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**DEPARTMENT OF THE ARMY**

**IN CONJUNCTION WITH  
LIBERTY COUNTY DEVELOPMENT AUTHORITY**

**DRAFT SUPPLEMENTAL ENVIRONMENTAL  
ASSESSMENT  
AND  
DRAFT FINDING OF NO SIGNIFICANT IMPACT**

**FOR THE  
WRIGHT ARMY AIRFIELD  
RUNWAY EXTENSION PROJECT**

**FORT STEWART, GEORGIA**

**April 2015**



US Army  
Fort Stewart, Georgia



Liberty County Development Authority  
Liberty County, Georgia

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**In Compliance with the National Environmental Policy Act of 1969**

**DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT and  
DRAFT FINDING OF NO SIGNIFICANT IMPACT**

**FOR THE  
WRIGHT ARMY AIRFIELD  
JOINT USE GENERAL AVIATION AREA AND RUNWAY EXTENTION  
PROJECT**

**WRIGHT ARMY AIRFIELD  
FORT STEWART, GEORGIA**

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**Approval:**

\_\_\_\_\_  
Kevin F. Gregory  
Colonel, U.S. Army  
Garrison Commander

Date: \_\_\_\_\_

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Date: \_\_\_\_\_

# **DRAFT FINDING OF NO SIGNIFICANT IMPACT**

## **1.0 INTRODUCTION**

In February 2003, the Army released an Environmental Assessment (EA) and Finding of No Significant Impact (FSNI) which evaluated potential environmental impacts associated with a proposal for the Liberty County Development Authority (LCDA) to jointly use Wright Army Airfield (WAAF) as a civilian airport. The 2003 FNSI identified infrastructure improvements involving a 1,500-foot runway extension of Runway 6L, refurbishing two existing runways and taxiways, and constructing a civilian airport terminal and other related facilities. The Army subsequently issued a Ground Lease to the LCDA providing access to Level II airport facilities. In 2006, WAAF became a fully operational joint military and civilian use airfield. Soon thereafter, the civilian airport terminal and related civilian facilities were constructed by the LCDA. These facilities are currently in use today.

A series of Supplemental EAs were prepared in the years following the Army decision to jointly use WAAF with LCDA. Those documents evaluated potential environmental impacts from associated improvement proposals which included (1) constructing and maintaining a dry stormwater detention basin / borrow pit, (2) constructing and maintaining a new civilian airport access road, (3) restoring, enhancing and preserving approximately 372 acres of wetlands in the Goshen Swamp (4) constructing and maintaining infrastructure for stormwater conveyance, (5) re-evaluation of the 1,500-foot Runway 6L extension, and (6) installation of associated Medium Intensity Landing System with Runway Alignment or an Instrument Landing System (ILS). These actions have not occurred at WAAF.

Since these prior Supplemental EAs were prepared, the proposal to extend Runway 6L, construct an associated ILS, and to construct and maintain a dry stormwater detention basin has changed. As such, potential environmental impacts evaluated in the Supplemental EA consider changes in runway extension and ILS design parameters and the removal of the dry stormwater detention basin / borrow pit from the proposed action. Instead of dry stormwater detention basin construction in the A-19 training area along the west side of FS Road 47, drainage improvements will consist of site stabilization measures that will occur after tree removal in the Runway Protection Zone (RPZ). Fill material for the runway extension construction will be obtained from off the Installation.

The runway extension proposal remains a 1,500-foot addition; however, Unified Facilities Criteria (UFC) guidelines must be followed when designing and constructing infrastructure on military installations. The following design changes resulting from the requirement to meet UFC guidance include:

- 1) The initial runway extension plan depicted the runway at 100-feet wide with no shoulders. The runway was redesigned to meet UFC 3-260-01 criteria which state the runway is to be 100-feet wide with 25-foot shoulders on both sides. This criterion may be found in UFC 3-260-01, Table 3-2, No. 2-3.

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- 2) The initial taxiway was designed to be 75-feet wide; however, UFC guidelines state that a Class “A” Airfield will have a 50-foot wide taxiway with 25-foot shoulders on both sides of the taxiway for a total taxiway width of 100-feet. Design changes are also necessary to meet primary surface requirements. This criterion may be found in UFC 3-260-01, Table 5-1, No. 1-2.
  - 3) The runway extension must also include an ILS conformant to the UFC 3-260-01.

Extending the runway by 1,500-feet will in turn extend the RPZ. The RPZ is an accident potential zone that is a 1,000-foot wide by 3,000-foot long area at the immediate end of a runway.

Instead of dry stormwater detention basin construction in the A-19 training area along the west side of FS Road 47, drainage improvements will consist of site stabilization measures that will occur after tree removal in the RPZ. This change was necessary to meet Georgia Department of Transportation runway safety requirements but will also serve to improve water quality down stream. Fill material for the runway extension construction will be obtained from off the Installation.

## **2.0 PURPOSE AND NEED**

The purpose of the proposed action is to upgrade the joint use airfield to enable the Army to utilize a greater variety of aircraft and to enhance the airfield for opportunities in industrial marketing necessary to the economic welfare of Liberty County. As discussed in the original EA, the Army also benefits from airfield upgrades and routine maintenance. Additionally, drainage improvements will be implemented in the A-19 training area and will be common to each action alternative evaluated in this supplemental EA. The drainage improvements will alleviate existing flooding issues to the region and also serve to reduce the velocity of stormwater flows after tree removal in the RPZ, improving water quality downstream.

## **3.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES**

### **3.1 Proposed Action**

The US Army in collaboration with the LCDA propose to extend the joint-use runway (Runway 6L) 1,500 feet along with a turnaround taxiway, extend the RPZ, and to construct an associated ILS. The proposed action will also entail drainage improvements in the A-19 training area. The proposed action will cause impacts to waters of the U.S. that will be mitigated in accordance with the Clean Water Act.

### **3.2 No Action Alternative**

Under this alternative, the proposed action will not be implemented. Although this alternative does not meet the purpose and need of the proposed action, the CEQ regulations that implement NEPA require a clear basis for choice among options by the decision maker and the public, and a no action alternative must be included and analyzed (40 CFR 1502.14[d]).

## 4.0 ENVIRONMENTAL ANALYSIS

Chapter 3 of the Final EA discusses potential environmental consequences associated with implementing either the No Action or the Proposed Action Alternative at Wright Army Airfield (WAAF) on Fort Stewart, Georgia. Preliminary analysis determined that the implementation of either alternative has the potential to result in impacts to Water Quality and Resources, Land Use, and Socioeconomic Issues, and they are discussed in detail in Chapter 3 of the Final EA. Preliminary analysis indicated no impacts or changes to Biological Resources, Cultural Resources, Health and Safety, Utilities, Air Quality, Noise, Transportation, or Hazardous and Toxic Substances from the original 2004 Environmental Assessment that was completed on the WAAF property; accordingly, these resources are not discussed in detail in the main body of the Final EA.

**TABLE ES 1: Summary of Environmental Impacts**

<b>RESOURCE</b>	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION</b>
<b>Water Quality and Resources</b>		
<b>Direct / Indirect</b>	No Impact	Moderate
<b>Cumulative</b>	None	Moderate
<b>Land Use</b>		
<b>Direct / Indirect</b>	No Impact	Minor
<b>Cumulative</b>	None	Negligible
<b>Socioeconomic Issues</b>		
<b>Direct / Indirect</b>	Moderately adverse	Moderately beneficial
<b>Cumulative</b>	Moderately adverse	Moderately beneficial

## 5.0 PUBLIC REVIEW AND COMMENTS

The *Draft Supplemental EA for the Wright Army Airfield Runway Extension Project* was available for a 30-day public review period (April 1 – 30, 2015) at the local public libraries in Hinesville and Savannah and at the Post Library on Fort Stewart. Notification of Availability (NOA) of the Draft EA/FNSI was made known to the public via publication of an NOA in the *Savannah Morning News*, *Coastal Courier*, and *The Frontline* in the Savannah/Fort Stewart area. Documentation of the public notice may be found in Appendix V of the Final EA. Notification of the Draft EA/FNSI's availability was also mailed to the regulatory community and joint land use partners with whom the Installation consults. No comments and/or correspondence on the draft documents were received from any of these stakeholders.

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## **6.0 DRAFT FINDING OF NO SIGNIFICANT IMPACT**

The *Supplemental EA for the Wright Army Airfield Runway Extension Project* was prepared to analyze the potential environmental impacts associated with the 1,500 foot extension of Runway 6L at Wright Army Airfield, the installation of an Instrument Landing System (ILS) adjacent to the Runway 6L expansion, and drainage improvements within training area A-19 to the west of Fort Stewart Road 47. Following an analysis and comparison of impacts to the no action and action alternative, it was determined that none of the alternatives would result in significant impacts, and that the preparation of a FNSI by the Army for the proposed action was appropriate.

