
DRAFT ENVIRONMENTAL ASSESSMENT
AND DRAFT FINDING OF NO SIGNIFICANT IMPACT
FOR
B-3 BATTLE AREA IMPROVEMENTS
AT
FORT STEWART, GEORGIA

MARCH 2015

In compliance with the National Environmental Policy Act of 1969

**DRAFT ENVIRONMENTAL ASSESSMENT &
FINDING OF NO SIGNIFICANT IMPACT FOR
B-3 BATTLE AREA IMPROVEMENTS
AT FORT STEWART, GEORGIA**

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DRAFT FINDING OF NO SIGNIFICANT IMPACT (FNSI)

1.0 INTRODUCTION

The Army has identified an inability to meet Army doctrine for indirect live fire training on Fort Stewart, Georgia (FSGA), and is therefore proposing to improve the only available footprint on FSGA that can accommodate this training, the B-3 Battle Area. The B-3 Battle Area is the only training facility located in proximity to FSGA's Artillery Impact Area (AIA) and Observation Points (OPs) 1 through 4, which are used to conduct indirect live fire training on FSGA. Whereas direct fire requires aiming the gun directly at a target that can be seen, indirect fire requires aiming the gun at a target that cannot be directly observed, noting the fall of the shot, and calculating new, corrected elevation angles through coordination with off-site forward observers.

During indirect live fire training exercises, units conduct maneuver training upon their approach to the OPs. Army doctrine requires units to train in the same maneuver space conditions for live-fire, tactical movement, and resupply as they would in combat situations. In its current state, the B-3 Battle Area is heavily wooded and overgrown with dense vegetation, preventing realistic training as required by Army doctrine.

2.0 PURPOSE AND NEED

The purpose of the proposed action is to provide the Army the capability to conduct realistic indirect live fire training in accordance with Army doctrinal standards on FSGA. This is necessary to ensure the 3rd Infantry Division and other units are adequately trained to the standards required to meet the nation's current and future warfighting requirements.

3.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The Army proposes to conduct a clearcut of approximately 15 acres to establish line of sight from the observation points into the AIA, widen tank trails, expand an existing helicopter landing zone, and establish training event start lanes. This will consist of removing all merchantable (saleable) timber and all non-merchantable timber, stumps, bushes, logging slash, and remaining debris. The Army will also selectively remove (or thin) approximately 200 acres of merchantable timber to improve overall maneuverability and open up new lanes of travel for vehicles during indirect live fire training events. The densely forested under- and midstory currently limits the directions in which military vehicles may maneuver, hampering realism and effectiveness of the training.

Heavy mowing will occur throughout approximately 500 acres to improve dismounted maneuverability (on-foot maneuvers). The current thick understory impedes land navigation, as it is difficult to make out the terrain, landmarks, and other points of interest often developed during pre-briefs prior to the training event. This not only impacts the efficiency of a training event, but can result in safety issues during training. Following the site improvements, training will resume at the B-3 Battle Area, and the ITAM Office will continue to conduct post-training site inspections, followed by as-needed repairs and site maintenance.

4.0 ENVIRONMENTAL ANALYSIS

Chapter 3 of the Draft EA discusses the potential environmental consequences associated with implementing the No Action and the Proposed Action Alternative. Implementation of the Proposed Action and/or its Alternative has the potential to impact Water Quality and Resources, Biological Resources, and

Health and Safety. Other environmental resources to which no potential impacts are anticipated are not discussed in detail in the main body of the Final EA, but are instead briefly discussed in Appendix B of the Draft EA.

Type of Impact	Alternative I (No Action)	Alternative II (Preferred) Proposed Action
Water Quality and Resources		
Direct / Indirect	No Impact	Negligible
Cumulative	No Impact	Minor
Biological Resources		
Direct / Indirect	No Impact	Negligible
Cumulative	No Impact	Negligible
Health and Safety		
Direct/Indirect	Minor	Beneficial
Cumulative	No Impact	Negligible

Table ES 1. Summary of Environmental Impacts

5.0 PUBLIC REVIEW AND COMMENTS

The Draft EA for B-3 Battle Area Improvements on Fort Stewart, Georgia will be available for a 30-day public review period (March 27 – April 25, 2015) at the Live Oak and Oglethorpe Mall Branches of the Savannah Public Library, the Live Oak Public Library in Hinesville, and at the Post Library on Fort Stewart. The Notice of Availability (NOA) of the Draft EA/FNSI will be published in the *Savannah Morning News*, *Coastal Courier*, and *The Frontline* in the Savannah/Fort Stewart area. Notification of the Draft EA/Draft FNSI’s availability will also be mailed to the members of the regulatory community and joint land use partners with whom the Installation consults, to include the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers (Wetland Regulatory Division), Georgia State Historic Preservation Office, and the Cities of Hinesville, Glennville, and Statesboro, Georgia, among others. All comments and/or correspondence on the draft documents received from any of these stakeholders will be appropriately incorporated into the final documents associated with this proposed action.

