, projects proposed in the ADP for HAAF would not be implemented, resulting in no clearing of additional forested lands/visual resources. Short-term, direct, negligible adverse impacts to Visual Resources are anticipated due to routine operations, maintenance, repairs (to include work on existing roads, grounds, and utility corridors), and training on Post. The routine operations, maintenance and repair on facilities and grounds associated with recreational facilities is conducted by personnel familiarized with the Installation policies, protocols, and federal and state law, and this minimizes the potential for direct adverse impacts to these resources. Impacts due to training on Post are likewise short-term, indirect, and negligible, as units training within the forested areas of Post do not routinely impacts this resource, as previously discussed.

Recreation. Short-term, direct, negligible adverse impacts are anticipated due to routine operations, maintenance, repairs (to include work on existing roads, grounds, and utility corridors), and training on Post. Routine operations, maintenance, and repair on facilities and grounds associated with recreational facilities are conducted by personnel familiarized with the Installation policies, protocols, and federal and state law, and this minimizes the potential for direct adverse impacts to these resources. No impacts due to training on Post are anticipated as units do not train at or on the Installation's recreational resources. However, the lack of construction/implementation of the projects proposed under the ADP for HAAF will result in potential adverse impacts to Recreation on Post, as those projects would have created new recreational resources and/or improved existing ones.

Overall, this alternative is anticipated to result in short-term, direct, negligible, adverse impacts to Visual Resources and short-term, direct, negligible, adverse impacts to Recreation.

3.4.7.3 CUMULATIVE IMPACTS

The ROI for Visual Resources and Recreation lies within the boundaries of HAAF, as none of the actions on/within the City of Savannah were deemed sufficiently proximate in time or location to the proposed action to result in potential cumulative impacts. Past, present, and reasonably foreseeable future events with the potential to result in cumulative impacts are considered in the analysis below.

3.4.7.3.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Past and present actions in the ROI consist of the historical development of HAAF and its associated infrastructure and transportation network. Periodic iterations of timber harvest, site clearing/grading/ stabilization, and construction/demolition in the ROI were followed by periods of routine operations, maintenance and repair, as well as military training activity on HAAF. Development reduced the vegetative cover in the ROI, resulting in minor adverse cumulative impacts to the forested lands that make up the predominance of the Visual Resources on HAAF. Although this vegetative removal also adversely impacted some of the recreational opportunities in the ROI, ample resources still remain, to include biking and hiking trails, and new recreational resources were constructed, resulting overall in minor beneficial cumulative impacts to Recreation in the ROI.

Ongoing actions in the ROI consist of routine operations, repair, maintenance, and training on HAAF, all of which require minimal vegetation removal sufficient to impact visual resources. Potential impacts to Visual Resources and Recreation resources are minimized due to the fact that personnel conducting these actions are familiarized with the Installation policies, protocols, and federal and state law. Impacts to both resources due to training on Post are negligible, as units training within the forested areas of Post primarily take brushy vegetation for camouflage, conduct land navigation on existing roads and paths, and other actions which do not present a high potential for adverse impacts to Visual Resources. Vegetation removal associated with these actions at the recreational facilities on Post is likewise not sufficient to adversely impact these resources, and Soldiers do not train on these resources in the ROI.

Future actions in the ROI consist of the continuation of routine operations, repair and maintenance, and training on HAAF, and actions described on Table 3, Future Actions in the ROI, most notably construction of Project DeRenne, which will remove trees and other vegetation along the boundary between HAAF and the City of Savannah to facilitate its construction. Although this will remove a visual buffer at this location, the trees will be replanted, in accordance with existing Installation guidance in the FSGA/HAAF Tree Plan/Policy. The construction of Project DeRenne is anticipated to result in minor beneficial cumulative impacts to Recreation, as the improved traffic flow will facilitate easier access to HAAF for those wishing to use the Installation's recreational and other assets on this portion of Post. Overall, this alternative is anticipated to result in moderate adverse cumulative impacts to Visual Resources and minor beneficial cumulative impacts to Recreation.

3.4.7.3.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Under this alternative, past and present actions within the ROI are as discussed under Alternative I. Future actions in the ROI, to include implementation of projects proposed in the ADP for HAAF, are still anticipated to result in minor adverse cumulative impacts to Visual Resources and minor beneficial

cumulative impacts to Recreation on HAAF. The only difference in these alternatives is not constructing the new taxiway and facilities south of the existing flightline. As this no longer removes the visual buffer at this location, adverse impacts are slightly less under this alternative. This new construction will shift north and into the existing cantonment area, where existing visual buffers consist primarily of shrubby vegetation that is easy to replace once removed. The lands immediately south of the existing flightline will not be cleared and developed under this alternative and remain open for recreational use, such as hiking. Overall, this alternative is anticipated to result in minor adverse cumulative impacts to Visual Resources impacts and minor beneficial cumulative impacts to Recreation.

3.4.7.3.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Under this alternative, past and present actions within the ROI are as discussed under Alternatives I and II. Future actions in the ROI, however, do not include implementation of projects proposed in the ADP for HAAF, but do include the continuation of routine operations, repair, maintenance, and training on HAAF, and those actions described on Table 3, Future Actions in the ROI, most notably construction of Project DeRenne. Construction associated with this project will remove trees and other vegetation along the boundary between HAAF and the City of Savannah, but trees will be replanted, in accordance with existing Installation guidance in the FSGA/HAAF Tree Plan/Policy, resulting in no more than minor adverse cumulative impacts in the ROI. The construction of Project DeRenne is anticipated to result in minor beneficial cumulative impacts to Recreation, as the improved traffic flow will facilitate easier access to HAAF for those wishing to use the Installation's recreational and other assets on this portion of Post. Overall, this alternative is anticipated to negligible adverse cumulative impacts to Visual Resources and negligible beneficial impacts to Recreation.

3.4.8 AIRSPACE AND AIRFIELD OPERATIONS

Unless otherwise specified, information discussed below is taken from the following sources: United Facilities Code (UFC) 3-260-01, *Airfield and Heliport Design, 2010; Installation Operational Noise Management Plan (ICUZ Study) for HAAF, 2012; and The Pilot's Handbook of Aeronautical Knowledge, 2016)*. Note: Airfield Safety will be covered under Health and Safety, and not in this section of the PEA.

3.8.1 AFFECTED ENVIRONMENT

Airspace. The Federal Aviation Act (49 USC 40103) and the Federal Aviation Authority (FAA) regulate and manage the navigable airspace of the U.S., including military training routes (MTR), military operating airspace (MOA), and restricted airspace. HAAF has a Class B runway that supports up to 60,000 operations per year, ranging from military deployments to training exercises conducted on C-17s, C-130s, C-5s, commercial aircraft, and rotary helicopters. Units training on HAAF are allowed to utilize small, hand-held unmanned aerial systems (UAS); however, none of the DoD's array of larger UASs are currently allowed on HAAF, due to its adjacency to the City of Savannah. Aircraft on HAAF are utilized by both tenant and visiting units from the U.S Army, Navy, Air Force, Marines, Coast Guard, and Reserves.

HAAF operates in Class D Airspace when its Air Traffic Control (ATC) Tower is open and Class E Airspace when its ATC Tower is closed. Class D airspace is generally the airspace from the ground to 2,500 feet above the airport's ground surface; Class E airspace is any controlled airspace not classified as

either A, B, C, or D. When HAAF ATC Tower is operational, all aircraft must establish two-way radio communications with the ATC Tower prior to entering the airspace and maintain communication while in that airport's airspace. ATC radar surveillance of HAAF is maintained via a mosaic of radars that feed into the FAA Standard Terminal Automations Replacement Systems (STARS) supporting Savannah/Hilton Head International Airport, HAAF and Wright Army Airfield. The primary radar source that cover HAAF is provided by the Wright AAF ASR-11 radar at Fort Stewart.

There are currently four aviation corridors that connect HAAF to the airfields on FSGA (Figure 26). These corridors are used by rotary wing aircraft to transition to and from Fort Stewart airfields, training areas, and ranges. Fixed wing aircraft arriving/departing HAAF to/from Fort Stewart proceed at higher altitudes under Visual Flight Rules (VFR) or as directed by ATC under Instrument Flight Rules (IFR) or VFR flight following. The traffic pattern airspace and aviation corridors for HAAF are covered in an MOU between Chatham County, the City of Savannah, and FSGA/HAAF. Generally the rotary wing aircraft fly down the center of the corridor, but they can maneuver to the left/right within the overall corridor. A buffer is added to each side of the corridor to reduce possible annoyance to communities potentially impacted by these routes. There are no changes proposed to MTR/aviation corridors, MOAs, and/or restricted airspace, to include training within these resources, and the implementation of the alternatives will not result in any impacts to these airspace resources.

The runway on HAAF is maintained to ensure aircraft approaches are free of all potential obstructions, in accordance with FAA regulations, 14 CFR Part 139 Section 331, *Obstructions*, and UFC 3-260-01, *Airfield and Heliport Planning and Design*. This applies specifically to both man-made and natural obstructions, such as trees and brush and debris. However, there are exceptions to this rule, to include man-made obstructions such as windsocks, antennae, and other navigational aids, which assist in safe aircraft operations, and which are factored into the airfield's landscape for its pilots. The runway is also maintained to ensure approach and departure patterns do not encroach on restricted areas, which include unusual, often invisible, hazards to aircraft. Clear zones are located on the ground at the end of each runway and APZs are located beyond the clear zone; each possess the potential for accidents and their use is restricted in accordance with DODI 4165.57.

Protective features such as barriers, fences, lighting, access control, intrusion detection, and assessment must be integrated into the airfield planning and design process to minimize problems with aircraft operations and safety requirements. These protective measures should be included in the design based on risk and threat analyses with an appropriate level of protection, or should comply with security-related requirements. Mindful of these restrictions, the planning and design of facilities on and around the airfield must be coordinated between the appropriate users, Command, and Installation planners. Modifications to existing facilities on and immediately adjacent to the airfield, as well as construction of new facilities within this space, must consider potential impacts to navigable airspace, i.e., will such actions constitute potential obstructions within the HAAF airspace environment.

Image Redacted

Figure 26: HAAF Flight Corridor System (ICUZ Study, 2012).

In addition to physical obstructions that can be built within the airspace, adjacent land uses can also create conditions hazardous to aircraft operations. Such uses include activities that release substances into the air such as dust or smoke capable of impairing the visibility of crew members; objects that produce light emissions, direct or indirect (reflective), capable of interfering with the vision of crew members, including high-intensity lights and reflective artificial surfaces; activities that produce emissions capable of interfering with aircraft communications or navigational systems; and activities that attract birds or waterfowl, particularly in large numbers, including sanitary landfills, feeding stations, and attractive types of vegetation (grain and cornfields). Accordingly, adhering to the Regulating Plan is of vital importance, as these standards will prevent these conflicting land uses adjacent to the airfield.

Airfield Operations. The main portion of the airfield on HAAF lies within the Airfield Operations Building Standard of the Regulating Plan for HAAF. Airfield operations are accomplished within a multitude of facilities on HAAF, and include the ATC Tower, aircraft rescue and firefighting facilities (as well as their associated support equipment), fueling facilities, the airfield operations center (airfield management facility), squadron operations/aircraft maintenance units, and air mobility operations groups. To maximize operational functionality, airfield operations are located along the hangar line, with the central area typically allocated to airfield operations. Current development surrounding the airfield is focused north and west of the existing flightline; however, its configuration allows for future development to the south and these lands have been accordingly identified for airfield operations and airfield support in the HAAF Regulating Plan to fully support future development goals.

Other facilities that support these airfield operations are located adjacent and allow simplified access among maintenance, aircraft, and support areas. These facilities are located within the Airfield Support Building Standard of the Regulating Plan. When multiple aviation units are located at one facility, their integrity may be retained by locating such units adjacent to each other, i.e., by implementing functional adjacency. When required, other support facilities, such as aviation fuel storage and dispensing, heating plants, water storage, consolidated parts storage, and motor pool facilities, are sited on the far side of an access road paralleling the hangar line.

Vehicular roads on airfields cannot cross or be within the lateral clearance distance for runways and taxiways, as this prevents normal vehicular traffic from obstructing aircraft in transit; however, rescue and firefighting access roads are usually needed to provide unimpeded two-way access for rescue and firefighting equipment to potential accident areas. Connecting these access roads to the extent practical with airfield operational surfaces and other airfield roads will enhance fire and rescue operations. Fuel truck access points to aircraft parking aprons are located to provide minimal disruptions and hazards to active aircraft movement areas. To that end, fuel truck access from the facility boundary to the fuel storage areas are kept separate from other vehicular traffic, and fuel trucks are parked as close to the flight line as is reasonably possible. Likewise, transfer of explosives and munitions from storage areas to arm/disarm pads occurs on dedicated transfer roads, which are used exclusively for explosives and munitions transfer vehicles.

3.4.8.2 ENVIRONMENTAL CONSEQUENCES

Overall impacts to Airspace and Airfield Operations anticipated as a result of implementing the proposed action are discussed in this section. As each project in the ADP for HAAF enters the design phase, supplemental NEPA analysis will occur and will be documented via a REC (if it falls within the scope of this PEA) or an EA (if it beyond the scope of this PEA), as necessary.

3.4.8.2.1 ALTERNATIVE I: ILLUSTRATIVE PLAN

Airspace. No impacts to Airspace are anticipated under this alternative. Although implementation of the projects in the ADP for HAAF will result in an increase in contractor-related vehicles and materials on or in the direct vicinity of the airfield, none of these items are permitted within the airfield's clear zones, APZs, and other portions of the airfield that must remain free of obstructions in accordance with FAA regulations and pertinent CFRs. Also, these occurrences will be associated with each project's implementation only and will cease at the conclusion of each project's duration, resulting in them only being in the vicinity of the airfield on a temporary basis. Impacts may be further avoided via project-specific restrictions, to include staggering activities by location on the airfield and closing that applicable portion of the airfield to aircraft and vehicular access during the project's duration. No impacts to airspace are anticipated as a result of routine operations, repair, and maintenance of existing facilities, due to adherence to established Installation policies and protocols, and state and federal laws and regulations. As previously noted, no impacts are anticipated to MTR/aviation corridors, MOAs, and/or any component associated with training, and implementation of the alternative will not result in changes to these airspace resources. Overall, no impacts to airspace resources are anticipated.

Airfield Operations. Long-term, direct, moderate, beneficial impacts to Airfield Operations resources are anticipated under this alternative, due to construction of a new taxiway south of the existing flightline maximizes the full potential of the airfield proper, and care was taken during the ADP for HAAF Workshop to place proposed development adjacent to the flightline within the correct Building Standards, in accordance with the HAAF Regulating Plan. This promotes efficiency of airfield operations, economic utilization of airfield land, and functional adjacency for resident units. Placing like next to like promotes unit cohesion, as most readily seen in the siting of the 3/160th SOAR and 3rd CAB facilities in close proximity to one another.

Short-term, direct, negligible, adverse impacts to Airfield Operations are anticipated during construction processes adjacent to the airfield, as site clearing/grading/stabilization, construction, and demolition to include installation of new utility corridors, parking areas, and support/connector roads, may result in temporary interruption to operations on the airfield proper. However, once completed, the newly constructed facilities themselves will result in long-term beneficial impacts to operational efficiency on the airfield, as these units will benefit from operations within new facilities that are at current Army standards, including new HQs, COFs, Parachute Rigging Facilities, Hangars, etc., resulting in overall benefits on HAAF. Should re-siting of any project be required, Installation Master Planners and Unit representatives will ensure they are sited in accordance with the HAAF Regulating Plan, are compatible with existing and/or adjacent land uses, and promote efficient use of airfield land. No timber harvest is anticipated for projects adjacent to the airfield; however, each project will receive individual review and updated

determinations will be made at that time. Vegetation removal, as required, will adhere to all E&S/permitting requirements as discussed under Biological Resources (Section 3.5).

Renovation of existing airfield facilities must also conform to the HAAF Regulating Plan and facilities must be maintained at a level that will sustain compliance with the current standards. Construction of the new taxiway south of the existing flightline, and the associated relocation of the 3/160th SOAR adjacent to this new resource, will enhance existing Airfield Operations and establish a new operational area, resulting in long-term, minor beneficial impacts for this resource. No impacts are anticipated as a result of routine operations, maintenance, and repair of existing facilities or military training on HAAF, which occur in accordance with all Installation policies, protocols, and all state and federal laws and regulations, and none of which are known to result in impacts to Airfield Operations. Overall, no impacts to airspace and long-term, direct, moderate, beneficial impacts to airfield operations resources are anticipated under this alternative.

3.4.8.2.2 ALTERNATIVE II: IMPLEMENT 3/160TH SOAR INFILL

Airspace. No impacts to airspace are anticipated, for reasons discussed under Alternative I.

Airfield Operations. Long-term, direct, minor beneficial impacts are anticipated under this alternative. This Alternative differs from Alternative I in that the Army will not construct the new taxiway on HAAF, and the flightline will maintain its current configuration and operational status. Under Alternative II, the new taxiway will not be constructed south of the existing flightline and the 3/160th SOAR will not relocate to the south of the flightline; instead, they will remain north of the flightline in the existing cantonment area, in proximity to facilities planned for the 3rd Combat Aviation Brigade 3CAB. Although the units will not acquire total separation, each will still receive new facilities, ones located directly adjacent to a flightline, and ones that are functionally adjacent, which is favorable to their current situation, resulting in long-term beneficial impacts to operational efficiency on the airfield. Should re-siting of any project be required, Installation Master Planners and Unit representatives will ensure they are sited in accordance with the HAAF Regulating Plan, are compatible with existing and/or adjacent land uses, and promote efficient use of airfield land.

All other potential impacts are as discussed under Alternative I, and levels of operational efficiency will still be beneficial under this alternative. Renovation of existing airfield facilities must also conform to the HAAF Regulating Plan and facilities must be maintained at a level that will sustain compliance with the current standards. No impacts are anticipated as a result of routine operations, maintenance, and repair of existing facilities or military training on HAAF, as discussed under Alternative I. Overall, no impacts to airspace and long-term, direct, minor, beneficial impacts to airfield operations resources are anticipated under this alternative.

3.4.8.2.3 ALTERNATIVE III: NO ACTION ALTERNATIVE

No impacts to either Airspace or Airfield Operations are anticipated as a result of this alternative. Construction proposed under Alternatives I and II would not be implemented, but routine operations, maintenance, and repair of existing facilities on and adjacent to the airfield proper would be ongoing, as would military training on HAAF, all of which occur in accordance with all Installation policies, protocols,

and all state and federal laws and regulations, and none of which are known to result in impacts to Airfield Operations.

3.4.8.3 CUMULATIVE IMPACTS

The ROI for Airfield Operations consists of the lands consisting of the airfield proper and its immediate vicinity. No cumulative impacts are anticipated for Airspace, as there were no direct/indirect impacts anticipated for that resource. Past, present, and reasonably foreseeable future events with the potential to result in cumulative impacts are considered in the analysis below.

3.4.8.3.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Past and present actions in the ROI consist of the historical development of the airfield proper and its immediate vicinity, all of which lie within the boundaries of HAAF. Periodic iterations of timber harvest, site clearing/grading/stabilization, and construction/demolition that created the airfield were followed by periods of routine operations, maintenance and repair, as well as military training activity on the surrounding lands (HAAF). As this resulted in the development of the airfield, these past actions within the ROI contributed to minor beneficial cumulative impacts to Airfield Operations. Ongoing actions in the ROI consist of routine operations, repair and maintenance, and training on adjacent lands, all of which occur in accordance with all Installation policies, protocols, and all state and federal laws and regulations, and none of which are known to result in impacts to Airfield Operations.

Future actions in the ROI include continuation of routine operations, repair and maintenance, and training on HAAF, the implementation of the ADP for HAAF, and actions described on Table 3, Future Actions in the ROI, most notably implementation of the HAAF Stormwater Drainage System Improvements and Apron and Taxiway Reconstruction. These projects will involve the replacement of deteriorated stormwater drainage pipe with new pipe and the removal and replacement of taxiways, runways, and parking aprons. Due to their operational adjacency, these repairs will occur concurrently, in phases, and are anticipated to greatly improve the drainage environment on the airfield proper. Overall, no impacts to airspace and minor beneficial cumulative impacts to Airfield Operations are anticipated under this alternative.

3.4.8.3.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Airfield Operations. Past and present actions in the ROI are as discussed under Alternative I. Under this alternative, future actions would not include construction of the new taxiway and facilities to support the 3/160th SOAR south of the existing flightline, which would result in less beneficial impacts to Airfield Operations, but not to a significant degree, as the facilities to support this unit would still be built adjacent to the airfield (although to the north of the airfield versus the south), within the appropriate building standard, and still maintain functional adjacency for the unit. Remaining impacts are as discussed under Alternative I, and are anticipated to result in minor beneficial impacts to Airfield Operations. Overall, no impacts to airspace and minor beneficial cumulative impacts to Airfield Operations are anticipated under this alternative.

3.4.8.3.3 ALTERNATIVE III: NO ACTION ALTERNATIVE

No cumulative impacts to Airspace or Airfield Operation are anticipated, as no direct/indirect impacts are predicted.

3.4.9 NOISE

3.4.9.1 AFFECTED ENVIRONMENT

Note: unless otherwise indicated, information in this section is obtained from the Installation Operational Noise Management Plan (ICUZ Study) for HAAF (2012).