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Kevin F. Gregory  
Colonel, U.S. Army  
Garrison Commander

Date: \_\_\_\_\_

**Draft Supplemental Environmental Assessment for the**

**Wright Army Airfield  
Runway Extension Project  
Fort Stewart, Georgia**

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# 1. INTRODUCTION

## 1.1. Project Background

In February 2003, the Army released an Environmental Assessment (EA) and Finding of No Significant Impact (FSNI) which evaluated potential environmental impacts associated with a proposal for the Liberty County Development Authority (LCDA) to jointly use Wright Army Airfield (WAAF) as a civilian airport. The 2003 FNSI identified infrastructure improvements involving a 1,500-foot runway extension of Runway 6L, refurbishing two existing runways and taxiways, and constructing a civilian airport terminal and other related facilities. The Army subsequently issued a Ground Lease to the LCDA providing access to Level II airport facilities. In 2006, WAAF became a fully operational joint military and civilian use airfield. Soon thereafter, the civilian airport terminal and related civilian facilities were constructed by the LCDA. These facilities are currently in use today.

A series of Supplemental EAs were prepared in the years following the Army decision to jointly use WAAF with LCDA. Those documents evaluated potential environmental impacts from associated improvement proposals which included (1) constructing and maintaining a dry stormwater detention basin / borrow pit, (2) constructing and maintaining a new civilian airport access road, (3) restoring, enhancing and preserving approximately 372 acres of wetlands in the Goshen Swamp (4) constructing and maintaining infrastructure for stormwater conveyance, (5) re-evaluation of the 1,500-foot Runway 6L extension, and (6) installation of associated Medium Intensity Landing System with Runway Alignment or an Instrument Landing System (ILS). These actions have not occurred at WAAF.

Since these prior Supplemental EAs were prepared, the proposal to extend Runway 6L, construct an associated ILS, and to construct and maintain a dry stormwater detention basin has changed. As such, potential environmental impacts evaluated in this Supplemental EA consider changes in runway extension and ILS design parameters and the removal of the dry stormwater detention basin / borrow pit from the proposed action. Instead of dry stormwater detention basin construction in the A-19 training area along the west side of FS Road 47, drainage improvements will consist of site stabilization measures that will occur after tree removal in the Runway Protection Zone (RPZ). Fill material for the runway extension construction will be obtained from off the Installation.

The runway extension proposal remains a 1,500-foot addition; however, Unified Facilities Criteria (UFC) guidelines must be followed when designing and constructing infrastructure on military installations. The following design changes resulting from the requirement to meet UFC guidance include:

- 4) The initial runway extension plan depicted the runway at 100-feet wide with no shoulders. The runway was redesigned to meet UFC 3-260-01 criteria which state the runway is to be 100-feet wide with 25-foot shoulders on both sides. This criterion may be found in UFC 3-260-01, Table 3-2, No. 2-3.

- 5) The initial taxiway was designed to be 75-feet wide; however, UFC guidelines state that a Class “A” Airfield will have a 50-foot wide taxiway with 25-foot shoulders on both sides of the taxiway for a total taxiway width of 100-feet. Design changes are also necessary to meet primary surface requirements. This criterion may be found in UFC 3-260-01, Table 5-1, No. 1-2.
- 6) The runway extension must also include an ILS conformant to the UFC 3-260-01.

Extending the runway by 1,500-feet will in turn extend the RPZ. The RPZ is a safety clear zone that is a 1,000-foot wide by 3,000-foot long area at the immediate end of a runway.

Instead of dry stormwater detention basin construction in the A-19 training area along the west side of FS Road 47, drainage improvements will consist of site stabilization measures that will occur after tree removal in the RPZ. This change was necessary to meet Georgia Department of Transportation runway safety requirements but will also serve to improve water quality down stream. Fill material for the runway extension construction will be obtained from off the Installation.

## **1.2. Purpose and Need**

The purpose of the proposed action is to upgrade the joint use airfield to enable the Army to utilize a greater variety of aircraft and to enhance the airfield for opportunities in industrial marketing necessary to the economic welfare of Liberty County. As discussed in the original EA, the Army also benefits from airfield upgrades and routine maintenance. Additionally, drainage improvements will be implemented in the A-19 training area and will be common to each action alternative evaluated in this supplemental EA. The drainage improvements will alleviate existing flooding issues to the region and also serve to reduce the velocity of stormwater flows after tree removal in the RPZ, improving water quality downstream.

## **1.3. Applicable Regulatory Requirements**

The National Environmental Policy Act (NEPA) requires Federal Agencies to consider the environmental consequences of proposed actions when making decisions. The Council on Environmental Quality (CEQ) was established to oversee Federal policy in this process and to implement the Procedural Provisions of NEPA (40 CFR 1500-1508). The Army’s NEPA’s rules are found at 32 CFR Part 651 Environmental Analysis of Army Actions; Final Rule. This law requires the Army to consider the environmental impacts of a “Proposed Action” and its alternatives prior to implementing the action.

## **2. PROPOSED ACTION AND ALTERNATIVES**

### **2.1. Alternatives Considered**

#### **2.1.1 Alternative I: No Action Alternative:**

Under this alternative, the proposed action will not be implemented. Although this alternative does not meet the purpose and need of the proposed action, the CEQ regulations that implement NEPA require a clear basis for choice among options by the decision maker and the public, and a no action alternative must be included and analyzed (40 CFR 1502.14[d]).

#### **2.1.2 Alternative II: Proposed Action:**

The US Army in collaboration with the LCDA propose to extend the joint-use runway (Runway 6L) 1,500 feet along with a turnaround taxiway, extend the RPZ, and to construct an associated ILS. The proposed action will also entail drainage improvements in the A-19 training area. The proposed action will cause impacts to waters of the U.S. that will be mitigated in accordance with the Clean Water Act.

### **2.2. Alternatives Eliminated from Further Evaluation**

#### **2.2.1. Alternative III: Extension of Runway 24R:**

The proposed runway extension design was placed on the end of Runway 24R (opposite end of Runway 6L). This alternative was developed due to the orientation of the runway being in line with the prevailing winds and with landings and take offs staying clear of the restricted airspace over the cantonment area to the west of the airfield (R3005C). In evaluation of the alternative, approximately seven (7) additional acres of high quality wetlands would be impacted through the construction of the proposed action at the end of Runway 24R. Additionally, based on the current elevation gradient at the end of Runway 24R, the amount of fill and clearing that would be required for the runway safety clear zone and glideslope is substantially greater in relation to the proposed action at the Runway 6L end and would substantially increase the construction costs associated with the project. Based on the increase in wetland impacts to this alternative site, increase in impacts to higher quality wetlands, as well as to the increase in required fill and grading, the proposed project in the Runway 24R area would not be economically feasible. Therefore, the alternative does not meet the project's purpose and need and is eliminated from further evaluation.

#### **2.2.2. Alternative IV: Extension of Runway 15L/Runway 33R:**

The proposed runway extension design was evaluated at the end of Runway 15L. The extension of Runway 15L would allow for the 1,500-foot extension to be completed at the facility with negligible wetland impacts to occur during

construction; however, Runway 15L is oriented perpendicular to restricted airspace R3005C. Extending Runway 15L to the north would move the approach/departure surface of this runway closer to R3005C resulting in higher potential for aircraft penetration of restricted airspace and aircraft conflicts during periods that the R3005C airspace is active with military activity. Current departures from existing Runway 33R (opposite end of Runway 15L) require an expedited right hand turn to avoid penetration of R3005C airspace. Existing arrivals to Runway 15L threshold must abbreviate their pattern to avoid penetrating R3005C airspace to the north of Georgia Highway 144. Therefore, moving Runway 15L closer to R3005C would increase the likelihood of conflicts with restricted airspace and does not meet the project's purpose and need and is eliminated from further evaluation.

### **2.2.3. Alternative V: Extension of Runway 6L Taxiway Beyond Wetlands:**

The proposed runway extension design was modified to evaluate potentially extending the runway and taxiway beyond 1,500-feet in order to minimize wetland impacts from construction. The alternative was utilized to evaluate potential wetland impact reduction by only crossing the wetland one time by extending the runway enough that the taxiway was to be located outside of the wetland footprint. UFC regulations require a 15-foot clearance requirement for the 50:1 approach slope at the current access road under construction to the southeast of the runway. Based on this requirement, the runway may only be extended an additional 148 feet to the west. Upon evaluating the 148-foot extension, the wetland impacts were increased by approximately 1-acre. The proposed alternative was disregarded from further evaluation due to the increase in wetland impacts for the proposed action.