6.0 CONCLUSIONS

The *Draft EA for B-3 Battle Area Improvements on Fort Stewart, Georgia*, was prepared to analyze the potential environmental impacts associated with conducting site specific actions designed to enhance the realism, effectiveness, and sustainability of this training resource on FSGA. Based on my review of the Draft EA and after consulting my environmental compliance team, I have concluded that no significant environmental impacts are anticipated to result from the implementation of the Proposed Action (Alternative II). Therefore, an Environmental Impact Statement is not required.

Kevin F. Gregory
Colonel, U.S. Army
Commanding

Date

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1.0 INTRODUCTION

The Sustainable Range Program (SRP) is the U.S. Army's overall approach to maximize the capability, availability, and accessibility of ranges and training lands to support doctrinal requirements, mobilizations, and deployments (DA, 2005). It is defined by its two core programs, the Range and Training Land Program (RTLTP) and the Integrated Training Area Management (ITAM) Program. The RTLTP establishes the operations / training functions of land management, including identification of doctrinally based training range and training land requirements; and the day-to-day range operations activities, such as training event scheduling (DA, 2005).

The ITAM Program integrates the mission requirements derived from the RTLTP with environmental requirements and environmental management practices and establishes the policies and procedures to achieve optimum, sustainable use of training and testing lands by implementing a uniform land management program (DA, 2005). Early and consistent coordination with the Installation's Environmental Office is an ongoing part of this process, working toward a goal of sustaining both the Army Mission and the environment. On Fort Stewart, Georgia (FSGA), the ITAM Office conducts inspections of training lands and ranges on a routine schedule, during which time recommended land management repairs are either planned for immediate or future execution. The FSGA ITAM Office coordinates its planned land management actions with the Installation's Environmental Office to integrate environmental considerations such as erosion control, pollution prevention, noise avoidance, wildlife management, endangered species protection, and wetlands avoidance.

The Army has identified an inability to meet Army doctrine for indirect live fire training on FSGA, and is therefore proposing to improve the only available footprint on FSGA that can accommodate this training, the B-3 Battle Area. The B-3 Battle Area is the only training facility located in proximity to FSGA's Artillery Impact Area (AIA) and Observation Points (OPs) 1 through 4, which are used to conduct indirect live fire training on FSGA. Whereas direct fire requires aiming the gun directly at a target that can be seen, indirect fire requires aiming the gun at a target that cannot be directly observed, noting the fall of the shot, and calculating new, corrected elevation angles through coordination with off-site forward observers.

The B-3 Battle Area is a crucial training resource, ensuring Infantry battalions and attached forward observers achieve optimal skill levels. Indirect live fire training is the primary use of the B-3 Battle Area; however, it may also be used for joint use exercises that require adjacency to the AIA, such as Combined Live Fire Exercises that integrate both Field Artillery and Infantry units maneuvering toward and coordinating indirect fire at targets located within the AIA. The AIA buffer is not accessed by of these units while training in the B-3 Battle Area. During indirect live fire training exercises, units conduct maneuver training upon their approach to the OPs. Army doctrine requires units to train in the same maneuver space conditions for live-fire, tactical movement, and resupply as they would in combat situations. In its current state, the B-3 Battle Area is heavily wooded and overgrown with dense vegetation, preventing realistic training that meets Army doctrine.

This Draft Environmental Assessment analyzes the potential environmental impacts of the B-3 Battle Area improvements on FSGA, 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 Code of Federal Regulations [CFR], Parts 1500 to 1508); and Army Regulation 200-2, *Environmental Effects of Army Actions*, as promulgated in 32 CFR 651.

1.1 INSTALLATION BACKGROUND

FSGA is the largest Army Installation east of the Mississippi River, covering approximately 279,270 acres in parts of Liberty, Long, Bryan, Evans, and Tattnall counties (Figure 1). The Installation is approximately 39 miles across from east to west and approximately 19 miles from north to south. Fort Stewart was established by the Army in 1940 to train Soldiers inducted into the General Infantry in anticipation of the United States entering World War II. The Army named the new Post, Camp Stewart, in honor of Daniel Stewart, a local Revolutionary War veteran and state political leader who was later brevetted as a Brigadier General in the Georgia Militia, an organization that is now more commonly referred to as the Georgia National Guard. After World War II ended, the Army deactivated Camp Stewart, but reopened it four years later during the early stages of the Korean Conflict.

In 1953, the Army authorized construction of tank unit firing ranges and maneuver areas. The following year, the Post was renamed Camp Stewart Anti-Aircraft Artillery and Tank Training Center. In 1956, the Post became a permanent Army Installation and was renamed Fort Stewart. Major changes in the Army's force structure resulted in corresponding changes at Fort Stewart, specifically the activation of the Post's 1st Brigade, 24th Infantry Division. With this change, the Post entered a new era, adding infantry elements to its predominantly mechanized areas of expertise. In June 1996, the 24th Infantry Division was reflagged the 3rd Infantry Division (Mechanized), also known as the "Marne Division" for the division's heroic exploits on the Marne battlefields in France during WWI. Today, Fort Stewart also comprises Hunter Army Airfield in Savannah, and together, along with the Port of Savannah, they are considered the Army's Premier Power Projecting Platform on the Atlantic Coast of the United States.