Noise is often defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, diminishes the quality of the environment, or is otherwise annoying. Human response to noise varies by the type and characteristics of the noise source, distance from the source, receptor sensitivity, and time of day. Noise can be intermittent or continuous, steady or impulsive, and it may be generated by stationary or mobile sources (see Figure 27 for "typical" sound levels in the environment). Sound levels are expressed in decibels (dB), usually weighted for human hearing. In the A-weighted system (dBA), the decibel values of sounds at low frequencies are reduced, as compared to unweighted decibels, in which no correction is made. To describe "average" sounds on a 24-hour basis, the day-night sound level (DNL) metric is used. The DNL provides a single measure of overall noise impact and is the accepted single measure for determining human annoyance.

The Army uses the DNL measurement to measure environmental noise levels for their activities. This metric is recommended by the USEPA, used by most Federal agencies when defining their noise environment, and applied as a land-use planning tool for predicting areas of potential annoyance both inside and outside of an Installation. The DNL describes the average daily acoustic energy over an entire year—meaning that the whole spectrum of sound, from quiet to loud noises, is averaged across the year. The DNL metric also incorporates a "penalty" for nighttime noise (normally 10:00 p.m. to 7:00 a.m.) when loud sounds are more noticeable and annoying. However, when measuring noise levels from small arms and large caliber sources, weighted noise metrics are used.

The weighted measurements screen out the very high and low sound frequencies that cannot be heard by humans. A-weighted noise measurements reflect what people hear, noted as dBA or ADNL. A-weighting is typically applied to measuring noise for small arms activities, such as ongoing training at the existing Small Arms (SA) Range and Shoothouse on HAAF. For low-frequency sounds that can cause vibrations, a C-weighting metric is used, and is noted as dBC or CDNL. Many people find that these lower frequency sounds, which includes artillery fire, are more annoying than other noises so that is taken into account in this metric. Currently, no training with munitions occurs outside of the enclosed ranges currently existing on HAAF.

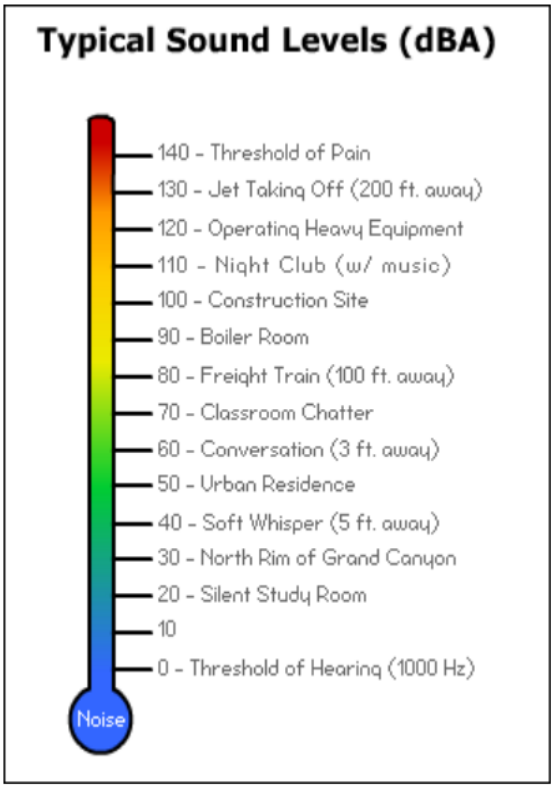

Figure 27: Typical Sound Levels (OSHA, 2019).

To assist the community in land-use planning and zoning, the Army uses planning zones where noise levels are separated into four categories associated with noise level contours: Land Use Planning Zone (LUPZ), Zone I, Zone II, and Zone III., as identified in the Installations' ICUZ Study and the Joint Land Use Study (JLUS), illustrated in Figure 28. The LUPZ is an area around a noise source with a DNL that is between 60 and 65 dBA, or 57 and 62 dBC. These areas are a buffer in Zone I where the noise could reach Zone II levels during periods of increased operations. This zone is used to provide the community with additional information regarding land use decisions. LUPZ contours are generally shown on land use planning noise documents.

- Zone I includes all areas around a noise source in which DNL is less than 65 dBA, or 62 dBC. This area is usually suitable for all types of land use activities (homes, schools, and hospitals).
- Zone II consists of an area where the DNL is between 65 and 75 dBA, or 62 and 70 dBC. Exposure to noise within this area is normally incompatible with noise-sensitive land uses (residences, hospitals, churches, educational facilities), and use of the land within the zone should normally be limited to activities such as industrial, manufacturing, transportation, and resource production (industrial parks, factories, and highways). In situations where noise-sensitive land uses occur within Zone II, guidance recommends noise level reduction features be incorporated in design and construction.
- Zone III is an area around the source of noise in which the DNL is greater than 75 dBA, or 70 dBC. The noise level within this zone is considered incompatible with noise-sensitive land uses, such as churches, schools, parks, playgrounds, residences, and hospitals.

Figure 28: Noise Zones on HAAF (SpecPro, 2012).

The LUPZ (60 ADNL) extends off the Installation approximately 1.5 miles east into Savannah and three miles west into Chatham County. The NZ II (65 ADNL) contour extends off the Installation approximately one mile east and two miles west into the same areas. The majority of the NZ III (75 ADNL) contour remains on-post, although a small portion does extend off the Installation approximately 400 feet west into Chatham County. Per AR-200-1, noise sensitive land uses (such as housing, schools, and medical facilities) are managed within the NZ I and LUPZ, normally not recommended in NZ II, and not recommended in NZ III. Currently, the existing land uses surrounding HAAF are compatible with its noise environment and the current Noise contours for HAAF are shown at Figure 29.

Airfield airspace criteria prohibit certain land uses from being present/occurring within the airfield's clear zone and APZs (APZ I and APZ II). These land uses include the storage and handling of munitions and hazardous materials and construction/operation of live-fire weapons ranges. Both helicopters and fixed-wing aircraft are a source of noise at HAAF, which operate 365 days per year supporting Army, Navy, Marine, Army Reserve, Air National Guard, Army National Guard, Air Force, and some commercial aviation. As discussed under Section 3.0, Airspace and Airfield Operations, there are five aviation corridors that connect HAAF with Fort Stewart's interior helicopter training routes. Each corridors is 0.5 mile wide with 0.3 mile annoyance buffer, and pilots may fly to the left/right within the overall corridor, although the

goal is to fly down its center.

Image Redacted

Figure 29: Existing Noise Contours for HAAF (SpecPro, 2012)

Analyses of noise complaints received by the Army have shown that short-term increases in DNL, not the long-term average, are the best predictors of complaints (ICUZ Study, 2012). In the absence of regulatory noise exposure standards, complaints have become the effective or *de facto* standard. To our knowledge, a state or Federal regulatory authority has never come to the Army with a Notice of Violation for noise. At the same time, there are many instances when Army commanders have voluntarily curtailed noisy activities

to reduce complaints. Through a formal ICUZ Study, Army Installations try to prevent complaints through self-monitoring of operations and partnering with land use planning efforts by local government. Currently, helicopter and aircraft operations and maintenance activities dominate the existing noise environment on HAAF, which range between 65 and 85 ADNL. Daily operation of motor vehicles in and around HAAF is also considered a minor source of noise and typically range from 50 dB (for light traffic) to 80 dB (for diesel trucks).

3.4.9.2 ENVIRONMENTAL CONSEQUENCES

Overall impacts from Noise anticipated as a result of implementing the proposed action are discussed in this section. As each project in the ADP for HAAF enters the design phase, supplemental NEPA analysis will occur and will be documented via a REC (if it falls within the scope of this PEA) or an EA (if it beyond the scope of this PEA), as necessary.

3.4.9.2.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Overall, long-term, direct, minor, adverse impacts are anticipated under this alternative. Noise will occur as a result of site clearing/grading/stabilization, construction (to include installation of new utility corridors, parking areas, and support/connector roads), as well as demolition and some renovation activities. In 2015, the Centers for Disease Control and Prevention published a document that identified an 85 dBA recommended exposure limit for noise and accordingly, FSGA/HAAF maintains adherence to an exposure limit of 85 dBA as an eight-hour time-weighted average for all working on the Installation. Compliance with this and all OSHA regulations is required, at a minimum, as a measure to minimize the potential for hearing loss at all project sites. Accordingly, only short-term, direct, less than significant adverse impacts are anticipated, and no impacts are anticipated to migrate to the off-Post community. Impacts may be minimized via adherence to standard BMPs, such as safety helmets and ear plugs and modification of shifts.

Additional measures to minimize potential noise impacts to workers may be found in DoD Instruction 6055.12, *Hearing Conservation Program*, and U.S. Department of the Army Pamphlet 40-501, *Hearing Conservation Program*. Impacts to workers, and the surrounding community, are expected to be less than significant because construction would occur during normal business hours, would vary based on the phase of the work occurring, would last only the time in which actual work would be occurring, and would be below the 85 dBA limit.

Noise impacts are also associated with routine, daily, airfield operations and training, to include utilization of the five aviation corridors providing transition between HAAF and off-site locations, to include SAV and/or FSGA. The number of aircraft entering and exiting the airspace is not anticipated to result in adverse noise impacts to persons utilizing aircraft or those at/on the airfield; however, as the aircraft do not always fly directly in the center of the corridor, and may veer left/right over sensitive off-Post receptors, this may result in sufficient noise to register complaints. This is because the land within the aviation corridor annoyance buffer is not solely military in use, but also includes the residential, recreational, and commercial parts of Savannah, Richmond Hill, Fleming, and Flemington in Chatham and Bryan counties; accordingly, there is the potential for annoyance and the associated complaints.

Continued utilization of past minimization measures are anticipated to be successful in minimizing potential adverse impacts. This includes reinforcing the use of the buffer to each side of the corridor to reduce possible annoyance to receptors (the public) along the route. HAAF has also adopted a "Fly Friendly Program," which works to reduce noise by training Army/other helicopter pilots on how to reduce noise complaints when flying in developed areas. The “Fly Friendly” noise abatement procedures at HAAF include:

- Restricting closed traffic operations on the south side of HAAF after 10:00 PM;
- Restricting flights over Savannah, Hinesville, Georgetown, and other populated areas to no lower than 1,000 feet;
- Establishing low level routes over unpopulated areas for transition of aircraft between HAAF and Fort Stewart; and
- Developing a comprehensive process for receiving, investigating, and resolving noise complaints from the local community.

Through this “Fly Friendly Program,” pilots get information on the ascent and descent angles, power settings, and turn radii most likely to generate high noise levels, allowing the impact of the noise from some operations and training at to be reduced, in its continuing effort to be a good neighbor.

Noise impacts are also anticipated due to other, non-aviation training on HAAF, both existing and proposed. This includes the training on the Installation’s SA/Baffled Range, Shoothouse and Breach Facility, and Sleepy Hollow Training Facility, all located in the central-western portion of the Installation (Figure 30, Existing Noise Contours in this portion of Post). Potential noise impacts were determined via inputs to the SA noise model, calculated based on 1,250 rounds during daytime hours (0700-2200) using M16s and 9mm weapons, the firing of which is only permitted during daytime hours. The linear peak sound level (dBP) was used to define the noise zones. The peak levels are for activity outside the facility and do not account for possible absorption, refraction, or reflection within each structure’s walls. These small caliber ranges on HAAF currently generate NZs III and II contours, all of which remain completely within the Installation boundary (Figure 29). Ammunition is not utilized on the Installation’s Land navigation Course.

As stated previously, no training with munitions occurs outside of these ranges, which are all enclosed and baffled, and these are not a substantial source of noise and associated noise impacts and/or complaints. However, training on the new Indoor Range, once constructed, may increase local noise at this location on Post and may introduce low-frequency, C-weighted, dBC or CDNL, noise to HAAF, which is new to the HAAF noise environment. The Indoor Range is not currently at a sufficient level of design to make a firm determination, and will not be at a 35% design level until around CY 2021. Once sufficient design and data is available, the Noise Modeling will be completed and its potential impacts on the noise environment will be assessed, to include supplemental NEPA analysis, if required. Training on the proposed new Urban Assault Course and Live Fire Range, if constructed, are not anticipated to substantially contribute to the noise environment on HAAF, as they are anticipated to be commensurate to the existing SA Range and Shoothouse. None of the noise associated with the new ranges, as currently scoped, is currently anticipated to alter the current SDZ on HAAF, which does not extend off the Installation boundary.

Image Redacted

Figure 30: Existing Small Caliber Range Noise Contours on HAAF, Common to All Alternatives (ICUZ Study).

All of the proposed projects within the ADP for HAAF are sited within the appropriate Building Standard, at present, and are consistent with the existing and future land uses on the Installation, minimizing the potential for noise to rise to such a level to be incompatible with adjacent noise receptors or increase the number of people annoyed by the heightened noise levels both on- and off-Post. Should re-siting be

required in the future, the HAAF Regulating Plan would be consulted to ensure they are sited on lands compatible for their use.

Overall, this alternative would result in long-term, direct, minor, adverse impacts in the Noise environment. No mitigation is proposed; however, standard noise abatement policies and procedures currently employed on the Installation have been successful at ensuring no significant impacts occur and should continue to do so. Should additional minimization measures be required, they will be developed and implemented as each project is designed and implemented.

3.4.9.2.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Impacts are as discussed under Alternative I, although under this alternative, the new taxiway and facilities supporting the 3/160th SOAR will not be constructed south of the existing flightline, shifting noise associated with these activities north within the existing cantonment area. This may result in less noise directly along the southern flightline during the implementation of these projects, and an associated increase in Noise along the northern flightline and within the cantonment area. Post-implementation, this source of potential Noise may also shift from the southern portion of the flightline to the North and within the cantonment area. Overall, however, noise levels should be commensurate to that anticipated under Alternative I. Standard noise abatement policies and procedures currently employed on the Installation have been successful at ensuring no significant impacts occur and should continue to do so. Should additional minimization measures be required, they will be developed and implemented as each project is designed and implemented. All remaining impacts are as discussed under Alternative I. Overall, this alternative would result in long-term, direct, minor, adverse impacts in the Noise environment.

3.4.9.2.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Overall, short-term, direct, negligible, adverse impacts are anticipated under this alternative. Proposed construction, demolition, and renovation (as well as the associated site preparation) in the ADP for HAAF will not occur under this alternative and, accordingly, the Study Area will not receive those potential Noise impacts. Potential impacts associated with routine, daily, airfield operations and training will be ongoing, to include utilization of aviation corridors and routine cantonment area operations, repairs, maintenance, and training (on the airfield and Installation range and training lands).

FSGA/HAAF will maintain adherence to an exposure limit of 85 dBA as an eight-hour time-weighted average for all working on the Installation. Compliance with this and all OSHA regulations is required, at a minimum, as a measure to minimize the potential for hearing loss at all project sites. Accordingly, only short-term, direct, less than significant adverse impacts are anticipated, and no impacts are anticipated to migrate to the off-Post community. Impacts may be minimized via adherence to standard BMPs, such as safety helmets and ear plugs and modification of shifts.

Overall, this alternative would result in short-term, direct, negligible, adverse impacts in the Noise environment. Standard noise abatement policies and procedures currently employed on the Installation have been successful at ensuring no significant impacts occur and should continue to do so. Should additional minimization measures be required, they will be developed and implemented as each project is designed and implemented.

3.4.9.3 CUMULATIVE IMPACTS

The ROI for Noise lies within the boundaries of HAAF and just outside of its boundary, extending into the City of Savannah, as some of the noise produced on HAAF does extend off of the Post and has the potential to impact the off-Post community. Past, present, and reasonably foreseeable future events with the potential to result in cumulative impacts are considered in the analysis below.

3.4.9.3.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Past and present actions in the ROI consist of the historical development of the City of Savannah, the airfield proper, and HAAF, as well the associated infrastructure and transportation network that supports them. Periodic iterations of timber harvest, site clearing/grading/stabilization, and construction/demolition in the ROI were followed by periods of routine operations, maintenance and repair, as well as military training activity on HAAF, all which continue to varying degrees in the present, and all of which contributed to cumulative adverse impacts due to Noise in the ROI.

Future actions in the ROI include ongoing training and routine operations on HAAF, as well as commercial, residential, and industrial development in the adjacent City of Savannah. There is a potential to implement a new training event at the Breech Facility under this alternative. Specifically, the 1/75 Range Battalion may begin utilizing 3.5-5.5 pounds Net Explosive Weights (NEW) at this location for future training events. The unit will use NEWs approximately two days per week, between 0600-2300 hours, but will not exceed 10 shots/blows per day, and will conduct this action on weekends or holidays. Training will be intermittent and may not occur for several weeks at a time. Fort Stewart has coordinated with the U.S. Army Public Health Command (PHC) for assistance in running this information thru noise modeling software, and PHC determined that, as long as the Unit does not exceed the stated frequency and time parameters, this new training event will result in no more than negligible adverse cumulative impacts to the overall noise environment and will not change the existing noise contours for the Installation. Fort Stewart will ensure that the local community in the ROI is notified a minimum of two weeks prior to the start of each training event. Should deviation from any of these three factors be proposed by the Unit (frequency, timeframe, and/or throughput), additional review is required and noise contours will need to be developed.

Additional future actions in the ROI, as identified in Table 3 (Future action sin the ROI) include Project DeRenne, which will increase DeRenne Avenue from its existing four to six lanes. This may result in periodic increases to the noise environment directly adjacent to the northwestern/northern boundary of HAAF, where the cantonment area is located. Noise associated with this project will impact few sensitive receptors at this location, which contains primarily offices, COFs, HQs, etc., In addition, construction would occur during normal business hours only and the equipment would be used only for a short period of time, with the goal of minimizing impacts.

The HAAF Apron and Taxiway Reconstruction will occur during the same time period and will involve the removal and replacement of taxiways, runways, and parking aprons. Due to their operational and locational adjacency, these repairs will occur concurrently, and FSGA/HAAF Master Planners will work with Airfield POCs to phase these actions accordingly, with sections of the airfield receiving work being cordoned off and closed to aircraft usage and traffic. These actions should minimize potential noise impacts from

construction and demolition associated with these two projects, which is also not adjacent to sensitive receptors such as AFHAs or barracks. Future use of SRTA and detonation cord at the Bradley Crose Shoothouse is another potential future action with the potential to result in cumulative impacts in the Noise environment and this project will be evaluated to determine if it will result in changes to the noise contours on this portion of the Installation.

Overall, implementation of this alternative would result in minor adverse cumulative impacts due to the Noise in the ROI. No mitigation is proposed; however, standard noise abatement policies and procedures currently employed on the Installation have been successful at ensuring no significant impacts occur and should continue to do so.

3.4.9.3.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Past and present actions in the ROI under this alternative will be as discussed under Alternative I. However, under this alternative, the new taxiway and facilities supporting the 3/160th SOAR will not be constructed south of the existing flightline, shifting noise associated with these activities north within the existing cantonment area. This may result in less noise directly along the southern flightline during the implementation of these projects and an associated increase in Noise along the northern flightline and within the cantonment area. Post-implementation, this source of potential Noise may also shift from the southern portion of the flightline to the North and within the cantonment area. All remaining impacts are as discussed under Alternative I. Overall, implementation of this alternative would result in minor adverse cumulative impacts to the Noise in the ROI.

3.4.9.3.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Past and present actions in the ROI are as discussed under Alternative I; however, under this alternative, none of the actions proposed in the ADP for HAAF will occur and, accordingly, the ROI will not receive those potential Noise impacts. Future actions in the ROI include ongoing training and routine operations, repair, and maintenance on HAAF, as well as commercial, residential, and industrial development in the adjacent City of Savannah, for which negligible adverse impacts are anticipated. Future actions identified in Table 3 (Future Actions in the ROI), as discussed in Alternative I. Overall, implementation of this alternative would result in negligible adverse cumulative impacts due to Noise in the ROI.

3.4.10 TRANSPORTATION

Note: Unless indicated otherwise, information discussed below is taken from the Coastal Region Metropolitan Planning Organization (CORE) 2040 Total Mobility Plan and HAAF Transportation Plan.

3.4.10.1 AFFECTED ENVIRONMENT

Transportation resources refer to the infrastructure and associated equipment required for the movement of people, manufactured goods, and raw materials in a defined geographic space. In Chatham County, Georgia, which includes the Study Area, transportation resources include a commercial port system, a railway/railroad system, two airfields, and an interstate, highway, road, and street system, to include mass

transit, and pedestrian pathways. HAAF is located within Chatham County and lies adjacent to the City of Savannah, all of whom benefit from this regional transportation environment.

Commercial Port System. The Port of Savannah is located approximately 10 miles from HAAF and is the largest port on the eastern seaboard and tenth largest port in the nation. Port facilities include container berths and container cranes capable of handling 45 containers per hour. The Port of Savannah also has gantry cranes with individual lift from 45 to 175 tons and tandem lifts to 275 tons. The Ocean Terminal features 10 berths totaling 5,988 linear feet and 83 acres of open storage space and about 37 acres of covered storage. Railcar switching services are provided by Norfolk Southern and CSX Transportation. Garden City and Ocean Terminals can accommodate lash mother ships and barge marshaling. Additional embarkation facilities including side, stern, and pivoting ramp roll-on/roll-off with crane and storage services are available at the Ports of Brunswick, Georgia, and Jacksonville, Florida, both of which are linked to railway service via CSX Transportation and Norfolk Southern.

Railways/Railroads. A main railway line connects the cantonment areas of FSGA and HAAF, which in turn connect to a railway system running along the entire eastern coast of the United States. This enables the movement of assets from FSGA and HAAF via railway at the Rail Marshaling Area on FSGA, for example, directly dock side to the ports of Savannah, Brunswick, and Jacksonville during deployments. Amtrak provides civilian passenger rail service at its Savannah station, which is served by the Palmetto, Silver Star, and Silver Meteor trains of Amtrak's Silver Service line, running from New York City to Miami, and stopping at nearly 50 cities in between.