### 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter focuses on only those resources within the affected environment potentially impacted by the proposed action. Potential direct, indirect, and cumulative impacts to the affected environment are discussed as they relate to the action and no action alternatives. Direct impacts are those caused specifically by the proposed action and that occur at the same time and place. Indirect impacts are also caused by the proposed action, but later in time or farther in distance. The levels of intensity of potential impacts are described as follows:

- ***Negligible***. This term indicates the environmental impact is barely perceptible or measurable; remains confined to a single location; and will not result in a sustained recovery time for the resource impacts (days to months).
- ***Minor***. This term indicates the environmental impact is readily perceptible and measurable; however, the impact will be temporary and the resource should recover in a relatively short period of time (days to months).
- ***Moderate***. The term indicates the environmental impact is perceptible, measurable, and may not remain localized, thus also impacting areas adjacent to the proposed action. Under the impact, recovery of the resource may require several years or decades.
- ***Significant***. This term indicates the threshold of intensity associated with an environmental impact has been met (i.e. TLS). This threshold is defined by a potentially substantial and permanent adverse change in or loss of resources within the context of the project. In the absence of mitigation or avoidance, a significant impact will trigger the dismissal of the alternative or preparation of an Environmental Impact Statement.

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). Impacts occur within a specified region of influence (ROI). Resources that receive no direct, indirect, or only a negligible impact as a result of the no action or action alternatives, will not result in cumulative impacts.

The ROI for the Proposed Action is WAAF and the A-18 and A-19 training areas adjacent to WAAF, located on Fort Stewart, Georgia. WAAF currently consists of two (2) perpendicular 5,000-foot runways utilized by the Army and the LCDA through a joint use agreement. Control towers and airport facility are located within the WAAF property, to the south. Gray Eagle unmanned aerial vehicle facilities are located on the northern side of WAAF. The area to the west of Runway 6L consists of grassed uplands and emergent wetlands. The area to the west of Fort Stewart Road 47, in the A-19

training area is forested with an established mixed-pine forest. Training area A-18 is the site of an Army decision to partner with Georgia Power Company to construct, operate, and maintain 30 megawatts of solar photovoltaic panels.

### **3.1. Resources Analyzed**

Please refer to the EA titled and dated “Environmental Assessment of Wright Army Airfield Joint Use Development Project, June 18, 2004,” incorporated by reference, for discussion of the following resources: Earth Resources, Air Quality, Noise, and Utilities. The previously mentioned resources have not deviated from the specified details contained in the original June 2004 EA, December 2006 Supplemental EA, or the March 2012 SEA.

The proposed action evaluated in this Supplemental EA will not impact Biological Resources because the area of potential effect is not managed for plants, animals, and wildlife habitat including those listed as threatened or endangered. As such, Biological Resources will not be adversely impacted as a result of the Proposed Action and is not discussed in this Supplemental EA. Refer to Appendix III for a copy of prior U.S. Fish and Wildlife Service consultation and concurrence correspondence for this area of Fort Stewart. The remaining environmental resources potentially impacted by the proposed action are discussed in detail below:

The Installation’s Integrated Cultural Resources Management Plan (ICRMP) incorporates cultural resource laws and regulations into an internal document outlining how Fort Stewart manages its cultural resources. The Installation and the Georgia State Historic Preservation Office (SHPO) developed a Programmatic Agreement (PA) to provide the Installation with a flexible tool to manage its cultural resources. Fort Stewart prepared a MFR for the proposed action area that concluded no resources eligible for the National Register of Historic Places will be impacted by the proposed action. Refer to Appendix IV for a copy of the MFR prepared by Fort Stewart for the proposed action area.

### **3.2. Water Quality and Resources**

#### **3.2.1. Affected Environment**

Analysis of water quality focuses on the physical, chemical, and biological characteristics of water resources. The Clean Water Act (CWA) (33 USC §1251 et seq.) is the primary Federal law that protects the nation’s water, including lakes, rivers, aquifers, and wetlands. Disturbance to Jurisdictional Waters of the US, including navigable waters, impoundments, tributary streams, and wetlands, is regulated and subject to Federal permits under Section 404 of the CWA.

##### **3.2.1.1. Surface Waters**

Within the greater Fort Stewart watershed, surface water resources are diverse and include over 265 miles of freshwater rivers, streams, and

creeks, numerous ponds and lakes, and over 12 miles of brackish streams (FSGA, 2005). Although Fort Stewart occupies parts of four separate watersheds, the majority of the Installation lies within the Canoochee and Ogeechee Coastal Watersheds.

In the Proposed Action area, surface water sources drain into the Goshen Swamp, which ultimately discharges into Peacock Creek, a 303(d) impaired water body designated by the Georgia Department of Natural Resources (DNR) as impaired due to high levels of fecal coliform and low levels of dissolved oxygen. Peacock Canal, as it is referred to locally, was determined to only partially support its designated use for fishing due to being impaired by low levels of dissolved oxygen and the presence of bacteria in the form of fecal coliform. Peacock Creek was historically a slow meandering coastal creek. However, in the 1950s it was channelized by the CCA to drain areas of Liberty County that were prone to flooding. In the 1970s, the Army Corps of Engineers further channelized sections of the Peacock Creek as an additional flood prevention measure, and renamed it Peacock Canal. The Georgia EPD cited urban runoff as source of impairment to Peacock Canal. A Total Maximum Daily Load (TMDL) Implementation Plan has not been prepared for Peacock Canal, but is slated to occur in the future. The basis of the impairment determination was made based on one year's data collected at different stations along the downstream portion of the Canal during drought conditions in the 1997-98 timeframe. Additional data is needed to assess sources of DO depletion and fecal coliform (bacteria) throughout the basin so that non-point source Best Management Practices (BMP), including structural BMPs can be considered to address the non-point source pollutants.

The Clean Water Act (CWA) (33 USC § 1251 et seq.), Georgia Water Quality Act (GWQA) (Official Code of Georgia [OCGA] § 12-5-20), and Georgia Erosion and Sedimentation Control Act (OCGA § 12-7-1) permitting require implementation of erosion controls during site disturbing activities.

- Construction permitting requires fees in the amount of \$80.00/disturbed acre and must be paid to the Georgia Environmental Protection Division (EPD). A copy of the fee submission must be provided to the FS/HAAF Environmental Division along with a prepared and initialed Notice of Intent (NOI) for coverage under the State's National Pollutant Discharge Elimination System (NPDES) Permit for Stormwater Discharges Associated with Construction Activities and the project's approved Erosion Sedimentation Pollution Control (ESPC) Plan. The FS/HAAF Environmental Division will complete the Notice of Intent (NOI) and process it for submittal to the State (approximately 14 days from submittal). Land disturbance, inclusive of timber harvesting and/or grubbing/grading activities may

not commence until 14 days from the date of certified mailing of the NOI packet. The total acreage shall include material laydown areas, muck out/soil fill sites, stockpile and equipment storage areas, work-site entrance/exits, utility rights-of-way, demolition works sites, and timber harvest sites.

- Sites with an NOI require continuous maintenance of BMPs until submittal of the Notice of Termination (NOT) to the Georgia EPD. The NOT can be processed and submitted to the State upon acceptable site stabilization as determined by the Army.
- The proposed action must comply with Energy Independence Security Act (EISA) Section 438, which requires maintaining or restoring the site's predevelopment hydrology with regard to the temperature, rate, volume and duration of flow. Low Impact Development (LID) techniques must be used to implement EISA Section 438, as required by the DoD United Facilities Code (UFC)-3-210-10. E&S control best management practices (BMPs) must be utilized during land disturbance. These technical requirements and BMP recommendations can be found in greater detail at the following web link: [http://www.stewart.army.mil/dpw/EN\\_Downloads.aspx](http://www.stewart.army.mil/dpw/EN_Downloads.aspx).
- At a minimum, a Level 1A E&S Control State Certified trained individual is to be on the site during ANY land disturbance activity.
- Site dewatering requires prior approval from the Fort Stewart Environmental Office. If approved, dewatering must incorporate BMPs to dissipate or disperse the flows.
- Ensure all washouts of trucks and equipment is controlled and is discharged with E&S BMPs. Waste material and/or debris is required to be disposed of properly, and not into streams, ditches, or stormwater conveyance systems.
- For spill prevention, ensure proper drip pans and secondary containment are utilized with construction and demolition equipment.