In addition to passenger rail service, Chatham County is also served by approximately 221 miles of rail freight facilities, of which CSX Transportation and Norfolk Southern, both Class I railroads, provide the major intermodal services. Other rail freight service providers include Georgia Central, Golden Isles and the Savannah Port. Almost all of these railroads and railroad yards are located in the western part of Chatham County and around the Port of Savannah. Much of Chatham County's extensive rail infrastructure provides freight-oriented service to the Port of Savannah. Overnight rail service is available from the port to Atlanta, while two-to-four-day service is available for other regional freight distribution cities, such as Dallas and Chicago.

This integration of port and railway/railroad resource providers allows for a highly streamlined process of intermodal freight movement in Chatham County, all of which aid the local and regional economies. None of the projects proposed in the ADP for HAAF are anticipated to impact this transportation resource, nor do any of the projects proposed potentially impact the railways/railroads within the Study Area, either in an adverse or beneficial capacity. Accordingly, this transportation resource will not be discussed further in this section.

Airfields. HAAF has the U.S. Army's longest runway at 11,000 feet, able to accommodate any aircraft in the Air Force fleet, including the C-5A Galaxy. This capability is critical to HAAF's role as a Power Projection Platform and the Installation is able to deploy forces such as the 75th Ranger Regiment or 3d Infantry Division (Mechanized) anywhere in the world with minimal notice (MARCOA, 1995). During the ADP for HAAF Workshop, stakeholders identified projects that would more fully utilize the operational capacity of HAAF's flightline, and these projects are addressed in the Operational Airspace Chapter of this PEA (Section 3.9). However, HAAF is not utilized as a general transportation resource within the Study

Area, but as a military transportation resource only, and the HAAF airfield will not be discussed in this capacity in the remainder of this section.

There is one commercial airport in the Study Area, the Savannah Hilton Head International Airport (Savannah Airport). Located less than 20 miles from HAAF (SAI, 2019), it is the second busiest airport in Georgia, second only to the Hartsfield-Jackson Atlanta International Airport in Atlanta, located more than 250 miles to the north, and the largest airport in Coastal Georgia. The Savannah Airport is also host to the Savannah Air National Guard's 165th Airlift Wing, which operates the C-130H Hercules tactical aircraft as a vital component of the Air Mobility Command (ANG, 2019). The Savannah Airport occupies a 3,500-acre site and has two operational runways. The current terminal was completed in 1994 and has since been expanded to a total of 15 gates, and is currently served with regular flights from American, Delta, Jet Blue, Allegiant and United Airlines.

In 2014, a Master Plan Update was commissioned for the Savannah Airport, addressing its needs in a comprehensive manner and providing airport management with a comprehensive assessment of the capital improvements needed to meet projected levels of passenger and aircraft operational activity during the next 20 years. Recommendations of the Master Plan include widening of Airways Avenue (which leads of off I-95 and towards the Airport) and constructing an Emergency Operations Center near the Airfield, in addition to various field and terminal improvements. Preliminary review did not identify any potential impacts to the Savannah Airport as a result of the alternatives, nor any potential impacts to the Study Area as a result of the implementation of the Savannah Airfield Master Plan; accordingly, this transportation resource will not be discussed further in this section.

Public Transportation. The Chatham Area Transit (CAT) system currently operates 17 routes, which includes two express routes and a downtown circulator shuttle (GA DOT, 2014). The federal and state required Transit Development Plan (TDP), maintained by CAT, provides a 5-year/10-year guide and planning tools outlining the most effective and efficient transit services for residents. CAT has identified a "Family of Services" designed to enhance ridership, the appeal of services to additional markets, and improve existing services. Although it does not come onto HAAF itself, the CAT routes terminate adjacent to the Installation's Access Control Points (ACPs) located at Montgomery Street, Rio Road, and Wilson Avenue, which are easily walkable for those living or working on HAAF, and are therefore a dependable transportation resource in the Study Area (CAT, 2019). Preliminary review did not identify any potential impacts to Public Transportation as a result of the implementation of the alternatives; accordingly, this transportation resource will not be discussed further in this section.

Road Networks. The Study Area lies within Chatham County, which is serviced by a complex road network including two major interstates (I-95 and I-16) that intersect in the vicinity of the Study Area. Interstate I-95 runs from Miami, FL to the Canadian border at Houlton, ME, and is the primary north-south interstate on the East Coast. Interstate I-16 runs from Savannah to Macon, and is the primary interstate route for traffic traveling from Coastal Georgia to the Atlanta Metropolitan Area. An auxiliary interstate, I-516, branches off I-16 and travels east to provide a link from the interstate/highway system to the local Chatham County road network and further into the City of Savannah and HAAF.

From highways, traffic is fed onto a system of major arterial roads, designed to carry large amounts of traffic at a relatively high speed, over longer distances, often incorporating some degree of access management. DeRenne Avenue is an example of an arterial road and carries traffic from the highways eastwards into the City of Savannah and HAAF. As discussed earlier, DeRenne Avenue is currently slated for substantial improvements in the near future (6-15 years), to alleviate mobility and congestion along this highly utilized road segment. Traffic next flows on to a series of collector roads, which are designed to carry less traffic at lower levels of speed for shorter distances. In the Study Area, this includes Montgomery Street, which branches off of DeRenne Avenue and into HAAF.

Entry into HAAF is controlled via three Access Control Points (ACPs)/Gates, located on Montgomery Street, Rio Road, and Wilson Avenue, all of which require a valid picture-ID for entry. Montgomery and Wilson Gates have two inbound and outbound lanes each and Rio Road Gate has one inbound lane and one outbound lane. Montgomery Street and Rio Road Gates are open 24/7, although Wilson Gate implements reduced entry hours (0500-2100 weekdays, 0600-1800 weekends). Wilson Gate is directly proximate to White Bluff Road in the City of Savannah, and experiences its associated congestion during peak morning (0530-0900) and noon (1100-1300) traffic. Likewise, Montgomery Gate is adjacent to DeRenne Avenue, and is subject to its associated congestion during these same peak hours. Peak volume is not as heavy at the Rio Road Gate during these same peak hours, as it provides access to the lesser-used southern portion of the Installation; however, it is currently the only Gate designated for large/heavy truck traffic, even though its small size and configuration makes this access unwieldy.

From collector roads, traffic flows onto local roads, which facilitate short, local trips and connect the local road network within the Installation. The primary road network within HAAF consists of Duncan Drive, Wilson Boulevard, North/South Lightning Road, South Perimeter Road, and Rio Road, all of which have numerous other smaller roads branching deeper into the Installation. Duncan Drive is a four-lane road extending west through the center of the Installation from Montgomery Street to Stephen Douglas Street. Wilson Boulevard is two-lane and provides access and circulation through the central portion of the Installation. North/South Lightning Road is tow-lane and the primary road circling the northern portion of the flightline. South Perimeter Road is two-lane and provides access and circulation for the southern portion of the flightline. Rio Road is two-lane and extends from Rio Road to South Perimeter Road, providing access to the southern portion of the Installation.

There are no tank trails on HAAF, as the Installation neither supports nor requires this training resource; instead, vehicles accessing HAAF's small arms ranges, breach site, and other training support resources utilize the existing improved and unimproved road network and, when utilizing the ranges, park in the existing designated parking areas at these facilities. Government owned, rented or leased vehicles utilized by range or contractor personnel supporting these training facilities are also authorized to utilize the existing road network and designated parking areas.

In 2007, a Comprehensive Traffic Engineering Study (CTES) (Carter-Burgess, 2007) was conducted for HAAF to determine the existing state of the transportation environment and identify areas of congestion, potential safety issues, and roadway deficiencies to develop recommendations for improvement. Overall, it determined that the majority of the transportation network operates at an acceptable level; however, the some locations on Post were flagged as requiring improvements:

- The intersection at Wilson Boulevard at North Perimeter Road experiences substantial congestion during peak traffic hours.
- South Perimeter Road at North Perimeter Road (the intersection of Perimeter Road and Wilson Road) and South Perimeter Road west of Rio Road have sharp curves and T-intersections that contribute to poor operation.
- Montgomery Gate and Wilson Gate have heavy traffic volumes entering the Installation during the morning and midday peak periods and a heavy outbound flow during the evening peak period. Motorists frequently experience delays and vehicle queuing caused by the volume of traffic entering and exiting, combined with the delay caused by the security check points and roadway geometry.

As part of the ADP for HAAF Workshop, a Field Street Assessment (FSA) was conducted, the results of which identified streets that were well maintained, in marginal condition, and in poor condition and in need of repair; collectively, the 2007 Study and FSA aided in the identification of the transportation-related projects currently proposed within the Study Area.

Pedestrian Pathways. The nearby City of Savannah and Chatham County overall are continuing to invest in bicycle and pedestrian infrastructure to ensure the safety of the users and to provide network connectivity (TMP, 2014). In the 2000 census, the City of Savannah had 70.8% of its workers driving to work alone and 76.4% of the workers in Chatham County driving alone to work, as compared to 85% in the state and 75.5% in the remainder of the U.S. Those carpooling in both the County and Savannah was higher than both the state and the US, as well as transit usage. The City of Savannah also exhibits a high percentage of walking (4.3%) and biking (2.3%). With the 2012 estimates, the percentage of those driving alone increased, which could be attributed to the growth in the suburban western areas of the County. However, the transit, walking and biking percentage remained relatively stable. No similar studies were available for HAAF; however, due to its relative inclusivity in the region, it can be assumed its numbers would be similar and the desire for walking and biking opportunities on HAAF would be commensurately high.

Biking lanes along the roadsides and sidewalks physically separated from the roadway are the preferred accommodation for bikers and pedestrians, as these resources provide safety, mobility, and healthier communities, per studies conducted by the Federal Highway Administration. In addition, military standard designs have begun incorporating bicycle racks, encouraging the benefits of cycling around the Installation versus driving from place to place. Studies further found that providing these accommodations, especially among pedestrians, positively impacted user quality of life. Per the study, the wider the separation between the pedestrian and the roadway, the more comfortable the pedestrian feels in his/her environment; accordingly, when practical, incorporating pedestrian pathways into future development plans is good.

Pedestrian requirements can be accommodated in varying degrees, from sidewalks to running trails, or even by widening existing paved shoulders along existing roads. Although a pedestrian pathway is currently present on parts of HAAF, there are gaps along its length and variations in its width, surface, and signage throughout its length. One of the projects proposed in the ADP for HAAF is to complete a perimeter path around the entirety of HAAF for use by Soldiers, their Families, and Civilians (present on multiple Figures). The path should maintain sufficient width to be shared by bicycles and pedestrians, should have a well-maintained surface, and should address safety issues when near vehicle traffic.

Other pedestrian requirements specific to HAAF include dedicated greenspace for physical training (PT) during morning peak hours, as identified in the 2007 Traffic Study. Currently, PT is carried out between 0530-0730 daily, primarily along established local roadways. Civilian service employees arrive through the ACPs for work around 0700, intersecting with Soldiers conducting PT, often on some of the same roads. This has the potential for both traffic delays along the local network, as they slow to avoid Soldiers conducting PT, but also safety concerns for those same Soldiers, as drivers strive to avoid them on these roads. Development of additional greenspace or constructing pathways will relieve potential traffic and safety concerns associated with early morning PT.

During the Workshop for the ADP for HAAF, participants noted where pedestrian safety issues were prominent, including North Lightning Road, where development close to the street in an area with limited sight lines often results in close calls between vehicles and Soldiers. HAAF accordingly seeks to improve pedestrian connectivity through connected sidewalks and separated pathways, marked crosswalks, signage, or lighting as appropriate, and with self-contained, walkable campuses. Projects proposed with the potential to impact Transportation resources on Post are noted in Figures 31-34 by Project Title and Identifier and are discussed in the text that follows.

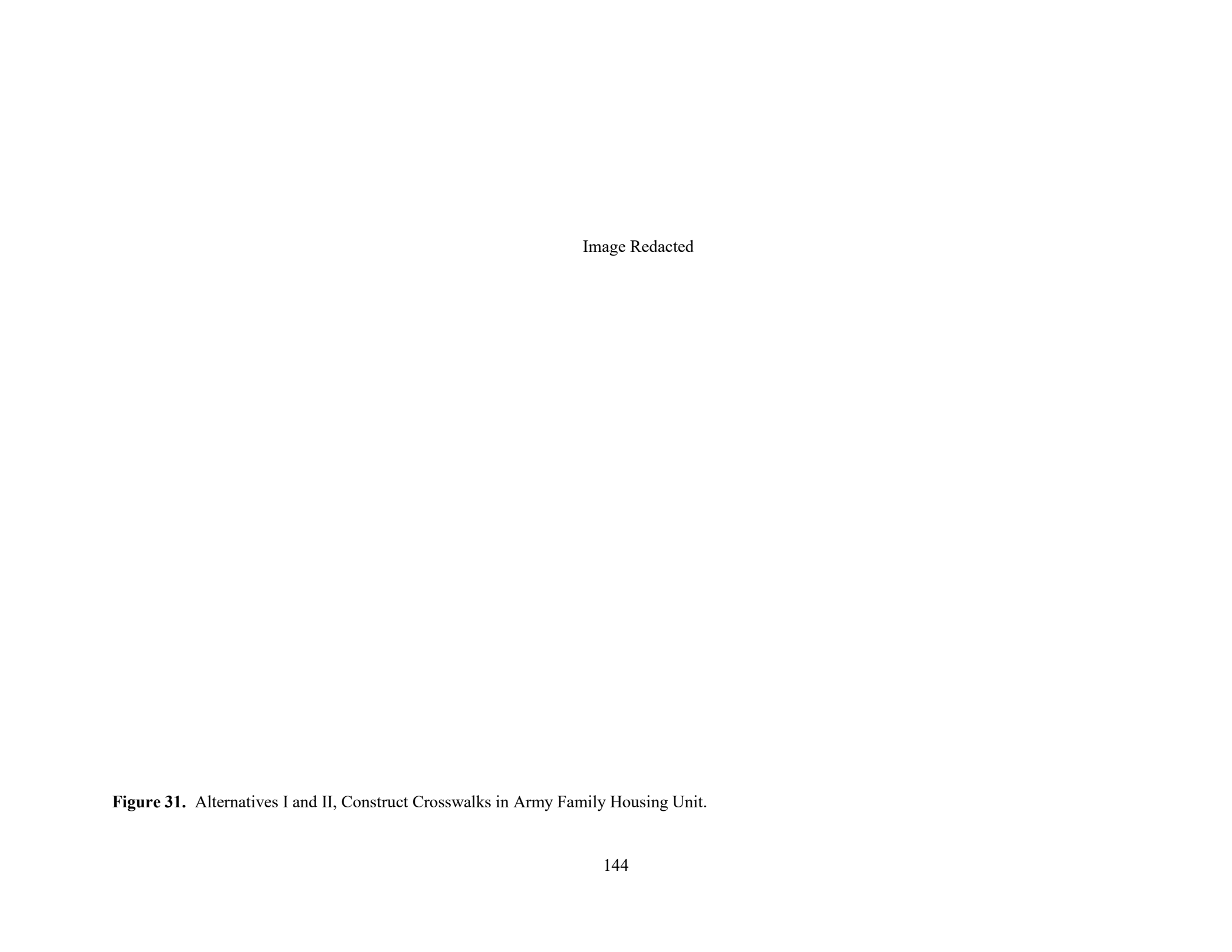

Figure 31. Alternatives I and II, Construct Crosswalks in Army Family Housing Unit.

Image Redacted

Figure 32. Alternatives I and II, Central Cantonment Area Transportation Upgrades.

Image Redacted

Figure 33. Alternatives I and II, Create Linked Pedestrian Path Network between Bowling Alley and Army Family Housing.

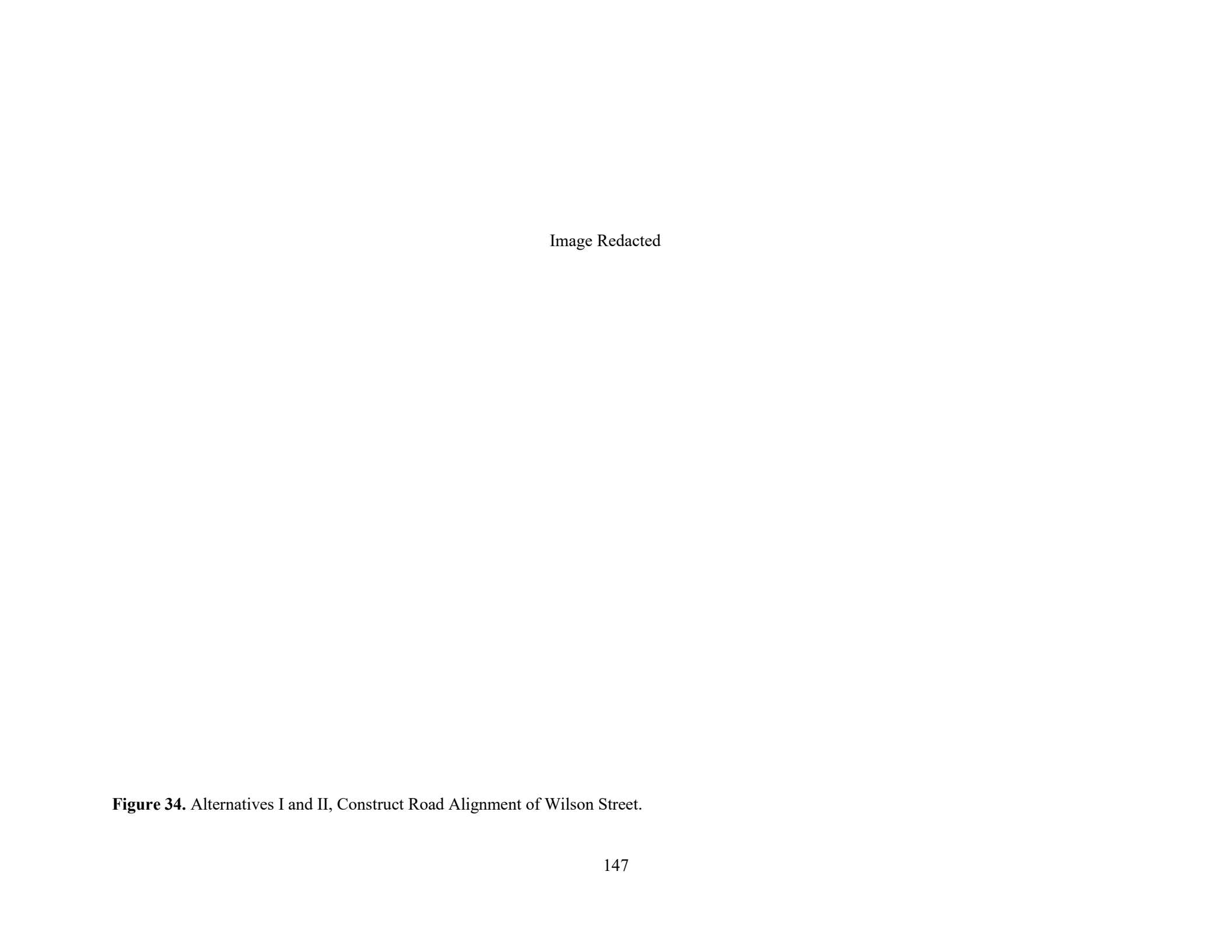

Figure 34. Alternatives I and II, Construct Road Alignment of Wilson Street.

3.4.10.2 ENVIRONMENTAL CONSEQENCES

Overall impacts to Transportation Resources anticipated as a result of implementing the proposed action are discussed in this section; however, in the future, as each project in the ADP goes through the design phase, it will undergo additional NEPA analysis.

3.4.10.2.1 ALTERNATIVE I: ILLUSTRATIVE PLAN

Long-term, direct, minor, beneficial impacts and short-term, direct, minor, adverse impacts to transportation resources on HAAF are anticipated as a result of this alternative, as it will remedy adverse congestion and safety findings identified in prior transportation plans and analyses within the study area.

Construction, demolition, and renovation activities may include timber harvest, site clearing/grading/ stabilization, and installation of new utility corridors, parking areas, and support/connector roads, and may result in short-term, direct, minor adverse impacts to the transportation network, due to the increase in construction and contractor-related vehicular congestion at the Installation's ACPs/Gates. This is due to the fact that their entry times are often simultaneous to the time Soldiers and Civilian worker are accessing the Installation, at morning and noon peak hours; however, these impacts will be short-term, associated with each project's implementation, and will cease at the conclusion of each project's duration. Impacts may be mitigated by project-specific restrictions, to include staggering worker arrival/departure hours to not coincide with peak traffic and by staggering entry among the three Installation ACPs/Gates.

Construction of transportation-focused improvement-specific projects, such as the Realignment of Wilson Street, Leonard Neal Street Upgrades, Upgrades to North Lightning Street, and others (Figures 32-33), will also result in short-term, direct, minor adverse impacts, as traffic is diverted to other local Installation roads to accommodate work in progress, potentially resulting in congestion on these roads where it has not formerly been felt, as well as potentially increasing the wear and tear on roads that are not accustomed to peak traffic usage. Indirect, yet similar impacts may also be felt in areas adjacent to these projects that are more minor in scale, such as Sidewalk and Tree Planting along Billy Mitchell Boulevard, Linked Multi-Use Pathway construction between the Bowling Alley and AFHAs, and Development of Crosswalks in AFHAs (Figures 31-34). However, these impacts are anticipated to be short-term and negligible. Impacts associated with these projects may also be mitigated by staggering access, as with the larger construction projects. Projects proposed to upgrade the Installations' utility infrastructure will also result in local road closures, and auxiliary road usage can be alternated to minimize potential adverse impacts to the local road network.