#### **3.2.1.2. Wetlands**

33 CFR Part 328.3(b) of the CWA (33 USC § 1251 et seq.) defines wetlands 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. Wetlands generally include swamps, marshes, bogs, and similar areas.” Approximately one-third of Fort

Stewart's 279,000 acres is wetlands of one type or another, based on the National Wetlands Inventory (NWI), a map-based planning tool first initiated by the U.S. Fish and Wildlife Service (USFWS) in 1974. Given their prevalence on the Installation, Fort Stewart has made avoidance and minimization of wetlands impacts a top priority and wetlands are one of the primary factors to be considered when siting a new project. In this manner, much of the avoidance and minimization of wetlands impacts takes place before actual site selection actually occurs.

All Plans and permits shall be developed in association with the Installation's resident soils and stormwater subject matter experts (SMEs), who collectively provide technical expertise during the preparation of all ESPC plans for projects conducted on Installation lands. During this process, ESPC plans will be reviewed for compliance with both the CWA and Georgia Erosion Sedimentation Control Act. During construction, these SMEs will also inspect and monitor the BMPs in the Plans and permits for implementation and maintenance to ensure compliance.

All wetlands within the project area were delineated on May 16-17, 2011, and submitted to the USACE for jurisdictional determination on June 1, 2011. A total of 14.04 acres of jurisdictional wetlands were identified to be located within the proposed action area. Conceptual site plans for the proposed action indicates that approximately 11.0-acres of wetlands will be impacted through filling. Alternative conceptual Site plans were developed during the planning phase of the proposed action in order to minimize all wetland impacts. Alternative Site plans included an additional 148-foot expansion of the Runway 6L, alternative ILS location, and potential alternative taxiway designs. Each alternative either caused an increase in wetland impacts or was met with regulatory or safety concerns that would not allow the construction of the proposed action. Field data collected during recent site surveys indicates that significant wetland function has been lost to the wetlands located within the proposed action area. The wetlands are currently a part of the RPZ and undergo regular maintenance mowing. The mowing in association with the grading and construction that has occurred within the WAAF property have severally degraded the overall wetland function within the proposed action area when compared to the upgradient and downgradient wetlands connected to the wetland system. Therefore, when compared to the upgradient and downgradient wetland systems, the overall quality and function of the wetlands within the proposed action area were identified to be low. Any impacts planned during construction are required to be permitted through the USACE in accordance with Section 404 of the CWA.

### **3.2.1.3. Floodplains**

The Federal Emergency Management Agency (FEMA) maps flood-prone areas and lands, to include those lying within the 100-year floodplain in Fort Stewart. There are approximately 120,000 acres of 100-year floodplain on Fort Stewart.

A review of the Post-Development (2011) Flood Inundation Map provided by Fort Stewart indicates that a portion of the Proposed Action is located within the 100-year floodplain.

“Construction associated with the Proposed Action will also result in impacts to the 100yr floodplain. Impacts will be minimized through adherence to all BMPs identified in timber harvest, ESPC, and other Plans and permit(s).

Executive Order 11988 (*Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*) mandates adding two feet to the baseline flood elevation for non-critical systems and three feet for critical systems (such as schools or hospitals). It may be determined that the runway at WAAF is a critical system, as it could be feasibly used for emergency evacuation purposes and for personnel and supply routing during or after a natural disaster.

Therefore, the design team shall survey both the runway's existing elevation and the existing 100yr floodplain to determine the base flood elevation, as part of the ongoing design for the Proposed Action to determine if the requirements of EO 11988 are currently met or, if not, how best to proceed to ensure compliance for the Proposed Action.”

The design engineer concluded that the proposed runway expansion was equal to or greater in elevation in relation to the current runway elevations. The end of the current Runway 6L is located at an elevation of 41.73’ and is not located within the 100-year floodplain. The proposed runway expansion will vary in elevations from 41.73’ where it meets the existing Runway 6L terminus to 45.48’ at the approximate 1,000’ extension mark. The final proposed elevation at the terminus of the 1,500’ runway expansion is 43.85’. A review of the 100-year floodplain survey indicates that the floodplain elevation is located at 36.38’. Therefore, based on the proposed elevations for the runway expansion being greater than 3.0 feet above 100-year floodplain elevation, it was determined that the proposed runway expansion is in compliance with EO11988.

### **3.2.2. Environmental Consequences**

#### **3.2.2.1. Alternative I: No Action Alternative**

This alternative will have no impacts to water quality and resources, as there will be no timber harvest, wetland impacts, grading, grubbing, or other land disturbance.

#### **3.2.2.2. Alternative II: Proposed Action**

Under this alternative, the Proposed Action will result in overall moderate impacts to Water Quality and Resources.

The Proposed Action will result in the filling of approximately 11 acres of jurisdictional wetlands. The wetland impacts must be permitted through the USACE in accordance with Section 404 of the CWA. Mitigation will entail purchasing approximately 79 wetland mitigation credits from the Yam Grandy Wetland Mitigation Bank. The bank is located within the primary service area of the Proposed Action. Pre-construction base-flow will be maintained through the installation of a network of culverts and dry-infiltration trenches. With “in-kind” mitigation and maintaining pre-construction base-flow, impacts to these wetlands are considered moderate.

Soil disturbance during timber harvest, site preparation, and drainage improvements may result in erosion and the overland transportation of sediments to surface waters, streams, and/or wetlands. However, effective implementation of timber harvest E&S control BMPs, NPDES permit requirements, site-specific ESPC plans, and pre- and post- construction BMPs will reduce the potential adverse impacts to surface waters. All plans shall be developed in association with the Installation’s resident soils expert and stormwater specialist, who collectively provide technical expertise during the preparation of all ESPC plans for projects conducted on Installation lands. During this process, ESPC plans will be reviewed for compliance with both the CWA and Georgia Erosion Sedimentation Control Act. These experts will also inspect and monitor the construction project to ensure compliance and that all agreed-upon BMPs in the ESPC Plan are being implemented and maintained.

Construction shall adhere to an ESPC plan that will require an undisturbed 25-foot vegetative buffer around all surface waters, including wetlands not permitted for impacts. Periodic inspections will include verification of compliance through turbidity sampling, E&S BMP checks, and maintaining required buffer areas of Federal and State waters. The Installation will mandate that the contractor immediately correct violations.

### **3.2.3 Cumulative Impacts**

#### **Alternative I: No Action Alternative**

No cumulative impacts to Water Quality and Resources are anticipated as a result of implementation of this alternative, as no direct or indirect impacts are expected.

#### **Alternative II: Proposed Action**

Moderate adverse cumulative impacts to Water Quality and Resources are expected to occur. Areas of WAAF have undergone tree removal in wetland areas as well as permitted (in accordance with Section 404 of the CWA) filling in portions of contiguous wetland areas that connect within the Proposed Action location. All adverse wetland impacts within the ROI have received appropriate “in-kind” mitigation as is expected of the Proposed Action.

## **3.3 Land Use**

### **3.3.1. Affected Environment**

The Army has several zoning classifications for property in and around WAAF. The majority of the property surrounding WAAF is zoned as Airfield (AF). This zoning classification allows for the activities of and related to an airport. Portions of WAAF are also zoned as administrative and industrial. The administrative zones are small areas located on the southern boundary of the airport that house several small structures used as administrative offices for the airport. The location of the proposed Runway 6L extension, ILS, and taxiway construction is zoned as Airfield (AF). The location of the drainage improvements and RPZ is considered a training area, primarily used by the National Guard through a real estate license with the Army.

### **3.3.2. Environmental Consequences**

#### **3.3.2.1 Alternative I: No Action Alternative**

No action will not impact land use on Ft Stewart since no construction would occur. Approximately 43 acres would remain forested and available for military training or future military requirements. Land use would remain military training area.

#### **3.3.2.2 Alternative II: Proposed Action**

The proposed action will have minor impact to land use. The area west of Fort Stewart Road 47 will result in the clearing of approximately 43 acres of mixed-pine forest within the A-19 training area. However, the Army

and the National Guard will continue to utilize A-19 as a training area for land navigation exercises that involve no site disturbing activities. This area will also be added to LCDA’s Ground lease with the Army and will be designated as AF land use, restricting incompatible development. The land use within the Proposed Action footprint east of Fort Stewart Road 47 will remain unchanged.

**3.3.3. Cumulative Impacts**

**3.3.3.1 Alternative I: No Action Alternative**

No cumulative impacts to land use are anticipated as a result of implementation of this alternative, as no direct or indirect impacts are expected.