Long-term, direct, minor, beneficial impacts to the transportation network are anticipated from the construction of the Multi-Use Pathway (along the entire perimeter of Post), which will complete a perimeter walking and biking area around the Installation that is usable by Soldiers, their Families, and Civilians. The path will maintain sufficient width to be shared by bicycles and pedestrians, have a well-maintained surface, address safety issues when near vehicle traffic, and provide the linkages requested by Installation residents between areas on Post they would like to access. Construction of sidewalks and separated pathways, marked crosswalks, signage or lighting, and green space upon which Soldiers may more safely conduct PT, will assist in the creation of a self-contained, walkable campus within the cantonment area of HAAF. Its stretch around the entirety of the Installation will also provide a walkable recreational resource as well.

No impacts to transportation resources are anticipated as a result of the routine operations, maintenance, and repair actions on HAAF. The 2007 Comprehensive Traffic Engineering indicated that the existing state of the transportation environment on HAAF operates at an acceptable level, though requiring improvements. Accordingly, maintaining the status quo does not equate to an adverse impact. In addition, these routine actions are currently implemented by persons trained in Installation requirements and for which no known adverse impacts to transportation resources are currently identified

Short-term, indirect, and negligible adverse impacts to transportation resources are anticipated as a result of training on Post, primarily during morning physical fitness hours as Soldiers enter the Installation for duty hours, conduct group training, and/or implement their individual training schedules. These impacts are anticipated to be short-term, associated with each project's implementation, and will cease at the conclusion of each project's duration. Impacts may be mitigated by project-specific restrictions, to include staggering worker arrival/departure hours to not coincide with these peak events and by staggering entry among the three Installation ACPs/Gates. No impacts to Transportation are anticipated at Installation training ranges, as these are located outside of the cantonment area and not on the primarily transportation network; accordingly, the primary vehicles and personnel in those location will be Soldiers, Civilian personnel, and contractors required to be at that location, to include personnel conducting repairs and maintenance who are familiar with Installation requirements for those locations, minimizing potential adverse impacts.

Overall, the long-term beneficial impacts to the transportation resources on Post created by the construction and demolition will minimize any temporary adverse impacts, as the completion of the identified transportation improvement projects will result in less congestion on Installation roads, better signalization, increased safety, more parking/improved parking areas, improved Installation connectivity, and overall, long-term, direct, minor, beneficial impacts to the transportation network on Post.

3.4.10.2.2 ALTERNATIVE II: 3/160TH SOAR INFILL

Overall, long-term, minor, direct, beneficial impacts are anticipated as a result of implementation of this alternative, as discussed under Alternative I. The same transportation projects as proposed under Alternative I will be implemented, at the same location, and during the same phases (short, mid-range). However, under this alternative, the 3/160th SOAR would not relocate south of the flightline, but would instead remain in the northern portion of Post, within the cantonment area with the 3CAB. This will result in more units and their associated new construction remaining within the same part of the Installation's cantonment area. It is not anticipated to substantially impact transportation resources, however, as the same transportation projects will be implemented under either alternative. In addition, although this will shift construction to the cantonment area, this will be temporary, last during construction only, and will cease once these activities end. Units proposed for these facilities are primarily located within the cantonment area already and this shift will not involve a substantial population increase to this portion of HAAF. Mitigation proposed under Alternative I also applies to Alternative II, and will assist in ensuring the proposed actions are implemented successfully and in a way that overall still benefits the transportation network on Post. Accordingly, long-term, direct, minor beneficial impacts are still anticipated as a result of this alternative.

3.4.10.2.3 ALTERNATIVE III: NO ACTION ALTERNATIVE

Under this alternative, none of the projects proposed for implementation in the ADP for HAAF will be implemented. This alternative will not provide a remedy to the adverse congestion and safety findings identified in prior transportation plans and analyses within the study area; however, as discussed under Alternative I, the 2007 Comprehensive Traffic Engineering indicated that the existing state of the transportation environment on HAAF operates at an acceptable level, although requiring improvements. Accordingly, maintaining the status quo does not equate to an adverse impact.

As discussed under Alternatives I and II, no impacts to transportation resources are anticipated as a result of the routine operations, maintenance, and repair actions on HAAF, as these actions are currently implemented by persons trained in Installation requirements and for which no known adverse impacts to transportation resources are currently identified. Short-term, indirect, and negligible adverse impacts are anticipated as a result of training on Post, primarily during morning physical fitness training hours as Soldiers enter the Installation for duty hours, conduct group training, and/or implement their individual training schedules. Impacts are anticipated to be short-term, and will cease at the conclusion of each project's duration, and may be mitigated by project-specific restrictions, to include staggering worker arrival/departure hours to not coincide with these peak events and by staggering entry among the three Installation ACPs/Gates. No impacts to Transportation are anticipated at Installation training ranges, as these are located outside of the cantonment area and not on the primarily transportation network; accordingly, the primary vehicles and personnel in those location will be Soldiers, Civilian personnel, and contractor required to be at that location, to include personnel conducting repairs and maintenance who are familiar with Installation requirements for those locations, minimizing potential adverse impacts.

Overall, long-term, direct, negligible, adverse impacts to the transportation resources are anticipated under this alternative.

3.4.10.3 CUMULATIVE IMPACTS

The ROI for Transportation lies within the boundaries of HAAF and to its northern boundary along DeRenne Avenue in the City of Savannah, as improvements to this road are proposed in the ADP for HAAF. Past, present, and reasonably foreseeable future events with the potential to result in cumulative impacts are considered in the analysis below.

3.4.10.3.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Past and present actions in the ROI consist of the historical development of the City of Savannah, the airfield proper, and HAAF, as well as the development of its associated infrastructure and transportation network. Primary areas of development on HAAF include the cantonment area to the north and the airfield proper at its center. As the military presence on the Installation grew, range and training roads, many unpaved, also began to develop, connecting various parts of the Installation to one another. In the City of Savannah, similar activity occurred, especially where it lies adjacent to the northern boundary of HAAF. These actions contributed to beneficial cumulative impacts to transportation resources in the ROI as they resulted in the development of the transportation network in this area.

As previously discussed, the 2007 Comprehensive Traffic Engineering indicated that the existing state of the transportation environment on HAAF operates at an acceptable level, though requiring improvements, and maintaining the status quo does not equate to an adverse impact. In addition, these routine actions are currently implemented by persons trained in Installation requirements and for which no known adverse impacts to transportation resources are currently identified. Some negligible cumulative adverse impacts are anticipated as a result of training on Post, primarily during morning physical fitness training hours as Soldiers enter the Installation for duty hours, conduct group training, and/or implement their individual training schedules, although these potential impacts may be minimized via staggering the schedules of personnel working on the ADP projects entering/exiting the Installation.

Future events in the study area include continued commercial, residential, and industrial development in the adjacent City of Savannah, which has the potential for increasing traffic volume in the ROI; specifically, the City of Savannah proposes to implement Project DeRenne at some point within the next 5-10 years. DeRenne Avenue is an arterial road that provides access to and from HAAF for residents in the southern portion of the City of Savannah and HAAF. Travelers on this road experience heavy congestion that restricts regional travel and mobility. To alleviate this congestion, a new road is proposed that will accommodate a more efficient flow of traffic and minimize traffic congestion in this portion of the ROI, resulting in beneficial cumulative impacts to transportation resources.

A potential, reasonably foreseeable future event is the implementation of the Capacity/Full Build-Out Alternative for HAAF, in which the lands south of the flightline would be fully developed to support a newly stationed/realigned BN or other similarly sized unit. This could include the construction of a new taxiway and associated road network accessing this portion of the Installation. This may also include the extension of the Multi-Use Pathway to the newly expanded construction, as well as the requirements typically identified for pedestrians, such as sidewalks and crosswalks for safety purposes. Overall, implementation of this alternative would result in minor beneficial cumulative impacts to Transportation resources.

3.4.10.3.2 ALTERNATIVE II: IMPLEMENT 3/160TH SOAR INFILL

Past and present actions are as discussed under Alternative I; however, under this alternative, there would be no new development south of the existing flightline. As previously discussed, this is not anticipated to substantially impact transportation resources, however, and all potential impacts will be the same as discussed under Alternative I, to include minimization and mitigation, ensuring the proposed actions are implemented successfully and in a way that overall still benefits the transportation network on Post. Accordingly, minor beneficial cumulative impacts are still anticipated as a result of this alternative.

3.4.10.3.3 ALTERNATIVE III: NO ACTION ALTERNATIVE

Past and present actions, as well as their associated impacts, are as discussed under Alternative I; however, under this alternative, none of the projects proposed in the ADP for HAAF will be implemented. This will not provide a remedy to the adverse congestion and safety findings identified in prior transportation plans and analyses within the ROI; although, as discussed under Alternative I, maintaining the status quo does not equate to an adverse impact.

Potential future actions on HAAF are as discussed under Alternative I and include Project DeRenne, which is anticipated to alleviate congestion on HAAF, as well as implementation of the Capacity/Full Build-Out Alternative for HAAF, which would all result in beneficial impacts to this resource, and overall, negligible beneficial cumulative impacts to Transportation resources are anticipated under this alternative.

3.4.11 HEALTH AND SAFETY

3.4.11.1 AFFECTED ENVIRONMENT

Health and Safety includes the evaluation of fire and police protection, range safety, airfield/aviation safety, and worker safety associated with on-Post training ranges, airfields, and worker safety issues during construction, operations, repairs/maintenance on Installation job sites and facilities, and range/training activities. Occupational health and safety applies to on-the-job safety and implements the requirements of 29 CFR 1926 *et. seq.*, the Occupational Safety and Health Act (OSHA). All construction and demolition on Post is required to be performed in accordance with applicable OSHA regulations to protect human health and minimize safety risks.

Fire and Police Protection. Law enforcement services on HAAF are provided by Department of the Army Civilian Police (DACP), in accordance with AR 190-56, *The Army Civilian Police and Security Guard Program* (DA, 2013). DACP Officers perform a multitude of duties, ranging from manning the ACPs, conducting traffic control and enhancement, patrolling the Installation, answering calls for service registered by workers and residents on HAAF, and assisting/presenting at events as needed. DACP law enforcement and security duties are authorized by the Installation and are limited in the execution of their authority to the Installation boundaries. They can apprehend any persons found on the Installation or at an activity for offenses committed on-Post that are felonies, misdemeanors, breaches of the peace, a threat to property or welfare, or detrimental to good order and discipline. In addition to apprehension authority, the DACP are authorized by the Federal/State/United States Code of Military Justice (UCMJ) to issue traffic citations and coordinate with local tenant units for the release of Soldiers for prosecution under/in accordance with the UCMJ and the local U.S. Magistrates for Federal/State prosecution of non-affiliated civilians. Installation Law Enforcement responsibilities fall under the Directorate of Emergency Services and the DACP and Military Police collectively work together to accomplish the Department of the Army Law Enforcement mission(s).

Law enforcement personnel currently operate out of a single facility located in the cantonment area, 24 hours per day, and 7 days a week (24x7). Although the mission is met utilizing the resources available within this existing facility, internal assessments have determined it to be in need of numerous repairs, undersized, and inefficiently configured. This includes an undersized parking area and an inconveniently located booking space, which currently abuts rooms utilized for other purposes; ideally, booking occurs in its own, secured, separated space (Hackney, 2019). Also, response times to those requiring emergency services at the southern/southwestern portions of the Installation is also an area which could be improved via construction of a new facility in this portion of Post.

The HAAF Fire Department is operated by Civilian Service personnel out of two dedicated facilities located in the cantonment area, in accordance with AR 420-90, *Fire and Emergency Services*, the National Fire Protection Association (NFPA), OSHA, and other pertinent federal, state, and local safety regulations and

laws. The Department operates 24x7 out of Fire Stations #2 and #4 (departments on FSGA are located in odd-numbered stations). The Department provides protection from fire, rescue from dangerous situations, incidents involving acts associated with terrorism or personal and large scale disasters (man-made or natural), education in fire prevention, fire and life safety assessments and assistance in any emergency where lives and property are in jeopardy.

The Department also provides specific services to Soldiers and Civilian workers on Post, including safety inspections, Public fire safety training, Fire extinguisher training, Fire Warden training, Facility design reviews, and hot work permits, and also provide coverage to the airfield for assigned and transient aircraft assistance and hazardous materials incidents. The HAAF Fire Department does not manage prescribed burns on the Installation which, though rare, are managed by the DPW Environmental Division, Forestry Branch. Although the mission is met within these facilities at their current location, response time to emergencies in the southern portion of the Post are not fully desirable to the Department, per internal assessments (Kunz, 2019). In addition, the existing facilities internal assessments' have determined them to be in need of repairs and expansion. Police and fire protection facilities are located within various Building Standards on Post, as they provide services to so many of its various components.

Healthcare Services Availability. Tuttle Army Health Clinic (TAHC) provides healthcare to the HAAF military community and beneficiaries in the Savannah, GA area through a comprehensive range of health services including flight medicine, family medicine, pediatrics, and behavioral health. TAHC also provides physical therapy, optometry, radiology, laboratory, and pharmacy ancillary services. Hours of operation are Monday through Friday 0800-1700, and the clinic is closed on weekends, holidays, and certain training days. TAHC is located in the Community Support Building Standard.

Worker Safety. Occupational health and safety applies to on-the-job safety and implements the requirements of 29 CFR 1926 *et seq*. All construction, demolition, and associated actions on HAAF are performed in accordance with applicable OSHA regulations to protect human health and minimize safety risks, and all such activities are coordinated between contractors and the Safety Office prior to their start. The "Army Safety Program," implemented under AR 385-10, provides additional guidance, and governs Army policies, responsibilities, and procedures to protect and preserve Army personnel and property against accident loss (DA, 2013). This provides for operational safety and mandates compliance with applicable safety laws and regulations. To ensure worker health, compliance with OSHA standards and the Army Safety Program is required and only authorized personnel are allowed within the footprint of a proposed activity. In addition, all workers must adhere to safety standards established by OSHA and noted per the Army Safety Program.

Range Safety. The "Range Safety Program," implemented under Army Regulation (AR) 385-63, governs Army policies, responsibilities, and procedures for firing ammunitions, lasers, guided missiles, demolitions, explosives, rockets, and the delivery of bombs on Army and Marine Corps ranges and live-fire training facilities (DA, 2012). The program is applicable to operational ranges, non-range training lands, bombing ranges, impact areas (IAs), surface dangers zones (SDZs), target areas, all live fire weapons firing areas, recreational ranges utilized for rod and gun clubs, and test and evaluation ranges. All ranges are sited within the Training Standard on HAAF, which is devoted entirely to Soldier training on the Installation and not adjacent to any facilities with which there is a conflicting land use. Because there are competing

requirements for use of training lands on Post, the Range Facility Management Support System (RFMSS) range scheduling process is utilized by the Installation's Range Control Office to automate the scheduling, operations and management functions of Range Branch.

Airfield Safety. There is one airfield located on HAAF, which is located in the Airfield Operations Standard of the HAAF Regulating Plan. Land immediately adjacent to the airfield is located within the Airfield Support Standard and Training Standard, neither of which conflict with activities on the airfield or adjacent to it. Regulation of facilities and infrastructure in the vicinity of the airfield in necessary to ensure there are no distractions to aircrew members. This includes highly reflective surfaces and the presence of detention/retention ponds that attract waterfowl capable of interfering with landing and takeoff, among others. Regulating the use of this land assists in the safety of airfield resources. As discussed under Section 3.9, Airspace and Airfield Operations, airfields must be kept free of vertical and horizontal obstructions, in accordance with FAA regulations, 14 CFR Part 139 Section 331, *Obstructions*, and UFC 3-260-01, *Airfield and Heliport Planning and Design.* Future construction on, adjacent, or in the immediate vicinity of the airfield must also adhere to these requirements to ensure these safety measures are in place for the future workers and flight crew.

Accident potential, as discussed here, is in terms of where, within the airfield, an accident is likely to take place and how large an impact area is likely to result from any single accident. Thus, CZs and APZs are designated at both ends of military runways. The CZ for Army airfields is 3,000 feet long and 1,000 feet wide. The accident potential in this area is so high that no building is allowed. For safety reasons, the Army is authorized to purchase the land for these areas if not already part of the Installation.

- The APZ I is 2,500 feet long and 1,000 feet wide. The APZ I lies just beyond the CZ, and has land use compatibility guidelines allowing industrial, manufacturing, transportation, communication, utilities, wholesale trade, open space, and agricultural uses. However, uses that concentrate people in small areas are not acceptable.
- The APZ II is 2,500 feet long and 1,000 feet wide. Compatible land uses include those of APZ I, as well as low-density single family residential and those personal and business services and commercial retail trade uses of low intensity or scale of operation. High-density functions, such as multistory buildings, places of assembly (theaters, schools, churches, and restaurants) and high-density office uses, are not considered compatible.

Both the east and the west CZ for the HAAF runway remain on the Installation. Approximately 2,500 feet of the APZ I and all of the APZ II extend west into Chatham County. This area is undeveloped, but areas within APZ II are partially zoned for residential. All of the APZ I and II and I extend east into Savannah. This area is heavily developed. Areas within APZ I are zoned commercial and industrial; areas within APZ II are zoned government/ institutional. The current land use is compatible with the APZ I, APZ II, and CZs.

3.4.11.2 ENVIRONMENTAL CONSEQUENCES

Overall impacts to Health and Safety Resources anticipated as a result of implementing the proposed action are discussed in this section. Installation SMEs will determine whether NEPA compliance can be fulfilled through a REC from this document or whether supplemental NEPA needs to be done using a tiered approach. In addition, the Installation will prepare the appropriate supplemental NEPA documentation.

3.4.11.2.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Fire and Police Protection. Long-term, direct, minor, beneficial impacts are anticipated to Fire and Police Protection. The ADP for HAAF proposes the construction of a new police station in the cantonment area, construction of an Addition to Fire Department #2, and the construction of a joint-use Police Station/Fire Department in the southwestern end of HAAF. Improved levels of emergency service are anticipated as a result of this new construction. Locating the new joint facility in the southwestern portion of HAAF will facilitate quicker response times for police and fire personnel to workers and residents experiencing emergency situations in this part of the Installation, and the construction of the new police station and addition to the fire station will result in modern, more efficient facilities for these emergency and security personnel, resulting in long-term, beneficial, direct impacts. Police and fire personnel may provide valuable input at the design charrettes for these new facilities, ensuring they are sufficiently sized and efficiently configured for the current and emerging missions they support. This process may also entail the utilization of additional and improved equipment and supplies.

During all construction, demolition, renovation, and other operations on HAAF, vehicles associated with such actions are not anticipated to hamper efforts by emergency vehicles, as discussed in Section 3.12, Transportation. If roads must be closed to support any of these activities, traffic will be effectively detoured/rerouted to ensure emergency vehicles can safely and effectively traverse the Installation and maintain access to the required facilities. Contractor access times may also be staggered to not coincide with peak traffic hours, to include when most workers are entering and existing HAAF in the early morning and afternoon, minimizing the potential impacts to emergency access routes by utilizing BMPs and measures discussed in Section 3.10, Transportation. No impacts to these resources are anticipated due to routine operations, maintenance, repair, and training on HAAF, as these activities are conducted in accordance with Installation policies and protocols and, if emergency services are required, they are enacted in accordance with those guidelines.

Healthcare Services Availability. No impacts to Healthcare Services are anticipated, as none of the projects proposed for implementation in the ADP for HAAF is anticipated to impact healthcare services on HAAF and no new healthcare facilities or renovations to existing healthcare facilities is proposed.

Worker Safety. Short-term, direct, negligible, adverse impacts to on-Post Worker Safety is anticipated. Traffic hazards on HAAF may increase slightly as personnel supporting the projects proposed under the alternatives enter and exit the traffic network each day. This may result in traffic delays, especially during the heavy traffic flows that are common during early morning/mid-afternoon, when most personnel head into and out of work. However, as discussed in Section 3.10, Transportation, these impacts will be temporary, concentrate primarily at the start of each project, and then cease upon each project's completion. Minimization of these potential impacts may be possible via rerouting of the project-related traffic to other parts of Post, as well as by staggering the arrival/departure times of portions of the work force.

Personnel involved in timber harvest, site clearance, and other associated actions, must adhere to all known prescribed safety standards per OSHA and act in accordance with the project-specific timber harvest plan. Only authorized personnel are allowed within each project's footprint. Prior to implementation of any proposed action, including timber harvest, site clearance, construction, demolition, and renovation, all activities must be coordinated between the contractor and the HAAF Safety Office, including their approval

of the contractor's Health and Safety Plan. All workers on site shall adhere to all requirements in the Plan, to include wearing safety helmets and ear plugs during work shifts.

With regards to worker exposure to noise, the CDC recommends an exposure limit of 85 dBA as an eight-hour time-weighted average. The majority of the equipment likely to be utilized by construction workers generates less than 85 dBA, which has been determined to not result in significant adverse impacts to health and safety. In addition, the use of this equipment occurs sporadically throughout the daytime hours and not for an eight hour constraint period. Accordingly, only short-term, direct and potentially indirect, negligible adverse impacts to on-Post worker safety are anticipated, and no impacts are anticipated to migrate to the off-Post community. Impacts may be minimized via adherence to standard BMPs, such as safety helmets and ear plugs and modification of shifts, and no mitigation is proposed.

Range Safety. Short-term, direct, negligible, adverse impacts to Range Safety are anticipated. Range and training lands/resources currently utilized on HAAF consist of the Small Arms Range, SRTA Shoothouse, Breach Facility, and Land Navigation Course. Their use must be coordinated through RFMSS, the application that assigns units to specific training areas, facilities, or ranges on specified dates. All military unit training, natural resource management, and maintenance personnel is coordinated through RFMMS and will continue to do so under all of the alternatives. Strict adherence to these requirements enhances the safety environment on HAAF, as further discussed below.

Smoking is not allowed in vehicles, or within 50 feet of any range facility, and smoking is authorized only in designated (marked) smoking areas. Areas where unexploded ordnance (UXO) is known or suspected to be present is clearly marked: **"**Unexploded Ordnance Do Not Enter.**"** All personnel entering range and training lands are briefed prior to entry, and are strongly instructed not to pick up, handle, or disturb UXO, projectiles, flares, fragments, or ammunition that may be found, and to note that if UXO is found, the site is to be marked, all personnel are to move to a safe distance (estimated bursting radius), and to report to the Range Branch immediately. If GPS is available, the finder shall mark the UXO location using GPS; if not, utilize the best method available.

Ammunition removed from sealed containers for use in training is placed on tarpaulins and covered to protect it from the direct rays of the sun and/or precipitation; however, ammunition is not removed any earlier than necessary to prepare it for firing. Units retain packing material for proper repackaging. Only approved ammunition is used on the ranges. Units shall conduct a daytime reconnaissance of Ranges and training areas prior to training, to ensure safe and effective training exercises. Range Branch Safety Section will provide general oversite prior to the event using written guidance in the form of a Concept Response or other written guidance.

Range Branch issues a weather advisory when severe weather is within 25 nautical miles and a weather warning when severe weather is within 5 nautical miles out from Ranges, Facilities and/or Training Areas. Range Branch issues a broadcast over all nets when the weather conditions reach unsafe levels. Uncontrolled range fires or wild land fires can threaten personnel, equipment, and forest resources, and all fires must be reported to Range Branch immediately, including the military map coordinates if possible. Units are required to extinguish small fires in their area provided it can be accomplished safely, and warming and cooking fires are prohibited unless specifically authorized by Range Operations.

The Composite Risk Management matrix for each training event ensures the presence of medical evacuation capabilities (ambulances, EMS forward positioned), training and experience of medical personnel on-site, the training events distance from the nearest Ambulance Exchange Point (AXP) and to the nearest hospital, the availability of an Air Ambulance/Air MEDEVAC, and weather conditions for aviation operations are appropriately accounted for. Commanders will ensure that their pre-live fire planning and coordination includes the designation of the closest Ambulance Exchange Point and a Helicopter Landing Zone for Air Medevac.

As discussed in Section 3.4, Training, there are no IAs on HAAF and none are anticipated to be created in the future by any of the existing or proposed actions on the Installation. Construction associated with the *Indoor Range, Driving Course, Enhanced Land Navigation Course, Air Assault Building, Live Fire Course, and Urban Assault Course* projects will occur in open, forested lands on HAAF that have been utilized for military training purposes for more than 60 years. Although probability of finding UXO at these construction sites is extremely low, if any are found during the tree clearing or construction process, all work will cease and established procedures to address the situation will be followed. If UXO is found during the course of the project, the FSGA/HAAF Explosive Ordnance Division (EOD) is called in and will make a determination if emergency treatment of munitions is required and recover, destruction, or otherwise manage waste munitions as necessary to protect human health, safety, and the environment. If these procedures are followed, only minor impacts are anticipated since the UXO presence would be identified and eliminated prior to any workers being exposed to this potential safety risk.

As currently scoped, construction, demolition, and renovation projects proposed in the ADP for HAAF do not have the potential to alter the existing SDZs or IAs on HAAF. The proposed new Indoor Range is a Baffled Range, and the open roofed design has the potential for bullets to escape from this roof and leave the facility; however, once finalized, if it appears the SDZ may fall off-Post, the appropriate actions will be taken to ensure there are no off-Post impacts. As a result of these numerous steps and measures, only short-term, direct, negligible, adverse impacts to safety on the range and safety lands on HAAF are anticipated.

Aviation Safety. No impacts to Aviation Safety are anticipated. As discussed in Section 3.9, Airspace and Airfield Operations, only as-needed, as-required construction, maintenance, and operational vehicles and materials are permitted on any portion of the airfield or immediately adjacent to it, to ensure compliance with FAA, CFR, and UFC requirements for Army airfields. Personnel access to the airfield, to include parking aprons, taxiway, and runway is strictly controlled and all personnel working on the projects analyzed in this PEA will be granted access via a coordinated pass system. Access, vehicle entry, and fill/borrow haul routes are coordinated in advance and are typically located where they are most adjacent to the location on the airfield receiving the work. Once the project is complete, this access location is closed and passes are revoked. Access sites for each project are determined and coordinated well in advance of the start of all projects and, if required, that portion of the airfield is cordoned off, to ensure airfield and worker safety.

Personnel flying into/out of HAAF at this time would be given advanced notice of work occurring in their vicinity via the Notice to Airmen (NOTAM) system, notice filed with an aviation authority to alert aircraft pilots of potential hazards along a flight route or at a location that could affect the safety of the flight. This,

too, can be coordinated days in advance, ensuring minimal impact on the safety of the flight, whether it is for training, deployment, or other purposes. Accordingly, no impacts are anticipated to Airfield Safety.

Overall, long-term, direct, minor, beneficial impacts are anticipated to Health and Safety under this alternative. This is due to the construction of new police and fire department facilities, all of which will result in modern, sufficiently sized, efficiently configured, and more strategically located facilities better able to meet the current and emerging missions they support. All projects will be implemented in accordance with prescribed safety standards per OSHA and other federal state, and local requirements, and in accordance with project-specific safety plans. Proper signage will be utilized at all times and only authorized personnel will be allowed within each project's footprint. Existing protocols will be maintained on range and training lands and no new IAs/SDZs will be created. Collectively, these measures will aid in promoting overall safety levels on the Installation and result in beneficial impacts to Health and Safety

3.4.11.2.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Overall, long-term, direct, minor, beneficial impacts are anticipated to Health and Safety resources under this alternative, for reasons discussed under Alternative I. Although there will be no construction south of the existing flightline under Alternative II to facilitate the new taxiway and facilities to support the relocation of the 3/160th SOAR, this does not result in a substantial difference in impacts on Health and Safety, as a shift of construction north into the cantonment area will not change personnel on the Installation's adherence to all Installation, Army, DoD, federal, and state regulations and laws regarding Fire and Police Protection, Healthcare Services Availability, Worker Safety, Range Safety, or Aviation Safety, nor will the additional construction within the cantonment area result in a substantial difference in potential impacts to these resources. Accordingly, long-term, direct, minor, beneficial impacts are still anticipated, as discussed under Alternative I.

3.4.11.2.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Overall, long-term, direct, negligible, adverse impacts are anticipated under this alternative. The construction of projects proposed in the ADP for HAAF will not occur and facilities and resources currently utilized by Health and Safety providers will be maintained at the status quo level. However, as previously discussed, the police and fire department facilities are in need of renovations (at a minimum) and, as these resources continue to age, efficiency may become an issue of concern and validate the need for new facilities in future years. Regardless of whether new construction occurs, all personnel working on the Installation (to include range and aviation) will continue to adhere to all Installation, Army, DoD, federal, and state regulations and laws, and this will help keep impacts minimized. Accordingly, short-term, direct, negligible, adverse impacts are anticipated as a result of this alternative.

3.4.11.3 CUMULATIVE EFFECTS

The ROI for Safety lies within the boundaries of HAAF, as Health and Safety actions on HAAF are not anticipated to impact the City of Savannah. Past, present, and reasonably foreseeable future events with the potential to result in cumulative impacts are considered in the analysis below.

3.4.11.3.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Past and present actions in the ROI consist of the historical development of the City of Savannah, the airfield proper, and HAAF, as well the associated infrastructure and transportation network that supports them. Implementation of these past actions would have resulted in potential adverse impacts to worker safety, range safety, as well as aviation safety, as land was cleared for development and activities were initiated; however, as safety standards improved over time, these potential impacts would have lessened. Fire, police, and healthcare access on Post would have been implemented, resulting in beneficial cumulative impacts in the ROI.

Future actions in the ROI include the continuation of routine operations, repair and maintenance, and training on HAAF, as well as projects identified on Table 3, Future Projects in The ROI , most notably the construction of Project DeRenne, the Apron and Taxiway Reconstruction, and the Stormwater Drainageway Improvements. Although identified as occurring in the City of Savannah, the completed new road will traverse onto HAAF property at the Montgomery ACP/Gate, and its implementation is anticipated to remedy congestion and safety issues within the overall ROI. Accordingly, this may improve police and fire access within the ROI, access to healthcare availability, and worker safety, as opening up these on Post may improve overall accessibility throughout the Installation and, indirectly, accessibility to healthcare services and emergency workers' access to those requiring their services.

The HAAF Apron and Taxiway Reconstruction and Stormwater Drainage Improvements projects will also occur, and concurrently on the airfield, involving a series of improvements to the airfield, including the removal and replacement of taxiways, runways, and parking aprons that no longer meet FAA standards, improving the overall safety and efficiency of the airfield, as well as those who work on and around it, to include airfield, police, and fire personnel. Overall, minor beneficial cumulative impacts to Health and Safety are anticipated under this alternative.

3.4.11.3.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Overall, minor beneficial cumulative impacts are anticipated under this alternative, as discussed under Alternative I. The same projects as proposed under Alternative I will be implemented, at the same location, and during the same phases; however, under this alternative, the new taxiway will not be constructed and the facilities for the 3/160th SOAR would not relocate south of the flightline, but would instead remain in the northern portion of Post. This will result in more units and their associated new construction remaining within the same part of the Installation's cantonment area. It is not anticipated to substantially impact Health and Safety, however, as these resources will still be available to those who work and live on the Installation and utilized as required. It will also still include the new facilities supporting Health and Safety, which are a benefit. Accordingly, minor beneficial cumulative impacts are still anticipated as a result of this alternative.

3.4.11.3.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Past and present actions with the potential to result in cumulative impacts in the ROI are as discussed under Alterative I; however, under this alternative, the projects proposed in the ADP for HAAF will not be constructed and facilities and resources currently utilized by Health and Safety providers will be maintained

at the status quo level. As these resources continue to age, efficiency may become an issue of concern and validate the need for new facilities in future years. All health and safety personnel will continue to adhere to all Installation, Army, DoD, federal, and state regulations and laws, and this will ensure that potential impacts are minimized. Accordingly, negligible adverse cumulative impacts are anticipated as a result of this alternative.

3.4.12 UTILITIES

3.4.12.1 AFFECTED ENVIRONMENT

The Installation adheres to policies set forth under Army Regulation 420-1 (Army Facilities Management), which raises the bar for Federal leadership and performance. All systems (privatized or not) are capable of meeting the demands of existing and anticipated future development discussed within this PEA. Information in this section is obtained from the Installation's various permits and plans.

Energy. The Army Energy Program, with which FSGA/HAAF is fully compliant, set goals for all military Installations to make energy a consideration for all Army activities to reduce demand, increase efficiency, seek alternative sources, and create a culture of energy accountability while sustaining or enhancing operational capabilities. Army construction, operation, and maintenance must also be compliant with Leadership in Energy and Environmental Design (LEED) and Low Impact Development (LID) protocols. FSGA/HAAF has a diverse energy consumption profile, consisting of electric power, solar power (on FSGA proper), natural gas (both delivered by commercial utilities), No. 2 fuel oil, propane, waste wood, and waste oil. The abundance of energy sources and adequate supplies from each source provide the Installation with ample excess energy capacity, allowing Fort Stewart to accommodate a variety of future mission expansion scenarios.

All electric service at HAAF has been privatized and is managed and maintained by Canoochee Electric Membership Cooperation (CEMC) through a main substation, serving approximately 662 buildings and 2,900 streetlights. The HAAF energy office requires the most cost effective energy source for any facility heating and air conditioning systems, new and existing.

All natural gas services on HAAF are privatized and HAAF distributes its natural gas purchases via approximately 22,760 linear feet of distribution pipe, with diameters ranging from less than two inches to eight inches. It is primarily coated steel pipe with a small amount of polyethylene pipe. Various buildings and facilities on HAAF utilize other energy sources as their primary, to include No. 2 fuel oil, propane, waste wood, and waste oil. All are tracked to ensure compliance with both the Army Energy Program and the Installation's Title V Permit, which requires emissions inventories.

Communications. HAAF's communication system is government-owned but operated by a communications contractor. It serves the entire cantonment area and provides local area network services and Internet access; Bell South is the local telephone provider for the Savannah metropolitan area, and Comcast provides cable television service at HAAF. There are several distinct types of information networks in a range environment: administrative, range control (RC), and tactical. The administrative networks provide telephone and data support for the range buildings, to include safety telephones. The special RC networks control down-range targets and sensors, which monitors and transports this information to off-site locations. The tactical networks support the unit training requirements in a field

environment. In addition, there could be security and alarm networks. The current infrastructure at HAAF consists of single mode (SM) fiber optic cable (FOC) installed in a maintenance hole/duct system, sections of which are direct buried. The fiber between nodes consists of directly-connected fiber, as well as fibers that are spliced through intermediate buildings to make connections.

Potable Water. As discussed previously under Water Quality and Resources, the GA DNR identified HAAF (as part of Fort Stewart) as one of the top ten highest consumers of water in southeast Georgia. HAAF utilizes groundwater as its potable water supply, and the Installation withdraws groundwater from five community wells and three non-community system wells. Groundwater pumped from these wells is treated with chlorine at the well head prior to being sent to storage tanks. HAAF operates under a Water Management Plan, and groundwater withdrawals are currently permitted by the GA DNR for a combined monthly average withdrawal of 1.170 million gallons per day (mgd). HAAF currently uses 0.358mgd, and has an available capacity for additional use of 0.314mgd. This system supplies most of the Installation, with the exception of the Gold Course, which is irrigated with recycled water.

Wastewater. HAAF owns and operates a wastewater collection system that consists of approximately 24 miles of sewer mains and laterals. Wastewater treatment facilities include a central wastewater treatment plant (WWTP) off of North Perimeter Road on the north end of the Installation and 43 sewage lift stations (pumping stations). The central wastewater treatment plant is an activated sludge plant that treats an average flow of 0.336 MGD (CY 2019). The plant receives and treats all wastewater generated on HAAF, including minor industrial wastewater from wash racks.

Sludge generated from the WWTP is dried on-site and taken off-Post to Superior Landfill and Recycling Center in Savannah, a commercial Subtitle D landfill operated by Waste Management (see full discussion in Land Use, Landfills, Section 3.9). All liquid effluent joins with the City of Savannah's Wilshire Street Sewage Treatment Plant's effluent and discharges into the Savannah River. This discharge is covered under the plant's NPDES permitted 1.25mgd discharge limit and the Installation's average daily usage is 0.339mgd, giving the Installation an additional future capacity of 0.991mgd. There is an ongoing training program at HAAF to minimize potential pollutant discharges, as well as an inspection program to ensure compliance.

Stormwater. HAAF has a stormwater drainage system comprised of stormwater pipes, catch basins and inlets, concrete culverts, and grassed drainage ditches/swales. Stormwater at HAAF is routed to drainage ditches and ultimately to canals throughout the Installation. Most stormwater runoff eventually flows into the Little Ogeechee River (Forest River) system. Pipes are made of corrugated metal, clay and concrete. These structural features are primarily found in areas where impervious surfaces and development are located (i.e., roads and buildings). In the less developed, forested areas of the Installation, stormwater drainage is primarily overland flow following the topography of the land (SWP3, 2012).

The extensive stormwater drainage system at HAAF allows for infiltration and some treatment in retention and/or detention basins to meet regulatory requirements for post-construction runoff. Many projects related to military training (e.g., firing ranges) do not feature impervious surfaces to the same degree as many civilian and private projects, and will not experience human activity and traffic of the same frequency and

intensity of impacts to the stormwater conveyance systems, existing and/or planned in associated with programmed range projects. HAAF only utilizes sedimentation ponds and/or basins during the construction phase of a project. The existing retention ponds and detention basins on the Installation are post construction measures (structural BMPs), meant to ensure NPDES permitting for runoff reduction, water quality, and total suspended solids removal of 80% are being met, as required by law.

HAAF also adheres to the requirements of the Municipal Separate Storm Sewer System NPDES Permit requirements, the GA Stormwater Management Manual/Coastal Stormwater Supplement, the EISA-Section 438, the DPW Policy on Stormwater Management and Dry Detention/Extended Detention Basins, and all applicable Executive Orders for all projects within the cantonment or range areas. In addition, Fort Stewart recommends the utilization of the United Facilities Criteria "Design: Low Impact Development (LID) Manual", and the Army Corps of Engineers Public Works Technical Bulletin "LID for Sustainable Installations: Stormwater Design Planning Guidance for Development within Army Training Areas." FSGA/HAAF has installed numerous LID solutions to minimize impairment to receiving water bodies, to include vegetating ditches with various native species (to provide shade, filter the water, and enhance habitat) and the installation of riprap and weirs (to increase dissolved oxygen and improve biological production within the water body).

HAAF also operates industrial activities subject to the requirements of the USEPA and State of Georgia industrial NPDES regulations under the CWA. These regulations involve regulating stormwater discharges from industrial activities that have the greatest potential to contaminate runoff. The applicable Installation industrial sectors include roads, motorpools, hangars, wastewater treatment facilities, and others.

Installation sources of industrial stormwater pollution have been identified on the Stormwater Pollution Prevention Plan (SWP3) at HAAF. The SWP3 is reviewed annually and updated as required per the Installation's Georgia NPDES General Permit, depending upon the frequency of operational or equipment changes, or whenever there is a major change in design, construction, operation, and/or maintenance of defined industrial activities that may impact the potential discharge of stormwater pollutants. The SWP3 prescribes BMPs that shall be implemented to reduce the potential for stormwater pollution, to include good housekeeping measures, material storage and management procedures, and preventive maintenance of equipment and facilities, to include underground storage tanks/aboveground storage tanks (USTs/ASTs).

3.4.12.2 ENVIRONMENTAL CONSEQUENCES

Overall impacts to Utilities that are anticipated as a result of implementing the proposed action are discussed in this section. Installation SMEs will determine whether NEPA compliance can be fulfilled through a REC from this document or whether supplemental NEPA needs to be done using a tiered approach. In addition, the Installation will prepare the appropriate supplemental NEPA documentation.

Figure 35: Utilities Constraints Map, ADP for HAAF.

3.4.12.2.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Long-term, direct, moderate, adverse impacts to Utilities are anticipated under this alternative. During the ADP for HAAF Workshop, participants worked to site new construction in close proximity to existing utilities, by using the Utility Constraints Map (Figure 35) and GIS maps of the Installation showing existing development on Post. This ensured each project is as close as possible to existing electrical, water, wastewater, natural gas, and/or communications lines. This also ensures the project is in an area where there are existing stormwater drainage structures. Where these resources do not currently exist, they are typically within a short distance and can be tapped into from the nearest developed site on the Installation. There are few existing utilities directly south of the flightline, where construction of a new taxiway and facilities to support the relocation of the 3/160th SOAR is proposed; however, construction projects in this portion of HAAF will be able to tap into existing utilities to the west, south, and east of this area to ensure these projects are fully supported.

Typically, connections are established through one or more trenches from existing lines along the nearest road or other primary utilities location, although some portions of the utility lines are aboveground due to limitations on trenching from existing geologic features. Most utility lines are installed via trenches that parallel roads and therefore occur in previously disturbed ground. Installation master planners, design teams, users, and the Installation utility providers will work during each project's design phase to locate the closest existing utility source and implement the best solution possible. Existing utility lines in the area of construction may be impacted as the new utilities are connected to the existing systems; however, each project will be timed to ensure these disruptions are as short-term and minimal as possible. It is also possible for existing utility systems to be inadvertently disrupted due to accidents on the job-site, such as excavations cutting a utility line. By conducting pre-construction utility line surveys and consulting the Utility Constraints Map, this potential should be minimized.

Installation experts have determined that sufficient capacity exists to support the actions proposed under this alternative, based on current usage and remaining capacities. Data from 2019 data notes that there is an available capacity of 306,283gpd of potable water for on-Post users and an available capacity of 0.99mgd wastewater that can be discharged, per the Installation's permits. This capacity can be maximized via the use of energy-efficient designs and the use of infrastructure that minimize the demand placed on the utility systems. The Army and its contractors strive to utilize LID designs to minimize potential impacts to potable water use, demand for electricity, and stormwater runoff.

Construction, demolition, and renovation projects include, as part of the design package, detailed erosion and sedimentation control plans, which will show the existing and planned stormwater drainage layout for the new facility, building, and/or infrastructure project proposed on HAAF. Review by Installation experts will ensure this works with the adjacent built and natural environment to prevent excessive runoff, sedimentation, and associated erosion, as well as impediments to the existing stormwater drainage system on site, avoiding potential adverse impacts. Renovations proposed would improve older, out of date utility systems, especially electrical or communication systems for example, resulting in beneficial impacts. No known impacts are known due to routine ongoing operations, repairs, maintenance, and training on the Installation as the Installation is operating well within is permitted allowances (water, wastewater) and is not experiencing shortages and/or issues with levels/quality of service (electrical, communication).