**3.3.3.2 Alternative II: Proposed Action**

Cumulative impacts to land use within the ROI is considered negligible. Army and National Guard units can continue to utilize A-19 training area as a land navigation course.

**3.4 Socioeconomic Issues**

**3.4.1. Affected Environment**

**Community Characteristics and Services**

An evaluation of the social and economic impacts of the proposed action assessed the project’s effects on the community including cohesion, accessibility to community facilities and services, mobility and safety, and local business activities.

Population data was collected for Liberty County based off of census data from 2010 and proposed growth as identified from the Liberty County Development Authority. Table 1 shows population data for Liberty County based off of the 2010 census data.

<b>Population Data for Liberty County</b>			
	<b>Census 2010</b>	<b>2012</b>	<b>2017</b>
<b>Population</b>	63,453	65,993	72,659
<b>Households</b>	22,155	22,776	25,619
<b>Families</b>	16,566	16,913	19,016
<b>Average Household Size</b>	2.75	2.78	2.74
<b>Median Age</b>	28.1	28.2	28.6

Overall, the population continues to grow within Liberty County. The census data states that Liberty County saw an overall 1.0% growth from 2010 to July 1, 2013, slightly behind the overall 3% growth within the same time period for the entire state of Georgia.

Race and Ethnicity data was collected for Liberty County based off of census data from 2010 and is illustrated the table below:

<b>Race and Ethnicity Data for Liberty County</b>		
	<b>Census 2010 Number</b>	<b>Census 2010 Percentage</b>
<b>White Alone</b>	29,981	47.1%
<b>Black Alone</b>	28,805	42.2%
<b>American Indian Alone</b>	358	0.6%
<b>Asian Alone</b>	1,247	2%
<b>Pacific Islander Alone</b>	392	0.6%
<b>Some Other Race Alone</b>	1,810	2.9%
<b>Two or More Races</b>	2,960	4.7%
<b>Hispanic Origin (Any Race)</b>	6,159	9.7%

Based off of the 2010 census data, 90.9% of the residents of Liberty over the age of 25 have an high-school level education (or GED) or higher with 20.2 % having an associate or bachelor’s degree. The level of high school or GED educated citizens within Liberty County is above the state average of 84.7%; however, the level of higher educated citizens within Liberty County is below the state average of 28.0%.

Average individual incomes for a citizen of Liberty County was identified to be \$20,791, below the Georgia average individual income of \$25,182. Additionally, household incomes were identified to average \$43,832 within Liberty County, below the state average of \$49,179.

There were 834 private non-farm business establishments identified in Liberty County in 2012. The private non-farm business establishments accounted for 12,173 jobs in 2012, a 2.1% increase from 2011.

Liberty County boasts five business parks within the county. The five business parks are home to numerous industrial clients, 70% of which are companies headquartered abroad. Additionally, Liberty County’s existing industries are aggressive exporters to over 70 countries throughout the world. Two of the industrial business parks, Tradeport East Business Center and Tradeport West Business Center, have been designated as Georgia Ready for Accelerated Development (GRAD) by the Georgia Allies. Additionally, numerous local and state incentives are in place, such as large foreign trade zones and graduated tax abatement programs, which make Liberty County a desirable location for industry.

Additionally, veterans and spouses associated with Fort Stewart provide an excellent supplement to Liberty County's traditional workforce. Each month approximately 300 soldiers exit the military, and a significant number elect to stay in the Liberty County area. These "Heroes for Hire" are cross-trained and possess a strong work ethic.

### **Recreational Use**

Fort Stewart has long allowed the public to access the installation's lands for hunting and fishing. Much of Fort Stewart is publicly accessible for hunting and fishing provided that the individuals are authorized by the Installation Commander and possess the necessary Sikes Act Permit, access pass, and applicable Georgia State licenses. Fort Stewart has approximately 1,500 to 2,000 hunting permit holders and 3,000 to 4,000 fishing permit holders. Prominent game species include white-tail deer, feral hog, and wild turkey. Wildlife observation, hiking, camping, shooting sports, volleyball, and horseshoes are other popular outdoor activities at Fort Stewart. There are also several playgrounds located on the installation.

There are no parks or formal recreation areas located within the project area or on adjacent properties. The proposed action area is located within the current Runway 6L RPZ and training area A-19. The proposed action area is not approved hunting ground locations and no suitable waterways for fishing purposes are located on or within the vicinity of the proposed action area.

### **Executive Orders 12898 and 13045**

Executive Order 13045 (Protection of Children from Environmental Health Risks and Safety Risks) mandates that each Federal agency shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. Executive Order 12898 (Environmental Justice) requires each Federal agency to make achieving environmental justice part of its mission by identifying and addressing as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.

## **3.4.2. Environmental Consequences**

### **3.4.2.1 Alternative I: No Action Alternative**

No action will not have an impact on any recreational use, environmental justice or on the protection of children because no construction will occur as proposed.

No action will have a minor adverse impact on the overall future economic development of Liberty County. The no action alternative will not allow for much needed upgrades to the existing WAAF / MidCoast Regional Airport facility allowing for a larger variety of aircraft to utilize the facility. The no action alternative will also limit the industrial marketing of the airport facility and the county's five industrial business parks. Overall, the no action alternative will negatively affect the overall economy and potential future economic development of Liberty County.

### **3.4.2.2 Alternative II: Proposed Action**

The proposed action will have a moderately beneficial impact on the overall economy and well being of Liberty County. The proposed action will allow for a greater variety of aircraft to utilize the facility and will enhance the airfield for opportunities in industrial marketing. The proposed action is planned to immediately boost the overall economy of Liberty County by the addition of a light manufacturing / retrofitting company at the airport facility. The company plans to develop its operation at the WAAF/MidCoast Regional Airport facility pending the planned runway improvements included in this proposed action. The company anticipates construction of a facility on site in excess of \$6.5 million with an anticipated investment of \$500,000 in equipment. This phase of the operation would create 80 new jobs. Phase II of the company's planned construction would occur within four years of Phase I and would bring an additional \$3.5 million in land/building and approximately an additional \$600,000 in additional machinery/equipment. Four-year employment projects state that up to 250 new jobs will be created at the facility with wages ranging from \$15-\$55/hour. Calculations show that the average earning per newly created job would be \$43,832, significantly higher than the Liberty County average individual salary of \$20,791.

The proposed action will not impact recreational activities available to the public on Fort Stewart, as no portion of the proposed action area is located within any land open for any recreational use.

The proposed action will not impact Environmental Justice or the protection of children. The action will not cause disproportionately high and adverse human health, economic or environmental effects upon the minority population and low-income populations within the meaning of Executive Order 12898. The action will not cause the displacement of any residents, eliminate any jobs, low income or otherwise. There are no residential areas within the vicinity of the proposed action that will be impacted. This action will not adversely impact the protection of children within the meaning of Executive Order 13045 because the construction

will be performing in compliance with all applicable environmental standards.

### **3.4.3. Cumulative Impacts**

#### **3.4.3.1 Alternative I: No Action Alternative**

Moderately adverse cumulative impacts to socioeconomic issues are anticipated as a result of implementation of this alternative, as no direct or indirect impacts are expected. The no action alternative would not provide the much needed runway improvements, which would lead to an overall increase in marketability for on-site and off-site industrial development. The lack of potential new on-site and off-site industrial development opportunities limits the potential for new job growth and overall growth of the Liberty County economy.

#### **3.4.3.2 Alternative II: Proposed Action**

Moderately beneficial cumulative impacts to socioeconomic issues within the ROI are anticipated to occur. The proposed action would lead to the much needed runway improvements at the WAAF / MidCoast Regional Airport facility. The improvements allow for the overall increase in on-site and off-site industrial marketability. The proposed action will lead to an overall increase to the Liberty County economy through the increase in jobs from current and potential future industrial and commercial business growth. The proposed action will not affect the recreational use of any person due to the proposed action area not being open to the public for any recreational use. The proposed action will not negatively affect human health, economic, or environmental status upon any minority or low-income population. Additionally, the proposed action will not displace any resident or eliminate any jobs, rather the proposed action is anticipated to result in the net gain of jobs on WAAF/Mid-Coast Regional Airport. Finally, the proposed action will not adversely impact the protection of children due to construction being completed in compliance with all applicable environmental standards.