Overall, long-term, direct, moderate, adverse impacts to Utilities are anticipated as a result of implementation of this alternative.

3.4.12.2.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Long-term, direct, minor, adverse impacts to Utilities are anticipated as a result of implementation of this alternative. As discussed under Alternative I, projects in the ADP were sited proximate to existing utilities where possible, to ensure each project is as close as possible to existing electrical, water, wastewater, natural gas, and/or communications lines. However, under this alternative, the new taxiway and associated facilities will not be constructed south of the existing flightline, and instead shifted north within the cantonment area, where ample existing utility connections exist.

As previously discussed, connections are established by trenching from existing lines along the nearest road or other primary utilities location, unless utility lines are aboveground due to limitations on trenching from existing geologic features. The Installation will work during each project's design phase to locate the closest existing utility source and implement the best solution possible. Existing utility lines in the area of construction may be impacted as the new utilities are connected to the existing systems; however, each project will be timed to ensure these disruptions are as short-term and minimal as possible. It is also possible for existing utility systems to be inadvertently disrupted due to accidents on the job-site, such as excavations cutting a utility line. By conducting pre-construction utility line surveys and consulting the Utility Constraints Map, this potential should be minimized.

Installation experts have determined that sufficient capacity exists to support the actions proposed under this alternative, based on current usage and remaining capacities. Data from 2019 data notes that there is an available capacity of 306,283gpd of potable water for on-Post users and an available capacity of 0.99mgd wastewater that can be discharged, per the Installation's permits. This capacity can be maximized via the use of energy-efficient designs and the use of infrastructure that minimize the demand placed on the utility systems. The Army and its contractors strive to utilize LID designs to minimize potential impacts to potable water use, demand for electricity, and stormwater runoff.

Construction, demolition, and renovation projects include, as part of the design package, detailed erosion and sedimentation plans, which will show the existing and planned stormwater drainage layout for the new facility, building, and/or infrastructure project proposed on HAAF. Review by Installation experts will ensure this works with the adjacent built and natural environment to prevent excessive runoff, sedimentation, and associated erosion, as well as impediments to the existing stormwater drainage system on site, avoiding potential adverse impacts. Renovations proposed would improve older, out of date utility systems, especially electrical or communication systems for example, resulting in beneficial impacts. No known impacts are known due to routine ongoing operations, repairs, maintenance, and training on the Installation, as the Installation is operating well within is permitted allowances (water, wastewater) and is not experiencing shortages and/or issues with levels/quality of service (electrical, communication).

Overall, long-term, direct, minor, adverse impacts to Utilities are anticipated as a result of implementation of this alternative.

3.4.12.2.3 ALTERNATIVE III: NO ACTION

No impacts are anticipated to Utilities under this alternative. None of the construction proposed under the ADP for HAAF would occur, to include the proposed expansion of the utility systems into the areas of Post that currently do not have these services. No known impacts are known due to routine ongoing operations, repairs, maintenance, and training on the Installation, as the Installation is operating well within is permitted allowances (water, wastewater) and is not experiencing shortages and/or issues with levels/quality of service (electrical, communication).

3.4.12.3 CUMULATIVE IMPACTS

The ROI for Utilities lies within the boundaries of HAAF, as none of these actions on/within the City of Savannah were deemed sufficiently proximate in time or location to the proposed action to result in potential cumulative impacts to cultural resources. Past, present, and reasonably foreseeable future events with the potential to result in cumulative impacts are considered in the analysis below.

3.4.12.3.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Past and present actions in the ROI consist of the historical development of the airfield proper and HAAF, as well the associated infrastructure and transportation network that supports them. This includes routine operations, ongoing training, construction projects, maintenance of facilities, grounds, and transportation support networks (roads, bridges, and railroads) and support of associated infrastructure (stormwater drainage systems, utilities). Collectively, this resulted in long-term, direct, cumulative impacts to utilities in the ROI as the supply grew to meet the demand.

Future actions in the ROI include the continuation of routine operations, repair and maintenance, and training on HAAF. Projects identified on Table 3, Future Projects in The ROI, have the potential for moderate adverse cumulative impacts to utilities in the ROI. To accommodate these actions, existing utility lines will be tapped into and/or new utility lines will be added as needed to accommodate each action. This may include modification of the stormwater drainage system, if applicable to the project, and will be implemented in accordance with site-specific, project-specific permits, to include NPDES permits, E&S Plans, and others, as applicable. Existing capacity on the Installation currently exists to accommodate these new demands and potential cumulative impacts are not anticipated to be more than moderate. Implementation of the Apron and Taxiway Reconstruction and the Stormwater Drainageway Improvements on the airfield proper are anticipated to result in minor beneficial cumulative impacts to stormwater drainage capacity on the Installation, as these projects will result in improvements to currently damaged and/or undersized drainage systems on the airfield. All work will occur in accordance with site-specific, project-specific permits, to include an E&S Plan and NDPES permit. Overall, moderate adverse cumulative impacts to Utilities are anticipated under this alternative.

3.4.12.3.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Past and present actions in the ROI are as discussed under Alternative I. Future events are primarily as discussed under Alternative I; however, under this alternative, none of the development in the ADP that is proposed directly south of the existing flightline will be constructed, but would instead shift north into the

existing cantonment areas. This would require less new utility installation or construction of new stormwater drainage structures in this location on HAAF. As discussed previously, the Installation prefers to site new development in areas where there are currently existing utilities and stormwater drainage structures whenever possible, and this is the current environment in the existing cantonment area. Accordingly, siting these facilities in the cantonment area will result in minor adverse cumulative impacts to Utilities, versus moderate under Alternative I. The remaining future events in the ROI are as discussed under Alternative I and include the minor beneficial cumulative impacts associated with the implementation of the HAAF Apron and Taxiway Reconstruction and Stormwater Drainage System Improvements. Overall, minor adverse cumulative impacts to Utilities are anticipated under this alternative.

3.4.12.3.3 ALTERNATIVE III: NO ACTION/STATUS QUO

No cumulative impacts to Utilities are anticipated under this alternative, as no direct/indirect impacts will occur.

3.4.13 HAZARDOUS MATERIALS/WASTE MANAGEMENT AND REMEDIATION

3.4.13.1 AFFECTED ENVIRONMENT

Specific environmental statutes and regulations govern hazardous materials and hazardous waste management activities at HAAF. For the purpose of this analysis, the terms "hazardous waste," "hazardous materials," and "toxic substances" include those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), and/or the Toxic Substances Control Act (TSCA). In general, they include substances that, because of their quantity, concentration, or physical, chemical, or toxic characteristics, may present substantial danger to public health, welfare, or the environment when released into the environment.

Asbestos Containing Materials (ACM). All HAAF facilities scheduled for maintenance work, remodeling, or demolition are inspected for asbestos containing materials (ACM) prior to project implementation. If no survey results are available, it is assumed that buildings and structures built prior to 1981 contain ACM, as this is the date these materials were phased out of use within the U.S. If ACM will either be disturbed or removed as part of work within a building on HAAF, the contractor performing the work must conduct asbestos abatement, containment, disposal, and submit a 10-day notification to the Georgia Environmental Protection Division (GA EPD), as required by the Georgia Asbestos Safety Act, Official Code of Georgia, Annotated Section 12-12-1. The disposal of ACM must be in accordance with both the GA EPD and Occupational Safety and Health Administration regulations (OSHA). Copies of all disposal manifests are provided to the HAAF DPW Environmental Division. Because ACM management and disposal procedures are mandatory and compliance will be monitored, no impacts are anticipated and this resource is not discussed further in this PEA.

Lead Based Paint (LBP). All HAAF facilities scheduled for maintenance work, remodeling, or demolition are inspected for lead-based paint (LBP) prior to project implementation. If no survey results are available, it is assumed that buildings and structures built prior to 1978 contain LBP, as this is the date these materials were phased out of use within the U.S. If tests indicate LBP removal is necessary, it is collected and disposed of off-Post in accordance with local, state, and Federal regulations, and copies of all disposal manifests are provided to the HAAF DPW Environmental Division. Because LBP management and

disposal procedures are mandatory and compliance will be monitored, no impacts are anticipated and this resource is not discussed further in this PEA.

Polychlorinated Biphenyls (PCBs). The presence of PCBs is often associated with older electrical system components. Sampling for PCBs in accordance with EPA regulations and the Federal Facilities Compliance Act is ongoing at HAAF. The Installation has conducted extensive surveys to identify and remove PCB-containing components; however, it is assumed that two older oil circuit breakers at HAAF contain PCBs, and that switches located in laterals along the HAAF runway may also contain PCBs. Fluorescent light ballasts (FLB) containing PCBs may also be present in the buildings that would be demolished. Although PCBs in FLB are not regulated under the TSCA, the State of Georgia does regulate these PCBs. Consequently, PCBs in FLB are also managed as PCB waste at HAAF. Because PCB management and disposal procedures are mandatory and compliance will be monitored, no impacts are anticipated and this resource is not discussed further in this PEA.

Underground Storage Tanks (USTs) and Aboveground Storage Tanks (ASTs). HAAF has removed or closed in place the majority of its historic USTs, and currently maintains only eight active UST sites, which are used for storage of used oil, used hydraulic fluid, used antifreeze, motor gasoline, and aviation fuels. In 2002, due to the prevalence of USTs found to be leaking on HAAF, and the associated risk to groundwater and drinking water resources, HAAF enacted a voluntary moratorium wherein no further USTs would be constructed on HAAF. To date, no exceptions have been granted. Accordingly, ASTs are utilized to store products on Post in lieu of USTs.

All USTs and ASTs must have appropriate secondary containment and be installed, inspected, managed, maintained, and monitored in accordance with local, state, and federal law. There is a potential for some of the projects proposed in the ADP for HAAF to either require the removal of a UST/AST or require the installation of an AST. Projects identified in the ADP for HAAF will undergo individual project-level review and the UST/AST Program Manager will determine which project-specific requirements apply to the project, to include required data tracking and associated permitting, as/if applicable. This process will continue as each project on the ADP is developed, with guidance provided at each stage of the project's development. Because the management of AST/USTs are mandatory and compliance will be monitored, no impacts are anticipated and this resource is not discussed further in this PEA.

Perfuoroalkyl and Polyfuoroalkyl Substances (PFAs). On September 4, 2018, the Army issued guidance for addressing releases of per- and polyfuoroalkyl substances (PFAs) on Army lands (DA, 2018). This guidance applies to Active Army Installations, BRAC Installations, Army National Guard facilities, and Army Reserve facilities, and its intent was to provide a consistent framework within which to address historic releases of these substances on Army lands, to include identifying sites where PFAs releases may have occurred, prioritizing release sites for future investigations and potential response, and well as providing guidelines for applying risk-based criteria during potential cleanup, sampling, and analysis.

In May 2016, the U.S. EPA issued a Lifetime Health Advisory (LHA) for PFOS and PFOA, singly or combined, of 0.07 micrograms per liter (µg/L) or 70 nanograms per liter (ng/L) or 70 parts per trillion (ppt) in drinking water. In addition to the EPA LHA, some states are issuing regulatory standards of their own in multiple media, not just for PFOS and PFOA but other PFAS as well. PFAS are a diverse group of compounds resistant to heat, water, and oil, and have been used for decades in hundreds of industrial applications and consumer products such as carpeting, apparel, upholstery, food paper wrappings, fire-

fighting foams, and metal plating. PFAS have been detected both in the environment and in the blood samples of the general U.S. population. These chemicals are persistent, and resist degradation in the environment. Their concentration increases over time in the blood and organs and, at high concentrations, certain PFAS have been linked to adverse health effects in laboratory animals that may reflect associations between exposure to these chemicals to include health problems such as low birth weight, delayed puberty onset, elevated cholesterol levels, and reduced immunologic responses to vaccination.

At Army Installations, the primary mechanism for releases of PFAS is through the historic use (post-1972) of Aqueous Film Forming Foam (AFFF), a product applied during firefighting and firefighting-related training. AFFF for firefighting was, and is, generally used in areas where fuel- or petroleum-based fires may have occurred; such as in the vicinity of aviation assets, fuel farms, or aircraft crash sites. The Army's current practice is not to use AFFF for petroleum-based training fires. Other known sources of environmental releases of PFAS include mist suppressants for chrome plating operations and landfills and wastewater treatment plants that have inadvertently accepted PFAS containing materials.

The Army has begun conducting historic records searches to identify locations where there is a potential for a release of PFAs, and those with the greatest likelihood include fire training areas, AFFF storage locations, aircraft crash sites, fuel farms, and sites associated with aviation assets. In accordance with this guidance, FSGA/HAAF is in the process of identifying potential PFAs sites on the Installation, to include its airfield and its associated fuel farm on HAAF; however, all information is in the preliminary phase and no actual PFAs sites have been identified and no analysis has been completed. Accordingly, this resource is not carried forward for detailed review. Should project proposed in the ADP for HAAF be determined to impact PFAs sites in the future, supplemental NEPA analysis will be conducted, at the level deemed appropriate (REC, EA, EIS).

Hazardous Materials and Wastes Management. The FSGA/HAAF Environmental Division oversees the management of hazardous materials and wastes on behalf of the military units and activities on HAAF, all in accordance with 32 CFR 650, *Environmental Protection and Enhancement*, and all other applicable Federal, state, DOD, and local laws and regulations. The primary hazardous wastes generated at HAAF are those associated with vehicle and aircraft maintenance, and the waste stream includes used lubricating oil, hydraulic fluid, degreasing solvent, scrap metal, wire, and waste asbestos. Other wastes which may also be generated on the Installation includes waste acid, lead-based paint, waste paint, paint sludge, PCBs in transformer oil, plastics, pesticides, herbicides, sanitary wastes, and construction debris. All hazardous wastes generated by Army activities at HAAF are taken to the DPW Environmental Division's 90-day Treatment, Storage, and Disposal Facility (TSDF) for disposal. All construction wastes are not disposed of on HAAF but are instead taken to off-Post sites approved for construction waste disposal. There are no active landfills on HAAF (see Section 3.9, Land Use).

The Installation Restoration Program (IRP) for HAAF is outlined in the HAAF Installation Action Plan (IAP), which identifies environmental cleanup requirements at each site, or area of concern, and proposes a comprehensive approach to conduct investigations and necessary remedial actions. There are a total of 18 Headquarters Army Environmental System (HQAES) sites at HAAF, of which 16 are eligible for Environmental Restoration- Army (ERA) funding. These sites include four active sites and 14 sites for which response is complete, and the two remaining sites are classified as non-ERA eligible, Response Complete (Remedy in Place with Long-term Monitoring) sites. The four active sites are located within the

Study Area for the proposed action, and are discussed below under Environmental Remediation; sites for which response is complete are not discussed, as they were determined to have no potential for impacts, as these sites have been remediated to a level where soils and groundwater are considered clean, do not require special handling or disposal, and do not present a potential hazard to personnel working at these locations.

Contaminants of concern on HAAF include volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons, pesticides, and PCBs. Media of concern include soil, groundwater, surface water, and sediment. Fort Stewart filed a RCRA notification form with the EPA for Fort Stewart and HAAF in July 1980, and a RCRA Part A permit application for interim status as a generator and storage facility was filed in November 1980. Subsequently, HAAF obtained a Part A permit and was under interim status as a hazardous waste generation and storage facility. In 1983, the EPA directed HAAF to file a RCRA Part B permit application and conducted a compliance inspection of HAAF. Following the compliance inspection, the EPA ruled that HAAF did not require a Part A or B permit because hazardous wastes generated at HAAF are transferred to the Defense Reutilization Marketing Office (DRMO) storage yard at Fort Stewart and managed at that location.

The Part B permit for Fort Stewart was subsequently revised to include quantities of wastes generated at HAAF, which is currently classified as a Small Quantity Generator. HAAF does not have a RCRA permit from the State of Georgia, so sites "from which hazardous constituents might migrate" are not known as solid waste management units; instead they are called areas of concern (AOCs). Descriptions and locations of the areas of concern are located in the IAP and are incorporated by reference.

Environmental Remediation. The Environmental Remediation Active (ERA) Program at HAAF focuses on investigation and remediation of sites where past practices and activities conducted at the airfield have resulted in contamination. There are four ERA sites on HAAF at which remediation activities are still ongoing, including Pump Houses #1, #2, and #6 (HAA-13), the Military Construction, Army (MCA) Barracks site (HAA-15), the Groundwater Contamination HAAF Site (HAAF-17), and the Former Fire Training Area (HAA-01). These sites are all located within the HAAF cantonment area, and are areas where military and military support operations have occurred. In general, these sites are not located where sensitive receptors can be impacted on Post, such as barracks, AFHs, and recreation sites; however, one (HAAF-15, MCA Barracks), is located in the vicinity of sensitive receptors.

Site HAAF-13 is contaminated primarily with petroleum hydrocarbons associated with fueling systems (i.e., storage, product delivery lines, and other components), which were part of bulk tank farms, motor pool service stations, AAFES service stations, and miscellaneous support activities. The age of the systems and lack of proper maintenance were primarily responsible for these releases, and the primary contaminants of concern at these sites are BTEX and polycyclic aromatic hydrocarbons. Sites HAA-01, HAAF-15, and HAAF-17 have chlorinated solvent contamination (trichloroethylene) that resulted from improper maintenance practices prior to the 1970s. Sites with the potential to be impacted by projects proposed in the ADP for HAAF are discussed below (Figures at Appendix E due to number and size).

3.4.13.2 ENVIRONMENTAL CONSEQUENCES

Overall impacts to Hazardous Materials/Waste Management and Remediation anticipated as a result of implementing the proposed action are discussed in this section. As each project in the ADP goes through the design phase. As each project in the ADP for HAAF enters the design phase, supplemental NEPA

analysis will occur and will be documented via a REC (if it falls within the scope of this PEA) or an EA (if it beyond the scope of this PEA), as necessary.

3.4.13.2.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Long-term, direct and indirect, minor, adverse impacts to Hazardous Materials/Waste Management and Remediation sites on Post are anticipated under this alternative. Construction and demolition to support a Parking Lot and the North Lightning Street Upgrade (projects J and K on ADP for HAAF, Figures at Appendix E) have the potential to impact ERA Site HAA-15, a known TCE plume located within the northwestern portion of HAAF. As standard practice for all proposed construction near an ERA site, efforts will first be made to shift work out of its footprint. This may include soil and groundwater testing to fully delineate the exact location and extent of potential contaminants. If ERA Site avoidance is not possible, upon commencement of ground disturbance, all contaminated materials, including soils, concrete rubble, timber, and/or groundwater, must be handled, contained, and disposed of by trained, certified personnel and sent to an approved disposal facility off of HAAF lands. All actions must be conducted in coordination with the DPW Environmental Division Restoration Section POC and conducted in accordance with the pertinent federal, state, and local laws, policies, and regulations. During construction, impacts may be minimized via implementation of construction measures previously utilized in and around the TCE plume on HAAF and which have resulted in minimal adverse impacts and maximum building efficiency. Implementation of known contaminant avoidance measures, early sampling and contaminant removal, and early integration of known minimization measures and BMPs will minimize adverse impacts to a less than significant level. As these are transportation projects and may not require deep cut-and-fill, adverse impacts due to hazardous materials and wastes are not anticipated for these projects.

Construction of the CAB Memorial Plaza, Renovation of Motorpools (2/3 and 3/17), and the Construction of Additional Storage Facilities (projects P, AW, AY, and BA on ADP for HAAF, Figures at Appendix E) have the potential to impact a separate TCE Plume Site (HAA-17) . As with the prior projects, efforts will be made to shift these project footprints out of the ERA sites to the best degree possible, and soil/groundwater testing will be conducted, as required, if needed to confirm site and contamination boundaries. If impacts are unavoidable, they may be minimized via implementation of construction measures previously utilized in and around the TCE plume on HAAF. For example, constructing a vapor intrusion barrier was successfully employed during construction of the SSA Warehouse in the cantonment area and may be recommended as a BMP for these facilities. All containment, management, and removal actions, as required, must be coordinated with the DPW Environmental Division Restoration Section POC, in accordance with all pertinent federal, state, and local laws, policies, and regulations.

Construction of the Driving Course (project X on ADP for HAAF, Figures at Appendix E) in the southwestern portion of the Installation will occur in the vicinity of the Former Fire Training Area (HAA-01), an area known to contain BTEX contamination. Site delineation and contaminant removal is required, although siting and design efforts will seek to avoid contaminated areas to the highest degree possible. All requirements are as previously discussed above. The Indoor Range (project R on ADP for HAAF, Figures at Appendix E) will be constructed on the location of a former Ammunition Supply Point (ASP). A site survey in 2018 at this location did not identify any munitions and explosives (MEC) remaining on site; however, the Installation recommends UXO training for all personnel working on all former range and/or

training lands potentially containing UXO, as the Installation has been an active training site for more than 70 years. Potential concerns were documented in the REC completed for this project in 2019, and provided to the applicable Installation and Army Corps of Engineers POCs. The design and other pertinent details will continue to be reviewed at each iteration and commented on as it develops to ensure avoidance and minimization measures are appropriately incorporated.

Some of the proposed projects in the ADP for HAAF may require removal of existing USTs and/or ASTs; if so, removal must follow the standards for removal and closure of registered tanks as required by federal/state law, and as outlined in the standard environmental requirements provided to all persons/agencies performing work on the Installation (Appendix E). All actions must occur in coordination with the DPW Environmental Office. Soil and groundwater samples, if required, must be conducted by a certified Georgia laboratory and disposal of materials, if applicable, must be coordinated with the Installation DPW Environmental Division. Removed tanks may meet criteria for recycling. These are standard procedures, and no changes to removal protocols is anticipated. Coordination of all steps must be through the DPW Environmental Office to ensure full compliance is achieved and potential impacts minimized.

Construction activities may require use of hazardous materials such as paints, solvents, petroleum, oils, and lubricants (POLs), and pesticides, as well as the removal of hazardous materials and/or wastes, to include ACM and LBP; however, contractual obligations require contractors to adhere to all applicable state and Federal regulations pertaining to toxic substances and hazardous materials. Furthermore, EO 13101, *Greening the Government through Waste Prevention, Recycling and Federal Acquisition*, dictates that non-toxic and/or non-hazardous cleaning materials shall be substituted through green-purchasing/acquisition practices where possible. Therefore, any wastes generated during the construction process would be handled and disposed of according to State and local regulations, minimizing the potential for adverse impacts. In addition, the amount generated would not be at a level that would significantly impede the ability of local disposal sites to handle such materials and/or wastes.

During construction, demolition, and renovation, care is taken to ensure hazardous materials and wastes are appropriately containerized, managed, maintained, and handled. All fluorescent light tubes/bulbs and high-intensity discharge lamps requiring removal would be considered a non-Resource Conservation and Recovery Act hazardous waste (i.e., universal waste) and are removed and sent to an approved recycling facility; however, broken or crushed fluorescent and high-intensity discharge lamps would be managed as hazardous waste. In addition, any mercury-containing thermostats are sent to an approved recycling facility or disposed of as hazardous waste. The removal of toxic substances (such as ACM, LBP, and/or PCBs) are conducted as part of demolition activities and must be conducted in accordance with all applicable regulations. Coordination of all steps must be through the DPW Environmental Office to ensure full compliance is achieved and potential impacts minimized.

There are several other active and inactive ERA sites located in the vicinity of the remaining projects on the ADP for HAAF. Although not directly impacted, actions in their vicinity may result in the potential for indirect and/or inadvertent impacts. However, it is anticipated that these sites may be avoided during each project's siting and design phase. This avoidance may be enhanced via preventive measures such as sampling. If hazardous materials/wastes are encountered at any of these project locations, the level of contamination shall be assessed and remediated as directed by the Fort Stewart Environmental Division.

Any hazardous material found onsite shall be removed and disposed of in a permitted off-Post facility by appropriately-licensed waste management and transportation companies through a DRMO contract.

All projects on the ADP list will receive continual review by environmental subject matter experts within the Environmental Division, from concept through final implementation. All proposed construction projects are sited in areas consistent with their land use/Building Standard. Should future re-siting be required, planners will consult Installation land use maps and consult the HAAF Regulating Plan's Building Standards to ensure this level of care is promoted and that the master planning process is followed.

No impacts are anticipated in association with the renovations proposed in the ADP on HAAF, as these typically involve interior work and, if exterior work is proposed, it is typically minimally intrusive with regards to grounds. Should contamination be inadvertently encountered during routine operations, repairs or maintenance on HAAF, the contaminated materials must be handled by trained and certified personnel and sent to an approved disposal facility off-HAAF. Likewise, all hazardous materials and wastes must be handled in accordance in accordance with federal, state, and local laws and regulations. These requirements apply to routine operations, maintenance, and repair of existing facilities on HAAF as well. Short-term, direct, but negligible adverse impacts are anticipated as a result of training on HAAF, as all brass and ammunition resulting from training operations on Post are appropriately collected and managed in accordance with Army, Installation, state, and federal regulations, SOPs, and laws.

3.4.13.2.2 ALTERNATIVE II: IMPLEMENT 3/160TH SOAR INFILL

Under this alternative, long-term, direct and indirect, moderate adverse impacts are anticipated. Impacts are anticipated to be greater under this alternative because it shifts construction of the facilities for the 3/160th SOAR from the lands south of the existing flightline, which have no known sites contamination issues, to the cantonment area in the north, in which there are numerous site contamination issues. Although there no known site contamination issues associated with the sites currently identified for these facilities under Alternative II, these sitings are subject to change and shifting this construction to the cantonment area increases the potential to impact sites with unknown contamination or impact sites of known contamination whose boundaries extended further than anticipated (and impacting adjacent construction under this alternative).. For example, a TCE plume at an adjacent site could spread from an adjacent site to one of the proposed locations for a construction or renovation project under this alternative.

All projects on the ADP list will receive continual review by environmental subject matter experts within the Environmental Division, from concept through final implementation, and master planners will consult Installation land use maps and the HAAF Regulating Plan's Building Standards to ensure facilities are appropriately sited and to avoid known areas of contamination to the best degree possible. Implementation of known contaminant avoidance measures, early sampling and contaminant removal, and early integration of known minimization measures and BMPs will minimize adverse impacts to a less than significant level.

As discussed under Alternative I, no impacts are anticipated in association with the renovations proposed in the ADP on HAAF, routine operations, repairs and maintenance, or training on HAAF. Contaminated materials must be handled by trained and certified personnel and sent to an approved disposal facility off-HAAF. Likewise, all hazardous materials and wastes must be handled in accordance in accordance with federal, state, and local laws and regulations, to include brass and ammunition generated as a result of training events. No mitigation is proposed.

3.4.13.2.3 ALTERNATIVE III: NO ACTION/STATUS QUO

Under this alternative, none of the projects proposed in the ADP for HAAF will be implemented, resulting in no impacts to Hazardous Materials/Waste Management and Remediation sites on Post. No impacts are anticipated in association with the routine operations, repair and maintenance, and training actions, as they are typically minimally intrusive. Should contamination be inadvertently encountered during routine operations on HAAF, the contaminated materials must be handled by trained and certified personnel and sent to an approved disposal facility off-HAAF. Likewise, all hazardous materials and wastes must be handled in accordance in accordance with federal, state, and local laws and regulations. These requirements apply to routine operations, maintenance, and repair of existing facilities on HAAF as well. No impacts are anticipated to hazardous materials, wastes, and contaminated sites as a result of training on HAAF, as all brass and ammunition resulting from training operations on Post are appropriately collected and managed in accordance with Army, Installation, state, and federal regulations, SOPs, and laws.

3.4.13.3 CUMULATIVE IMPACTS

The ROI for Hazardous Materials/Waste Management and Remediation lies within the boundaries of HAAF, as none of the actions lie on/within the City of Savannah or have the potential to impact off-Post locations. Past, present, and reasonably foreseeable future events with the potential to result in cumulative impacts are considered in the analysis below.

3.4.13.3.1 ALTERNATIVE I: IMPLEMENT ILLUSTRATIVE PLAN

Past and present actions in the ROI consist of the historical development of HAAF and the associated infrastructure and transportation network. Development would have consisted of periodic iterations of timber harvest, site clearing/grading/stabilization, and construction/demolition in the ROI. This would have included the use of hazardous materials and their collection, the generation of hazardous wastes and their disposal, and the creation of contaminated sites within the ROI. Periods of development were followed by iterations of routine operations, repairs and maintenance, and military training, which did not significantly add to adverse impacts in the ROI. Over time, cleaner materials were developed and utilized on Post, as well as improved methods of collecting and disposing of hazardous materials/wastes, minimizing some of these potential adverse impacts. Methods were also developed to remediate sites where contamination had occurred, resulting in beneficial impacts within the ROI. Present actions in the ROI consist of routine operations, repair and maintenance, and military training on HAAF, which may also contribute to cumulative impacts in the ROI.

Future actions in the ROI include the continuation of routine operations, repair and maintenance, and training on HAAF. Projects identified on Table 3, Future Projects in The ROI, have the potential for minor adverse cumulative impacts in the ROI, most notably the HAAF Apron and Taxiway Reconstruction and Stormwater Drainage System Improvements, as areas of known contamination are located on and adjacent to the airfield and may be directly and/or indirectly impacted. Oversight of project siting, implementation of known contaminant avoidance measures, early sampling and contaminant removal, and early integration of known minimization measures and BMPs will minimize adverse impacts to a less than significant level. Overall, implementation of this alternative has the potential to result in minor adverse cumulative impacts in the ROI.

3.14.13.3.2 ALTERNATIVE II: IMPLEMENT 3/160TH INFILL

Past and present actions in the ROI are the same as identified under Alternative I. As discussed under that alternative, the new taxiway will not be constructed and the facilities for the 3/160th SOAR would not relocate south of the flightline, but would instead remain in the northern portion of Post, within the cantonment area, and potentially impact areas of unknown contamination. This increases the potential for adverse cumulative impacts under this alternative; however, the Installation will enact early project siting reviews, ensure implementation of known contaminant identification and avoidance measures, early sampling and contaminant removal, and early integration of known minimization measures and BMPs to minimize adverse impacts to a less than significant level. Future events in the ROI are as discussed under Alternative I. Overall, this alternative has the potential to result in moderate adverse cumulative impacts in the ROI.

3.14.13.3.3 ALTERNATIVE III: NO ACTION/STATUS QUO

No cumulative impacts are anticipated under this alternative, as no direct or indirect impacts are anticipated.

4.0 CONCLUSIONS

This PEA considered the potential environmental impacts of implementing an ADP for HAAF, the purpose of which is to sustain the Installation mission, offer a superior Quality of Life for Soldiers, employees, and their Families, and ensure projects proposed are implemented in accordance with the Installation's environmental and operational constraints. This action will ensure future development on HAAF meets the established real property vision, goals, and objectives, which include establishing and maintaining flexible training spaces, sustainable infrastructure, multi-modal transportation, and effective public spaces.

The analysis of the proposed action was completed via a programmatic approach to allow for early planning, coordination, and flexibility in project implementation and to allow for an early identification of potential environmental impacts. It will also provide the decision maker for the proposed action with the appropriate information required to make an informed decision. This programmatic analysis will also serve as the basis for future, tiered, NEPA analysis as the designs and other details associated with the individual projects included herein are developed.

Analysis in this PEA was used to determine that a Finding of No Significant Impact is warranted and that preparation of an Environmental Impact Statement due to significant environmental impacts is not required. This analysis also supports the development of a Finding of No Practicable Alternative for potential impacts to floodplains and wetlands on HAAF. A summary of the potential environmental impacts is presented in Table 5 and was utilized by the decision maker to assist in the development of the findings for this action.

Table 5: Summary of Environmental Impacts

Type of Impact	Alternative I: Illustrative Plan (Preferred)	Alternative II: 3/160th SOAR Infill	Alternative III (No Action/Status Quo)
Biological Resources			
Direct / Indirect	Protected Species: Short-term, Indirect, Negligible Adverse Wildlife, Migratory Birds: Long-term and Short-Term, Direct and Indirect, Minor, Adverse Vegetation: Long-term, Direct, Moderate, Adverse	Protected Species: Short-term, Indirect, Negligible, Adverse Wildlife, Migratory Birds: Long-term and Short-Term, Direct and Indirect, Minor, Adverse Vegetation: Long-term, Direct, Minor Adverse	Protected Species: No Impact Wildlife, Migratory Birds: Short-Term, Indirect, Negligible Adverse Vegetation: Long-term and Short-term, Direct, Negligible, Adverse
Cumulative	Moderate Adverse	Minor Adverse	Negligible Adverse
Water Quality and Resources			
Direct / Indirect	Groundwater: Short-term, Indirect, Minor, Adverse CZMA: Long-term, Direct, Minor, Adverse Surface: Long-term, Direct, Moderate Adverse Floodplains: Long-term, Direct, Minor, Adverse Wetlands: Long-term, Direct, Moderate, Adverse	Groundwater: Short-term, Indirect, Minor, Adverse CZMA: Long-term, Direct, Minor, Adverse Surface: Long-term, Direct, Minor, Adverse Floodplains: Long-term, Direct, Minor, Adverse Wetlands: Long-term, Direct, Minor, Adverse	Groundwater: Short-term, direct, Minor, Adverse CZMA: Short-term, Indirect, Negligible, Adverse Surface: Short-term, Indirect, Negligible, Adverse Floodplains: Short-term, Indirect, Negligible, Adverse Wetlands: Short-term, direct, Negligible, Adverse
Cumulative	Moderate Adverse	Minor Adverse	Negligible Adverse
Air Quality Resources			
Direct / Indirect	Short-term, Direct, Minor, Adverse	Short-term, Direct, Minor, Adverse	Short-term, Direct, Negligible, Adverse
Cumulative	Minor Adverse	Minor Adverse	Negligible Adverse
Cultural Resources			
Direct / Indirect	Long-term, Direct, Minor-to-Moderate, Adverse	Long-term, Direct, Minor-to-Moderate, Adverse	Short-term, Direct, Negligible-to-Minor, Adverse
Cumulative	Minor to Moderate Adverse	Minor to Moderate Adverse	Negligible to Minor
Land Use			
Direct / Indirect	JLUS/ACUB/ICUZ :Long-term, Direct, Minor, Beneficial Training: Long-term, Direct, Minor, Beneficial	JLUS/ACUB/ICUZ :Long-term, Direct, Minor, Beneficial Training: Long-term, Direct, Minor, Beneficial	JLUS/ACUB/ICUZ: No Impact

	Solid Waste and Landfills: Long-term, direct, minor, adverse Recycling: Short-term, direct, minor, beneficial Borrow Pits/Fill Materials: No Impact	Solid Waste and Landfills: Long-term, direct, minor, adverse Recycling: Short-term, direct, minor, beneficial Borrow Pits/Fill Materials: No Impact	Training: Short-term, Direct and Indirect, Negligible to Minor, Beneficial Solid Waste and Landfills: Long-term, direct, negligible, adverse Recycling: Short-term, direct, negligible, beneficial Borrow Pits/Fill Materials: No Impact
Cumulative	Minor Adverse	Minor Adverse	Negligible Beneficial
Socioeconomics			
Direct / Indirect	Long-term, direct, Moderate, beneficial	Long-term, direct, Moderate, beneficial	Long-term, Direct, Moderate, Beneficial
Cumulative	Moderate Beneficial	Moderate Beneficial	Moderate Beneficial
Visual Resources and Recreation			
Direct / Indirect	Visual: Long-term, direct, moderate, adverse Recreation: Long-term, direct and indirect, minor, beneficial	Visual: Long-term, direct, minor, adverse Recreation: Long-term, direct and indirect, minor, beneficial	Visual: Short-term, direct, negligible, adverse Recreation: Short-term, direct, negligible, adverse
Cumulative	Visual: Moderate Adverse Recreation: Minor Beneficial	Visual: Minor Adverse Recreation: Minor Beneficial	Visual: Negligible Adverse Recreation: Negligible Beneficial
Airspace and Airfield Operations			
Direct / Indirect	Airspace: No Impacts Airfield Operations: Long-term, Direct, Moderate, Beneficial	Airspace: No Impacts Airfield Operations: Long-term, Direct, Minor, Beneficial	Airspace: No Impacts Airfield Operations: No Impacts
Cumulative	Airspace: No Impacts Airfield Operations: Minor Beneficial	Airspace: No Impacts Airfield Operations: Minor Beneficial	Airspace: No Impacts Airfield Operations: No Impacts
Noise			
Direct / Indirect	Long-term, Direct, Minor, Adverse	Long-term, Direct, Minor, Adverse	Short-term, Direct, Negligible, Adverse
Cumulative	Minor Adverse	Minor Adverse	Negligible Adverse
Transportation			
Direct / Indirect	Long-term, Direct, Minor, Beneficial	Long-term, Direct, Minor, Beneficial	Long-term, Direct, Negligible, Adverse
Cumulative	Minor Beneficial	Minor Beneficial	Negligible Beneficial
Health and Safety			
Direct / Indirect	Long-term, Direct, Minor, Beneficial	Long-term, Direct, Minor, Beneficial	Long-term, Direct, Negligible, Adverse

Cumulative	Minor Beneficial	Minor Beneficial	Negligible Adverse
Utilities, Solid Waste, and Recycling			
Direct / Indirect	Long-term, Direct, Moderate, Adverse	Long-term, Direct, Minor, Adverse	No Impact
Cumulative	Moderate Adverse	Minor Adverse	No Impact
Hazardous Materials/Waste Management and Remediation			
Direct / Indirect	Long-term, Direct and Indirect, Minor, Adverse	Long-term, Direct and Indirect, Moderate, Adverse	No Impact
Cumulative	Minor Adverse	Moderate Adverse	No Impact

5.0 ABBREVIATIONS AND ACRONYMS

ADP ..... Area Development Plan
APE..... Area of Potential Effect
APZ..... Accident Potential Zone
AR..... Army Regulation
AST..... Aboveground Storage Tank
BMP..... Best Management Practice
BN. ..... Battalion
BDE ..... Brigade
CERCLA..... Comprehensive Environmental Responsibility, Compensation, and Liability Act
CFR..... Code of Federal Regulation
COA ..... Course of Action
COL ..... Colonel
COR ..... Contracting Officer Representative
CWA ..... Clean Water Act
CX..... Categorical Exclusion
CZMA ..... Coastal Zone Management Act
DA..... Department of the Army
DOD..... Department of Defense
DOT ..... Department of Transportation
DOPAA..... Description of Proposed Action and Alternatives
DPW..... Director of Public Works; *or*
..... Directorate of Public Works
EA ..... Environmental Assessment
EIS ..... Environmental Impact Statement
EO ..... Executive Order
EPA..... U.S. Environmental Protection Agency
EPCRA..... Emergency Planning and Community Right-to-Know Act
(GA) EPD ..... GA Environmental Protection Division
ERA…….Environmental Remediation Active
ESA..... Endangered Species Act
ESCA……..Erosion and Sedimentation Control Act
FAA ..... Federal Aviation Administration
FCC..... Facility Use Category Code
FHA ..... Federal Highway Administration
FONSI..... Finding of No Significant Impact
FONPA ..... Finding of No Practicable Alternative
FY ..... Fiscal Year
GC..... Garrison Commander
GIS..... Geographic Information System
GHG..... greenhouse gas
HAP ..... Hazardous Air Pollutant

HQ..... Headquarters
HQDA..... Headquarters, Department of the Army
ICRMP..... Integrated Cultural Resource Management Plan
IMCOM ..... U.S. Army Installation Management Command
IPB ..... Installation Planning Board
IPR ..... In-Process Review
IRP ..... Installation Restoration Program
INRMP ……...Integrated Natural Resources Management Plan
IPMP……...Integrated Pest Management
JAG..... Judge Advocate General
KO..... Contracting Officer
LBP..... Lead-Based Paint
LF..... Linear Feet
LOS..... Level of Service
LUPZ ..... Land Use Planning Zone
MBTA..... Migratory Bird Treaty Act
MCA ..... Military Construction, Army (budget code)
MDMP ..... Military Decision Making Process
MEC..... Munitions and Explosives of Concern
MILCON..... Military Construction Account (budget code)
MMRP ..... Military Munitions Response Program
MOA ..... Memorandum of Agreement; *or* Military Operations Area (airspace)
NAAQS..... National Ambient Air Quality Standards
NAGPRA ..... Native American Graves Protection and Repatriation Act
NEC ..... Network Enterprise Center
NEPA..... National Environmental Policy Act
NHPA..... National Historic Preservation Act
NMFS..... National Marine Fisheries Service
NOA..... Notice of Availability
NOI ..... Notice of Intent
NPDES..... National Pollutant Discharge Elimination System
NRHP..... National Register of Historic Places
O&M..... operations and maintenance
OACSIM ..... Office of the Assistant Chief of Staff for Installation Management
OC..... Office of Counsel
OGC..... Office of General Counsel
OMA ..... Operations and Maintenance, Army
OSJA..... Office of the Staff Judge Advocate
PA ..... Programmatic Agreement
PAO ..... Public Affairs Office
PCB..... Polychlorinated Biphenyls
PEA..... Programmatic EA
PFAS……...Per- and Polyfuoroalkyl Substances
PN ..... Project Number

POC..... Point of Contact
POM..... Program Objective Memorandum
RCI..... Residential Communities Initiative
RCRA..... Resource Conservation and Recovery Act
REC..... Record of Environmental Consideration
ROI..... Region of Influence
RPMP..... Real Property Master Plan
SDZ..... Surface Danger Zone
sf..... Square Feet
SHPO ..... State Historic Preservation Office
SME ..... subject matter expert
SOP ..... standard operating procedure
SRM..... Sustainment, Restoration, and Modernization
SUA ..... Special-Use Airspace
TSDF..... Treatment, Storage, and Disposal Facility
UFC..... Unified Facilities Criteria
U.S. ..... United States
U.S.C..... United States Code
USACE ..... U.S. Army Corps of Engineers
USAEC ..... U.S. Army Environmental Command
USAG..... U.S. Army Garrison
USFWS ..... U.S. Fish and Wildlife Services
UST..... Underground Storage Tank
UXO..... Unexploded Ordnance

6.0 GLOSSARY

Affected Environment / Area of Potential Effect (APE): The area potentially impacted by the proposed action that is under analysis. This includes both the physical environment (wetlands, wildlife, etc.) and the human or built environment (cultural resources, socioeconomics, utilities, etc.). This also includes adherence to all applicable laws, regulations, permits, and policies associated with potential impacts to the environment from that proposed action.

Army Compatible Use Buffer (ACUB): In recent years, Army Installations have been experiencing increasing encroachment from a variety of sources, including population growth, urban land use, and environmental requirements. The ACUB program is a proactive tool that enables the Army to proactively address encroachment and contribute funds to the purchase of easements and properties with willing landowners. These partnerships preserve high-value habitat and limit incompatible land use near military installations.