**Table 1: Summary of Environmental Impacts**

<b>RESOURCE</b>	<b>NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION</b>
<b>Water Quality and Resources</b>		
<b>Direct / Indirect</b>	No Impact	Moderate
<b>Cumulative</b>	None	Moderate
<b>Land Use</b>		
<b>Direct / Indirect</b>	No Impact	Minor
<b>Cumulative</b>	None	Negligible
<b>Socioeconomic Issues</b>		
<b>Direct / Indirect</b>	Moderately adverse	Moderately beneficial
<b>Cumulative</b>	Moderately adverse	Moderately beneficial

#### **4. SUMMARY OF CUMMULATIVE IMPACTS**

CEQ regulations (40 CFR 150.7) require an analysis of the cumulative impacts resulting from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of who undertakes these other actions. Cumulative impacts can result from individually minor, but collectively significant, actions.

This cumulative impacts section of this Supplemental EA addresses only the cumulative effects arising from considering the Proposed Action in combination with other ongoing or proposed actions at Ft Stewart. The cumulative impacts of the Proposed Action are evaluated within the context of the greater Ft Stewart area, including WAAF.

There are a variety of projects in line to implement the goals and objectives of Ft Stewart and promote efficient and logical development of the post and enhance administration, logistics, quality of life, and support services.

Moderate adverse cumulative impacts to water quality and resources are expected to occur within the proposed action area. Areas of WAAF have undergone tree removal in wetland areas as well as permitted (in accordance with Section 404 of the CWA) filling in portions of contiguous wetland areas that connect within the Proposed Action location. All adverse wetland impacts within the ROI have received appropriate “in-kind” mitigation as is expected of the Proposed Action.

Cumulative impacts to land use within the ROI is considered negligible. Army and National Guard units can continue to utilize A-19 training area as a land navigation course.

Moderately beneficial cumulative impacts to socioeconomic issues within the ROI are anticipated to occur. The proposed action would lead to the much needed runway improvements at the WAAF / MidCoast Regional Airport facility. The improvements allow for the overall increase in on-site and off-site industrial marketability. The proposed action will lead to an overall increase to the Liberty County economy through the increase in jobs from current and potential future industrial and commercial business growth. The proposed action will not affect the recreational use of any person due to the proposed action area not being open to the public for any recreational use. The proposed action will not negatively affect human health, economic, or environmental status upon any minority or low-income population. Additionally, the proposed action will not displace any resident or eliminate any jobs, rather the proposed action is anticipated to result in the net gain of jobs on WAAF/Mid-Coast Regional Airport. Finally, the proposed action will not adversely impact the protection of children due to construction being completed in compliance with all applicable environmental standards.

## **5. CONCLUSIONS**

This Supplemental EA analyzed the potential environmental impacts associated with the construction, operation, and maintenance of drainage improvements within training area A-19, as well as a 1,500-foot extension to Runway 6L and the installation of an ILS at WAAF on Fort Stewart, Georgia. Following an analysis and comparison of impacts of the No Action and Proposed Action alternatives, it was determined that neither will result in significant impacts, and that the preparation of a FNSI by the Army for the proposed action was appropriate.

Irreversible and irretrievable resource commitments are related to the non-renewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource; such as energy and minerals, which cannot be regained. The proposed action will have no impact on irretrievable commitment or resources. The proposed action will not result in the use of or destruction of any specific resource that cannot be regained in the future.

## **6. REQUIRED PERMITS AND LICENSES**

Best Management Practices as defined by the Georgia's Department of Natural Resources, Environmental Protection Division and Georgia Soil and Water Conservation Commission must be followed to prevent erosion, consequent damage to endangered species habitat, or sedimentation of streams and wetland areas. Projects one acre or greater require a state approved Erosion and Sedimentation Control Plan, NRCS technical oversight, fee submittal for disturbed acreage, and Notice of Intent. The Directorate of Public Works will provide an engineering review and sign off. Due to the potential for encountering UXO, construction activities must be coordinated with the Fort Stewart Safety Office with regard to UXO safety issues and the potential need for UXO sweeps. An individual permit under the Section 404 of the Clean Water Act must be obtained from the ACOE prior to any wetland impacts. In support of this permit, a Water Quality Certification (under Section 401 of the CWA) and a Federal Consistency Certification (under the Federal Coastal Management Program) must both be obtained from the Georgia Department of Natural Resources.

## **7. LITERATURE CONSULTED**

The Supplemental EA incorporates by reference provisions of the following documents:

Army Regulation 200-1, Environmental Protection and Enhancement, HQ, Department of the Army, 1997.

Army Regulation 200-3, Natural Resources – Land, Forest and Wildlife Management, HQ, Department of the Army, 1995.

Cultural Resource Management (2015) Fort Stewart and Hunter Army Airfield Archaeological Site Database. Fort Stewart: DPW Environmental Division.

Directorate of Public Works (DPW), Final EA and FONSI for Establishment of Wright Army Airfield as a Joint Use Airfield and lease of 34 acres to the Liberty County Development Authority, February 2003.

Endangered Species Act of 1973 (as amended), US Fish and Wildlife Service, Washington, DC, 1988

Environmental Analysis of Army Actions; Final Rule, 32 Part 651, Department of the Army, Washington, DC, 2002.

Environmental Noise Program, 2004. Draft Environmental Noise Management Plan and Installation Compatible Use Zone Study for Fort Stewart, Georgia; Directorate of Environmental Health Engineering; US Army Center for Health Promotion and Preventive Medicine, 5158 Blackhawk Road, Aberdeen Proving Ground, Maryland 21010-5422

Executive Order 11990, Protection of Wetlands, 1977.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations, 1994.

Executive Order 13045, Environmental Health and Safety Risk Upon Children, 1997.

Fortune, Molly and Maggioni, Joseph P. (2002). *Building Inventory Fort Stewart, Georgia: An Inventory of Department of Defense Buildings Built Prior to 1989*. Fort Stewart: DPW Environmental Division.

Georgia Department of Transportation, Average Daily Traffic Counts, Liberty County, 2001-2005.

Georgia Department of Natural Resources. 1999. Protected Animals of Georgia. Georgia Department of Natural Resources. 1995. Protected Plants of Georgia.

Georgia Forestry Commission, 1999. Georgia's Best Management Practices for Forestry.

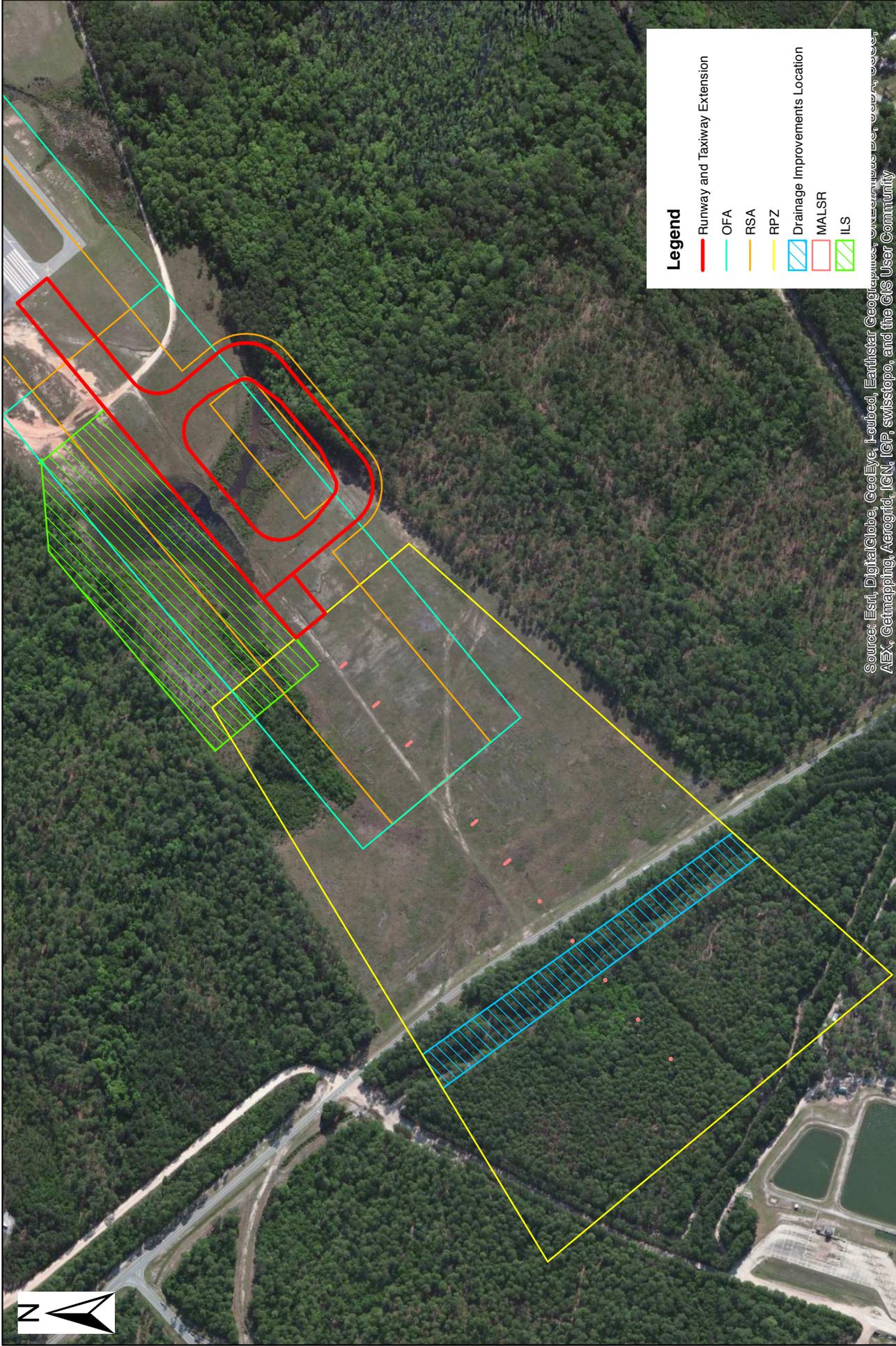
Management Guidelines for the Red-cockaded Woodpecker on Army Installations, Headquarters, Department of the Army, Washington, DC, May 1996.