Best Management Practices (BMPs): Structural, nonstructural, and management techniques that are the most effective and practical means to control and/or minimize the entry of pollutants into the resource under discussion. BMPs can include maintenance procedures; treatment requirements; operating procedures; and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Buffer Zone: An area adjacent to a sensitive resource that is left undisturbed. For example, 25-foot buffer zones are required adjacent to many wetlands to ensure ground disturbance near these resources does not result in soils entering these sensitive areas and causing adverse impacts.

Categorical Exclusion: A category of actions which do not individually or cumulatively have a significant effect on the natural, human, or social environment and for which, neither an environmental assessment (EA) nor an environmental impact statement (EIS) is required, in accordance with NEPA and Army Regulation 32 CFR part 651. At FSGA/HAAF, these actions are typically addressed in a REC.

Controlled Airspace: Airspace designated as the continental control area, control area, control zone, terminal control zone, transition area, or positive control area. Some or all aircraft within these areas may be subject to air traffic control.

Cooperating Agency: Any Federal agency other than a lead agency, which has jurisdiction by law or special expertise with respect to a major federal action affecting the quality of the environment. A state or local agency of similar qualifications (or, when the effects are on a reservation, an Indian Tribe) may, by agreement with the lead agency, become a cooperating agency.

Council on Environmental Quality (CEQ): Established by Congress within the Executive Office of the President, the CEQ coordinates federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives. The Council's Chair, who is appointed by the President with the advice and consent of the Senate, serves as the principal environmental policy adviser to the President. The CEQ reports annually to the President on the state of the environment, oversees federal agency implementation of the environmental impact assessment process, and acts as a referee when agencies disagree over the adequacy of such assessments.

Criteria Pollutant: An air pollutant that is regulated by National Ambient Air Quality Standards. The Environmental Protection Agency must describe the characteristics and potential health and welfare effects that form the basis for setting, or revising, the standard for each regulated pollutant. Criteria pollutants

include sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and two size classes of particulate matter (PM), PM10 and PM2.5 New pollutants may be added to, or removed from, the list of criteria pollutants as more information becomes available.

Critical Habitat: The specific areas within a geographical area occupied by a species on which are found those physical or biological features essential to the conservation of that species and which may require special management considerations or protection.

Cultural Affiliation: A relationship of shared group identity which can be reasonably traced historically or prehistorically between a present day Indian tribe or Native Hawaiian organization and an identifiable earlier group. Cultural affiliation is established when the preponderance of the evidence -based on geographical, kinship, biological, archeological, linguistic, folklore, oral tradition, historical evidence, or other information or expert opinion -reasonably leads to such a conclusion.

Cultural Resources: Historic properties as defined by the National Historic Preservation Act, cultural items as defined by the Native American Graves Protection and Repatriation Act, archeological resources as defined by the Archaeological Resources Protection Act, sacred sites as defined in Executive Order 13007 to which access is afforded under the American Indian Religious Freedom Act, and collections and associated records as defined in 36 CFR 79, Curation of Federally Owned and Administered Archaeological Collections.

Cumulative Effects / Impacts: The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

decibel (dB): A unit for expressing the relative intensity of sounds on a logarithmic scale from zero for the average least perceptible sound to about 130 for the average level at which sound causes pain to humans. For traffic and industrial noise measurements, the A-weighted decibel (dBA), a frequency-weighted noise unit, is widely used. The A-weighted decibel scale corresponds approximately to the frequency response of the human ear and thus correlates well with the loudness perceived by people.

Description of Proposed Action and Alternatives (DOPAA): A detailed description of the proposed action, the no action alternative, and other alternatives as they relate to the purpose and need for a proposed action.

Direct Effects / Impacts: The effects of an action which are caused by that action and occur at the same time and place.

Doctrine: The fundamental principles by which military forces or elements thereof guide their actions in support of national objectives.

Ecosystem: A system made up of the community of living things (animals, plants, and microorganisms) which are functionally interrelated to each other and the physical and chemical environment in which they live.

Effects* and *Impacts: As used in NEPA, these are synonymous, and include the natural, human, and social environment, and must be accounted for whether they are direct, indirect, or cumulative. See also Environmental Consequences.

Effluent: Wastewater--treated or untreated--that flows out of a treatment plant, sewer, or industrial outfall. This generally refers to wastes discharged into surface waters.

Eligible property: Property that meets the criteria for inclusion in the National Register of Historic Places, but is not formally listed.

Endangered species: Plants or animals that are in danger of extinction through all or a significant portion of their identified range and that have been listed as endangered by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service following the procedures outlined in the Endangered Species Act and its implementing regulations.

Environmental Consequences: Environmental effects of project alternatives, including the proposed action, any adverse environmental effects which cannot be avoided, the relationship between short-term uses of the human environment, and any irreversible or irretrievable commitments of resources which would be involved if the proposal should be implemented.

Erosion: The process in which a material is worn away by a stream of liquid (water) or air.

Executive Order: Official proclamation issued by the President that may set forth policy or direction or establish specific duties in connection with the execution of federal laws and programs.

Explosive Ordnance Disposal (EOD): The detection, identification, on-site evaluation, rendering safe, recovery, and final disposal of unexploded explosive ordnance. It may also include explosive ordnance which has become hazardous by damage or deterioration.

Floodplain: The lowlands and relatively flat areas adjoining inland and coastal waters and the flood-prone areas of offshore islands. Floodplains include, at a minimum, that area with at least a 1.0 percent chance of being inundated by a flood in any given year. The *base floodplain* is defined as the area, which has a 1.0 percent or greater chance of being flooded in any given year. Such a flood is known as a 100-year flood. The *critical action floodplain* is defined as the area, which has at least a 0.2 percent chance of being flooded in any given year. Such a flood is known as a 500-year flood. Executive Order 11988, the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year.

Geographic Information System (GIS): A system of computer hardware, software, and geographic data designed to capture, store, update, manipulate, analyze, and display geographically referenced data.

Groundwater: Water below the ground surface in a zone of saturation. This water is all water that exists in the interstices of soil, rocks, and sediment below the land surface, including soil moisture, capillary fringe water, and groundwater. That part of subsurface water in interstices completely saturated with water is called groundwater.

Habitat: The place where a population (e.g. human, animal, plant, microorganism) lives and its surroundings, both living and non-living.

Harass: Actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include but may not be limited to breeding, feeding, or sheltering.

Hard Look: In NEPA, the lead agency has the requirement of a substantial, good faith effort at studying, analyzing, and expressing the environmental issues in the NEPA document and decision making process,

and recognizing that a rule of reason must prevail. Legally, the courts determine if the lead agency has taken a "hard look" by checking the NEPA document for completeness of information and detail, soundness of analysis, thorough discussion of alternatives, and disclosure of sources. Conclusions are supported in a manner in a manner capable of judicial understanding. "More than a scintilla, less than a preponderance of evidence."

Harm: An act that actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering.

Hazardous Air Pollutants (HAPs): Air pollutants not covered by ambient air quality standards but which may present a threat of adverse human health effects or adverse environmental effects. Those specifically listed in 40 CFR 61.01 are asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride. More broadly, HAPs are any of the 189 pollutants listed in or pursuant to section 112(b) of the Clean Air Act. Very generally, HAPs are any air pollutants that may realistically be expected to pose a threat to human health or welfare.

Historic Property: Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are 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 that meet the National Register criteria.

Human Environment: "Human environment" shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment, also referred to as the Built Environment.

Impact area: Areas designated for impact and/or detonation of ordnance, or the area within an operational range used to contain fired, dropped, or launched military munitions. Impact areas may be delineated by operational range use. For example, the delineation of an indirect-fire weapon system impact area accounts for probable error in military munitions range and deflection. The delineation of a direct-fire weapon system impact area accounts for the total surface danger zone from the firing point or position downrange to impact. Impact areas may be further delineated by other operational range uses.

Inadvertent Discovery: The unanticipated encounter or detection of human remains, funerary objects, sacred objects, or objects of cultural patrimony found under or on the surface of Federal or tribal lands pursuant to section 3 (d) of NAGPRA.

Indirect Fire: Fire delivered on a target that is not itself used as a point of aim for the weapons or the director. See also direct fire.

Indirect Effect/Impact: Indirect impacts are caused by the action and are later in time or farther removed in action or distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. See also effect.

Integrated Cultural Resource Management Plan (ICRMP): A 5-year plan developed and implemented by an installation commander to provide for the management of cultural resources in a way that maximizes beneficial effects on such resources and minimizes adverse effects and impacts without impeding the mission.

Integrated Natural Resource Management Plan (INRMP): The Installation Commander's plan for the management of natural resources, including fish, wildlife, and plants; allow multipurpose uses of resources; and provide public access where appropriate for those uses, without any net loss in the capability of an installation to support its military mission. The INEMP is required under provisions of the Sikes Act (as Amended, 1997) and DODD 4700.4.

Joint Land Use Study (JLUS): Analytical planning study of civilian development patterns and land use activities in the vicinity of a military Installation that result in recommendations for instituting compatible civilian land use activities and development patterns that protect and preserve the utility and the operational effectiveness of military installations.

Land Disturbance: Exposed soil due to clearing, grading, or excavation activities. This is also commonly referred to as ground disturbing activities.

Land Use: General term used to describe how land is or may be utilized or developed, whether for industrial, commercial, residential, training, or other purposes.

Land Use Plan: A plan which establishes strategies for the use of land to meet identified needs.

Landfill: Disposal sites for non-hazardous solid wastes spread in layers, compacted to the smallest practical volume, and covered by material applied at the end of each operating day.

Lead Agency: The agency or agencies preparing, or having taken primary responsibility for preparing, the NEPA document.

Level of Service (LOS): A qualitative assessment of a road's operating conditions. For local government comprehensive planning purposes, level of service means an indicator of the extent or degree of service provided by, or proposed to be provided by, a facility based on and related to the operational characteristics of the facility. Level of service indicates the capacity per unit of demand for each public facility. This term refers to a standard measurement used by transportation officials which reflects the relative ease of traffic flow on a scale of A to F, with free-flow being rated LOS-A and congested conditions rated as LOS-F.

Low-income Populations: As defined in terms of Bureau of the Census annual statistical poverty levels may consist of groups or individuals who live in geographic proximity to one another or who are geographically dispersed or transient (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect. (See environmental justice and minority population.)

Marsh: A type of wetland that does not accumulate appreciable peat deposits and is dominated by herbaceous vegetation. Marshes may be either fresh or saltwater, tidal or non-tidal.

Metropolitan Planning Organization (MPO): 1) Regional policy body, required in urbanized areas with populations over 50,000, and designated by local officials and the governor of the state. Responsible in cooperation with the state and other transportation providers for carrying out the metropolitan transportation planning requirements of federal highway and transit legislation. 2) Formed in cooperation with the state, develops transportation plans and programs for the metropolitan area. For each urbanized area, a Metropolitan Planning Organization (MPO) must be designated by agreement between the Governor and local units of government representing 75% of the affected population (in the metropolitan area), including

the central cities or cities as defined by the Bureau of the Census, or in accordance with procedures established by applicable State or local law (23 U.S.C. 134(b)(1)/Federal Transit Act of 1991 Sec. 8(b)(1)).

Minority Populations: Those that exist where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than in the general population or other appropriate unit of geographic analysis (such as a governing body's jurisdiction, a neighborhood, census tract, or other similar unit). "Minority" refers to individuals who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. "Minority populations" include either a single minority group or the total of all minority persons in the affected area. They may consist of groups of individuals living in geographic proximity to one another or a geographically dispersed/transient set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.

Mitigation: Planning actions taken to avoid an impact altogether, to minimize the degree or magnitude of the impact, reduce the impact over time, rectify the impact, or compensate for the impact.

National Ambient Air Quality Standards (NAAQS): Standards defining the highest allowable levels of certain pollutants in the ambient air (i.e., the outdoor air to which the public has access). Because the Environmental Protection Agency must establish the criteria for setting these standards, the regulated pollutants are called criteria pollutants. Criteria pollutants include sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and two size classes of particulate matter, less than 10 micrometers (0.0004 inch) in diameter, and less than 2.5 micrometers (0.0001 inch) in diameter. Primary standards are established to protect public health; secondary standards are established to protect public welfare (e.g., visibility, crops, animals, buildings).

National Emissions Standards for Hazardous Air Pollutants (NESHAPs): Emissions standards set by the Environmental Protection Agency for air pollutants which are not covered by National Ambient Air Quality Standards (NAAQS) and which may, at sufficiently high levels, cause increased fatalities, irreversible health effects, or incapacitating illness. These standards are given in 40 CFR §61 & §63. NESHAPs are given for many specific categories of sources (e.g., equipment leaks, industrial process cooling towers, dry cleaning facilities, petroleum refineries).

National Pollutant Discharge Elimination System (NPDES): A provision of the Clean Water Act which prohibits discharge of pollutants into waters of the United States unless a special permit is issued by the Environmental Protection Agency, a state, or, where delegated, a tribal government on an Indian reservation.

National Register of Historic Places: The nation's inventory of known historic properties that have been formally listed by the National Park Service. The National Register of Historic Places is administered by the NPS on the behalf of the Secretary of the Interior. National Register listings include districts, landscapes, sites, buildings, structures, and objects that meet the set of criteria found in 36 CFR 60.4.

Native American: Of, or relating to, a tribe, people, or culture that is indigenous to the United States. [Title 25 USC 3001(9)] of, or relating to, a tribe, people, or culture indigenous to the United States, including Alaska and Hawaii.

Natural Resources: The viable and/or renewable products of nature and their environments of soil, air, and water. Included are the plants and animals occurring on grasslands, rangelands, croplands, forests, lakes, and streams.

No-Action / Status Quo Alternative: The alternative where current conditions and trends are projected into the future without another proposed action.

Non-Attainment Area: An area that the U.S. Environmental Protection Agency has designated as not meeting (i.e., not being in attainment of) one or more of the National Ambient Air Quality Standards (NAAQS) for sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and particulate matter. An area may be in attainment for some pollutants, but not for others

Non-Point Sources: Diffuse pollution sources (i.e. without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by storm water. Common non-point sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets.

Operating Tempo (OPTEMPO): The annual operating miles or hours for the major equipment system in a battalion-level or equivalent organization. OPTEMPO is used by commanders to forecast and allocate funds for fuel and repair parts for training events and programs.

Operational Range: A range that is under the jurisdiction, custody, or control of the Secretary of Defense and that is used for range activities; or although not currently being used for range activities, that is still considered by the Secretary to be a range and has not been put to a new use that is incompatible with range activities. (Title 10 USC 101(e)(3)(A) and (B)). Also includes "military range," "active range," and "inactive range".

Particulate Matter (PM): Any finely divided solid or liquid material, other than uncombined (i.e., pure) water. A subscript denotes the upper limit of the diameter of particles included. Thus, PM10 includes only those particles equal to or less than 10 micrometers (0.0004 inch) in diameter; PM2.5 includes only those particles equal to or less than 2.5 micrometers (0.0001 inch) in diameter.

Percolation: The downward movement of water through porous material such as soil or rock.

Point Source: A stationary location or fixed facility from which pollutants are discharged; any single identifiable source of pollution; e.g. a pipe, ditch, ship, ore pit, factory smokestack.

Preferred Action: In a NEPA document, this is typically the action that has been selected for implementation after consideration of purpose and need, project and cumulative impacts, and public comments.

Programmatic Agreement: A document that records the terms and conditions agreed upon to resolve the potential adverse effects of a Federal agency program, complex undertaking or other situations in accordance with 36 CFR §800.14(b).

Proposed Action: A plan that contains sufficient details about the intended actions to be taken, or that will result, to allow alternatives to be developed and its environmental impacts analyzed. In a NEPA document, this is the primary action being considered. Its impacts are analyzed together with the impacts from alternative ways to achieve the same objective and the required no action alternative, which means continuing with the status quo.

Purpose and Need: Explanation of why the federal agency and project proponent are undertaking the proposed action and what objectives they intend to achieve. Basis may include: capacity and transportation

demand, safety, legislative directive, economic development/planned growth, modal interrelationships, and system linkage and roadway deficiencies. The statement of purpose and need provides the basis for developing a range of reasonable alternatives and, ultimately, the identification of the preferred alternative.

Range: A designated land or water area that is set aside, managed, and used for range activities of the Department of Defense (DOD). The term includes firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access, and exclusionary areas. The term also includes airspace areas designated for military use in accordance with regulations and procedures prescribed by the Administrator of the Federal Aviation Administration. (Title 10 USC 101(e)(1)(A) and (B)).

Range Complex: All firing ranges, weapons training facilities, associated impact areas, and maneuver training areas within the installation and/or community boundary.

Record of Environmental Consideration (REC): A signed statement submitted with project documentation that briefly documents that an Army action has received environmental review. RECs are prepared for CXs that require them, and for actions covered by existing or previous NEPA documentation. A REC briefly describes the proposed action and timeframe, identifies the proponent and approving official(s), and clearly shows how an action qualifies for a CX, or is already covered in an existing EA or EIS.

Region of Influence or Interest: Often defined in NEPA documents to prescribe the geographic extent that is being evaluated for a particular resource. It may vary among resources. Thus, the region of influence for air emissions, which may be widely dispersed, or for wildlife, which are mobile, may be larger than the region of influence for plants, which are sedentary. This term is often used in association with the consideration of project or cumulative impacts.

Sedimentation: The process by which particulates that are in suspension in a liquid settle out and are deposited on the solid surface over which the liquid flows.

Sensitive Species: A species identified by a State, federal, local agency; the state heritage program, an NGO, or other organization, that is recognized to be in need of conservation management in order to maintain existing limited populations, distributions, or declining populations.

Solid Waste: Non-liquid, non-soluble materials ranging from municipal garbage to industrial wastes that contain complex and sometimes hazardous substances. Solid wastes also include sewage sludge, agricultural refuse, demolition wastes, and mining residues. Technically, solid waste also refers to liquids and gases in containers.

Special Use Airspace: An area with specific vertical and lateral limits, identified by an area upon the surface of the earth in which activities must be confined because of their nature or where aircraft operations not a part of those activities may be limited or restricted.

Species of Concern (see also species at risk, sensitive species): A species identified by a State, federal, local agency; the state heritage program, an NGO, or other organization, that is recognized to be in need of conservation management in order to maintain existing limited populations, distributions, or declining populations.

State Historic Preservation Officer (SHPO): Reflects the interests of the State and its citizens in the preservation of their cultural heritage. the SHPO advises and assists Federal agencies in carrying out their Section 106 responsibilities and cooperates with such agencies, local governments and organizations and

individuals to ensure that historic properties are taking into consideration at all levels of planning and development. See also Tribal Historic Preservation Officer.

State Implementation Plan (SIP): Produced by the state environmental agency, not the Metropolitan Planning Organization (MPO). A plan mandated by the Clean Air Act (CAA) that contains procedures to monitor, control, maintain, and enforce compliance with the NAAQS. Must be taken into account in the transportation planning process.

Surface Water: All bodies of water on the surface of the earth and open to the atmosphere, such as rivers, lakes, reservoirs, ponds, seas, and estuaries.

Threatened Species: Any plants or animals that are likely to become endangered species within the foreseeable future throughout all or a significant portion of their ranges and which have been listed as threatened by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service following the procedures set out in the Endangered Species Act and its implementing regulations (50 CFR §424). (See endangered species.) The lists of threatened species can be found at 50 CFR §17.11 (wildlife), §17.12 (plants), and §227.4 (marine organisms).

Tribal Historic Preservation Officer: Section 101(d)(2) of the National Historic Preservation Act authorizes the Federally recognized tribes the responsibilities of the State Historic Preservation Officer (SHPO) for purposes of Section 106 compliance on their tribal lands. They have designated Tribal Historic Preservation Officers (THPOs) whom Federal agencies consult in lieu of the SHPO for undertakings occurring on, or affecting historic properties on, tribal lands.

Turbidity: Haziness in air caused by the presence of particles and pollutants. A cloudy condition in water due to suspended silt or organic matter. The amount of solid particles that are suspended in water and that cause light rays shining through the water to scatter. Thus, turbidity makes the water cloudy or even opaque in extreme cases. Turbidity is measured in nephelometric turbidity units (NTU).

Volatile Organic Compounds (VOCs): Any organic compound which evaporates readily to the atmosphere. VOC's contribute significantly to photochemical smog production and certain health problems.

Watershed: The land area that drains water to a particular stream, river, or lake. It is a land feature that can be identified by tracing a line along the highest elevations between two areas on a map, often a ridge. Large watersheds, like the Mississippi River basin contain thousands of smaller watersheds.

Wetlands: Those areas that are inundated by surface water or groundwater with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas (e.g., sloughs, potholes, wet meadows, river overflow areas, mudflats, natural ponds). *Jurisdictional wetlands* are those wetlands protected by the Clean Water Act. They must have a minimum of one positive wetland indicator from each parameter (i.e., vegetation, soil, and hydrology). The U.S. Army Corps of Engineers requires a permit to fill or dredge jurisdictional wetlands.

7.0 REFERENCES

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16 U.S. Code (USC) 470. *National Historic Preservation Act*. 1966 (Public Law 89-665), as amended through 1992.

16 USC 668–668d. *Bald and Golden Eagle Protection Acts*. 1940 (Public Laws 86-70, 87-884, 92-535, 95-616).

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16 USC 1451. *Coastal Zone Management Act*. 1972, (Public Law 92-583).

16 USC 1531–1544. *Endangered Species Act*. 1973. (Public Law 93-205).

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8.0 PERSONS AND AGENCIES CONSULTED

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Appendices redacted but available upon approved request.