Morehead, James R., William R. Mallory, Carrie Williams-Bourgeois, L. Janice Campbell, James H. Mathews, and Eric Ian Hamilton. (2008). *Cultural Resources Survey at Fort Stewart Military Reservation (Vols.1-3) [Delivery Order 9] (NRMUs A18.2, A18.3, A18.5, A19.2, A20.1, AWAAF, B5.1, B5.2, B6.2, C5.3, D2.1, D3.4, D3.7, D4.3, D4.4, D15.1, DTRASH, F10.1, F14.1, F19.1, F19.2, F19.4, F20.1, F20.2, & F20.4) In Bryan, Evans, Liberty and Long Counties, Georgia*. Prentice Thomas and Associates, Inc., Mary Esther, Florida. Submitted to the National Park Service, Southeast Archeological Center, Tallahassee, and the Directorate of Public Works, Environmental Branch, Fort Stewart, Georgia under Contract# C5000030247.

Phase I Cultural Resources Survey of the Wright Army Airfield Joint Use Area II, Fort Stewart, Georgia, August 12, 2004.

Ross, James. (2004). *Archaeological Investigations at Fort Stewart: An Intensive Archaeological Survey of 9,690 Acres (NRMUs A2.1, A2.2, A11.2, BEOD, B9.5, B10.2, B21.1, B22.2, B24.1, B24.3, E5.1, E6.1, E6.2, E7.3.2, E21.4, F1.3, and F12.4 in Bryan, Evans, Liberty and Long Counties) at Fort Stewart, Georgia [Delivery Order 7]*. Panamerican Consultants, Inc. Submitted to the National Park Service, Southeast Regional Office, Atlanta, and funded by the Directorate of Public Works, Environmental Branch, Fort Stewart under Contract #1443CX509098044.

# **FIGURES**



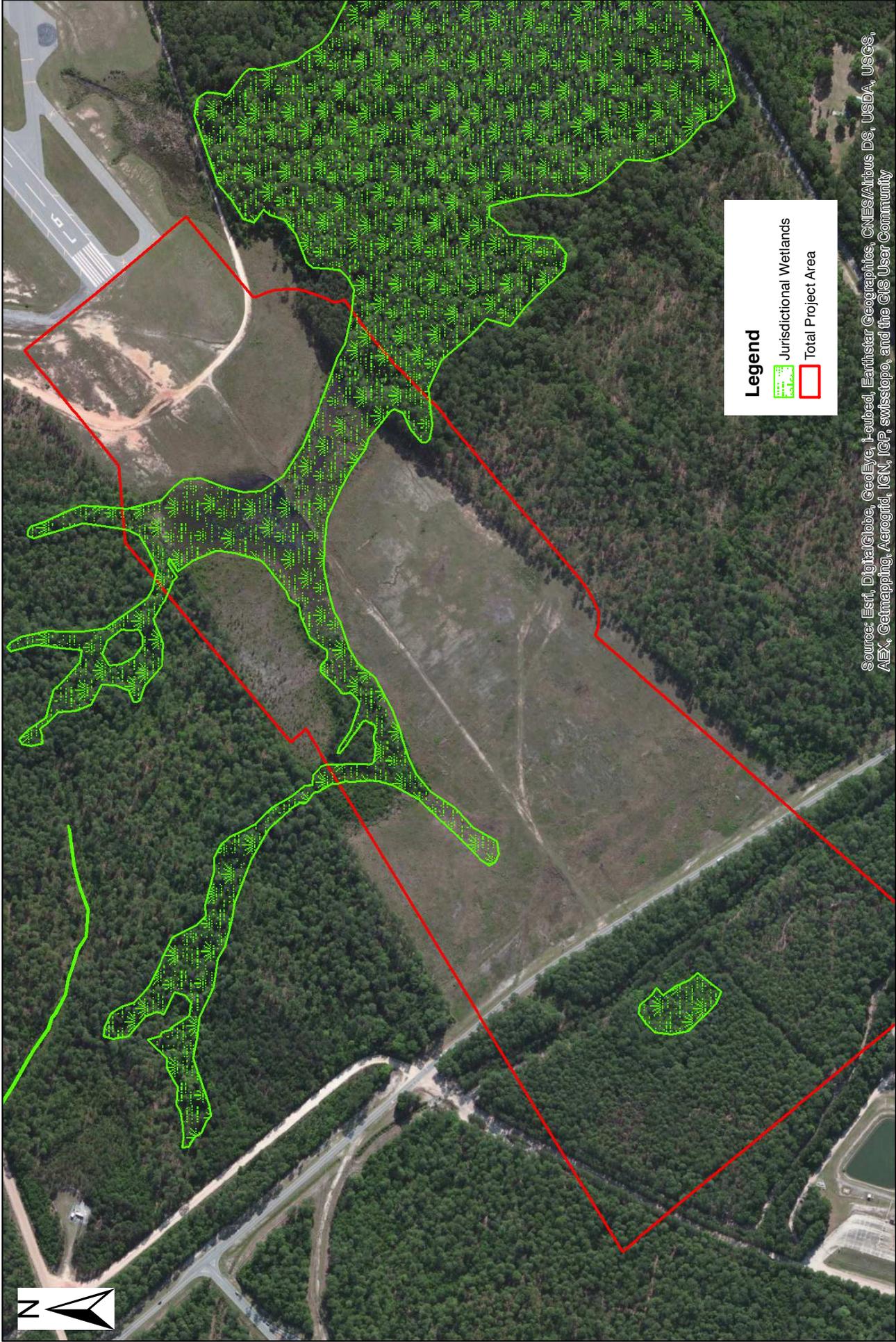
**Legend**

- Runway and Taxiway Extension
- OFA
- RFA
- RPZ
- Drainage Improvements Location
- MALSR
- ILS

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

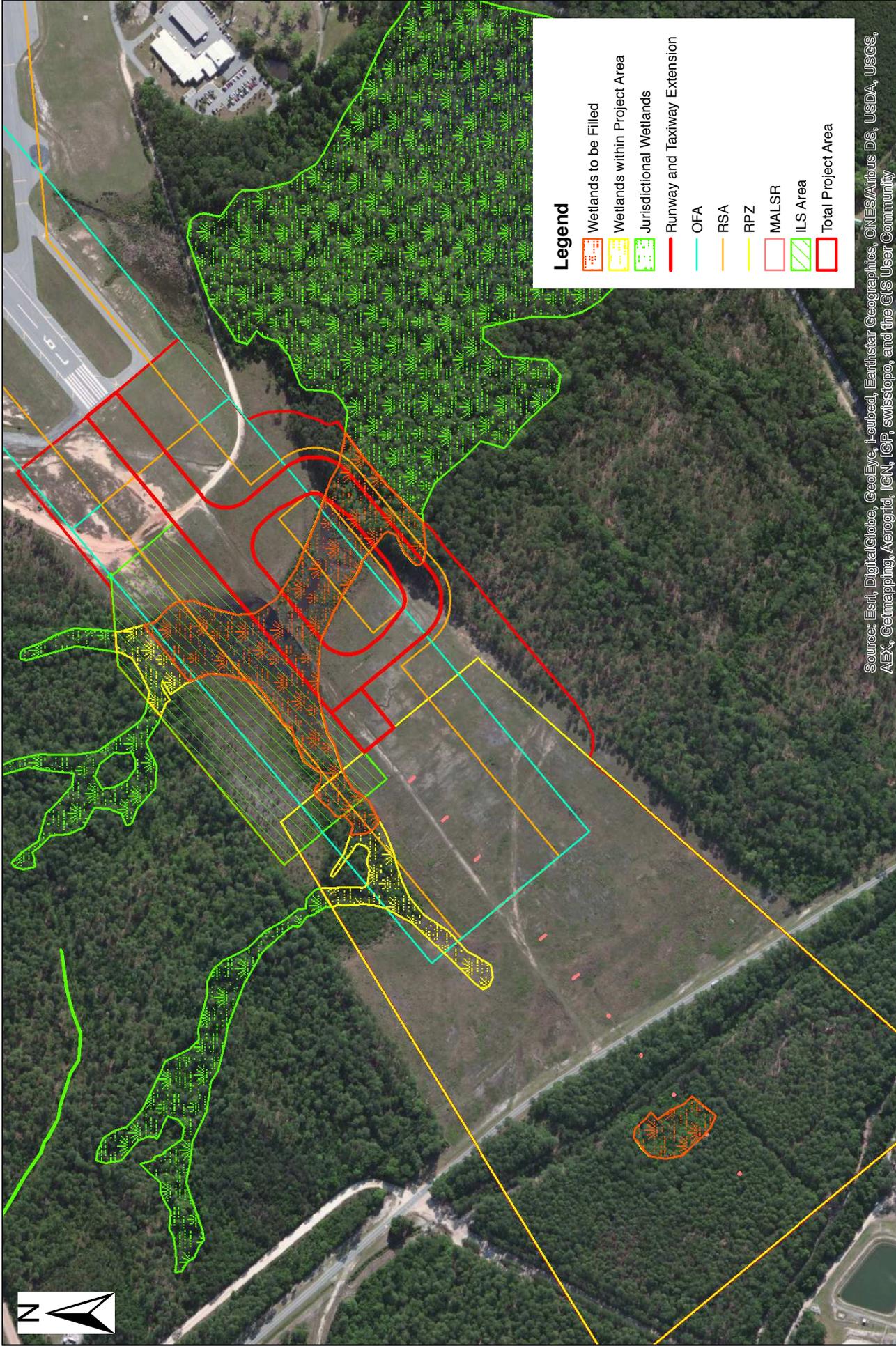
**Runway Expansion and Dry Detention Basin Overview**  
 MidCoast Regional Airport / WAAF SEA  
 Runway Expansion Project  
 1116 E. Lowes Circle  
 Fort Stewart, Georgia 31314  
 Drawing Date: March 31, 2015





Jurisdictional Wetlands Within Project Area  
 MidCoast Regional Airport / WAAF SEA  
 Runway Expansion Project  
 1116 E. Lowes Circle  
 Fort Stewart, Georgia 31314  
 Drawing Date: March 31, 2015





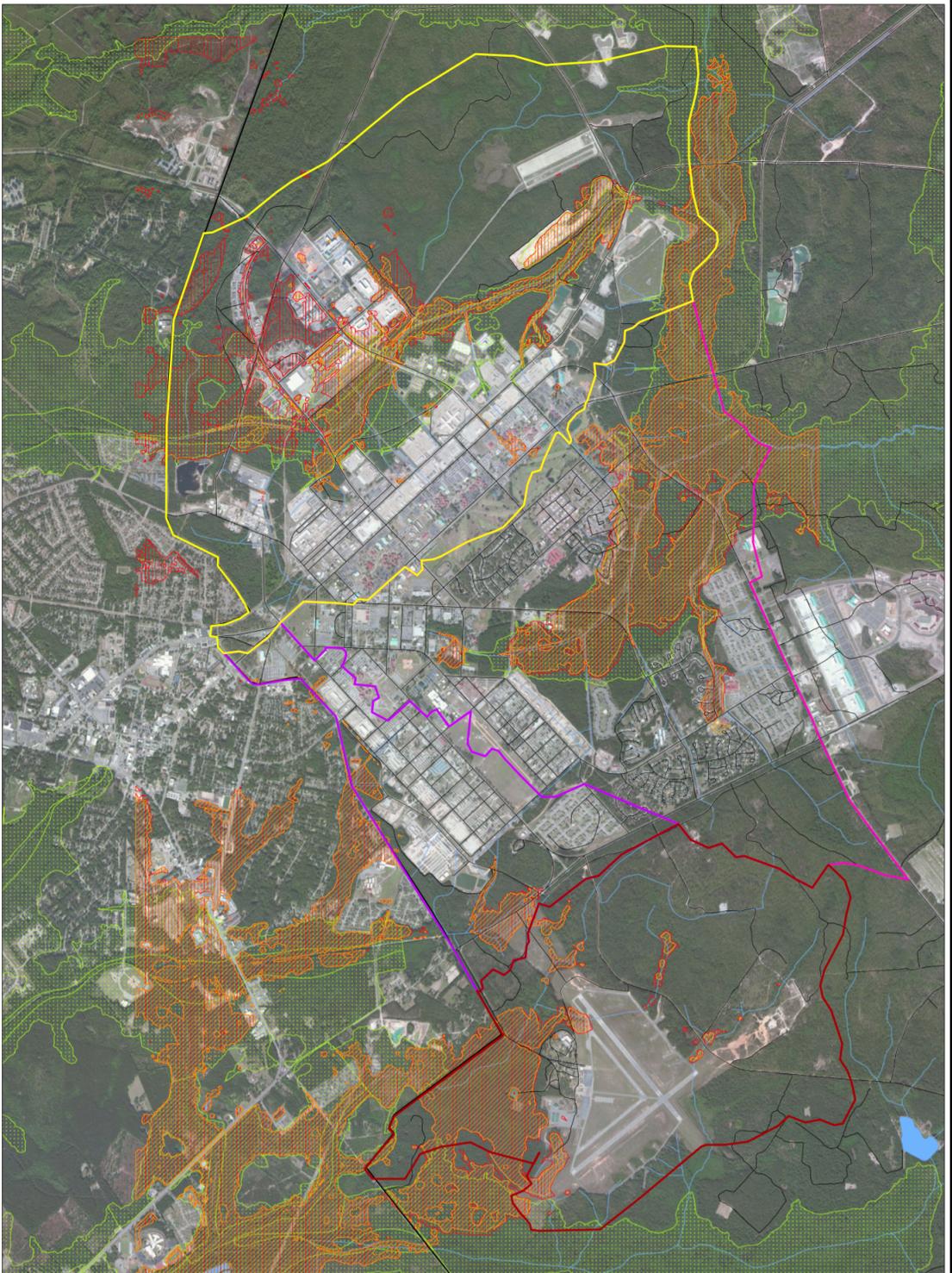
**Legend**

- Wetlands to be Filled
- Wetlands within Project Area
- Jurisdictional Wetlands
- Runway and Taxiway Extension
- OFA
- RSA
- RPZ
- MALS
- ILS Area
- Total Project Area

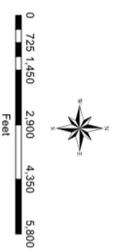
Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

**Extent of Wetland Fill for Proposed Action**  
**MidCoast Regional Airport / WAAF SEA**  
**Runway Expansion Project**  
**1116 E. Lowes Circle**  
**Fort Stewart, Georgia 31314**  
**Drawing Date: March 31, 2015**





- Legend**
- Roads
  - Surface Water
  - Watershed Boundary
  - Mill Creek
  - Taylor's Creek
  - Goshen Swamp
  - Melvin Swamp
  - Installation Boundary
  - 25 Year Storm
  - 100 Year Storm
  - FEMA 100 Year Flood Zone
  - Existing Water Body



Coordinate System:  
 WGS 1984 UTM Zone 17N  
 Projection:  
 Transverse Mercator

**Appendix C**  
**Post-Development (2011)**  
**Flood Inundation**  
 Fort Stewart, Georgia




**ARROWOOD**  
 ENVIRONMENTAL GROUP, INC.

P.O. Box 61237  
 Savannah, Ga 31420  
 912-920-2598 888-880-3520 FAX

**KEY:**  
 See Map

**Site Information**  
 Floodplains Located Within Project Area  
 Wright Army Airfield  
 Supplemental EA  
 Ft. Stewart, Liberty County, Georgia

**SCALE:** See Map  
**DATE:** 2/4/15  
**DRAWN BY:** SLS  
**CHECKED BY:** LM

**Source:** Weston Solutions  
 Provided by: Fort Stewart



**FIGURE:**

**7**