1.2 PURPOSE AND NEED

The purpose of the proposed action is to effectively provide the Army with the capability to conduct indirect live fire training on FSGA in accordance with Army doctrinal standards. The proposed action is necessary to ensure the 3rd Infantry Division and other units are adequately trained to the standards required to meet our nation's current and future warfighting requirements.

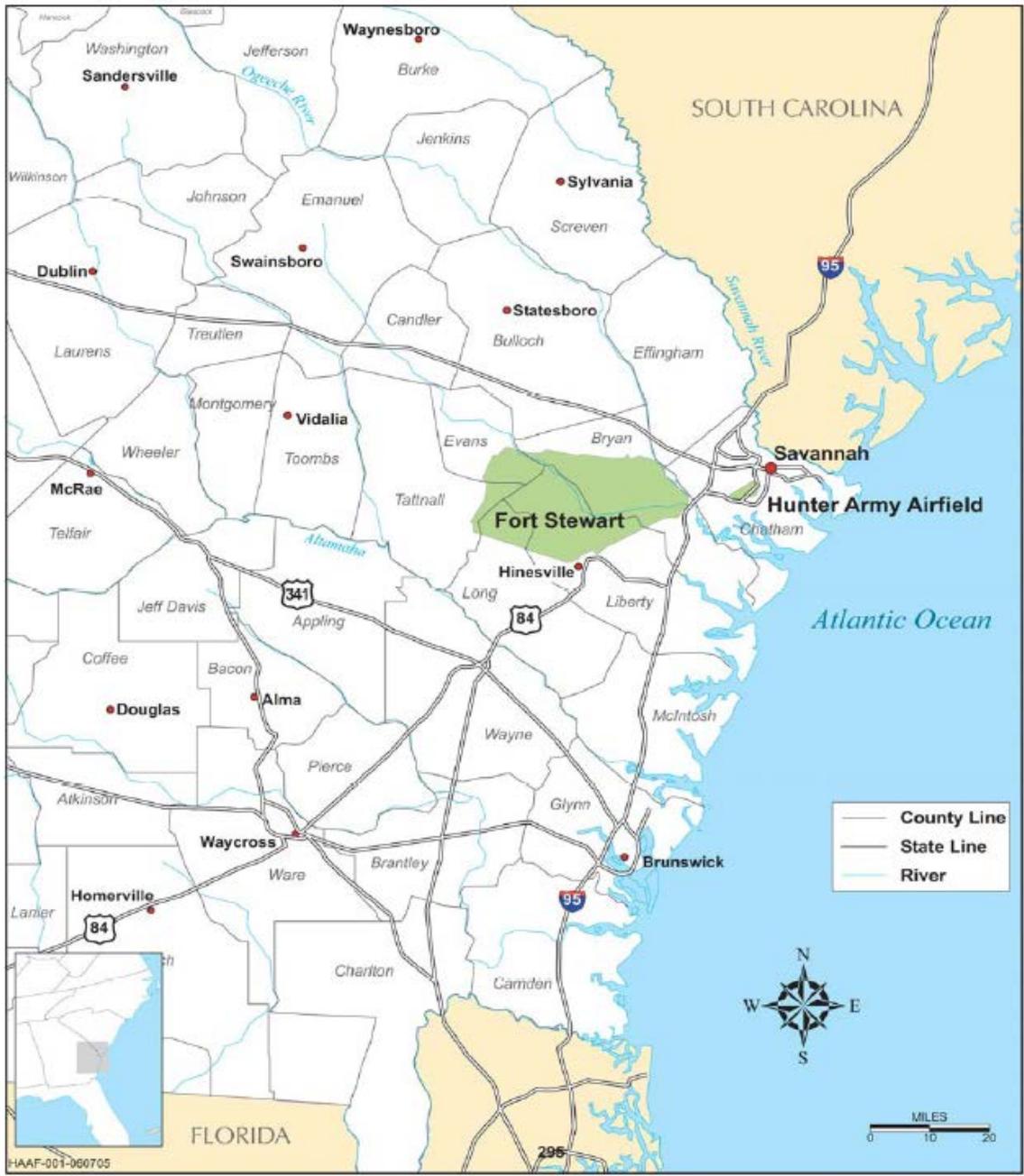


Figure 1. Location of Fort Stewart.

2.0 DESCRIPTION OF THE PROPOSED ACTION & ALTERNATIVES

2.1 INTRODUCTION

The Army utilized a collaborative interdisciplinary (ID) team approach to evaluate the proposed action and alternatives to determine if they met the purpose and need of the proposed action. This collaborative process involved personnel from FSGA's Directorate of Plans, Training, Mobilization, and Safety Training Division and FSGA's Directorate of Public Works Environmental Division. The team collected and evaluated information relevant to the proposed action.

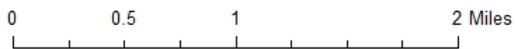
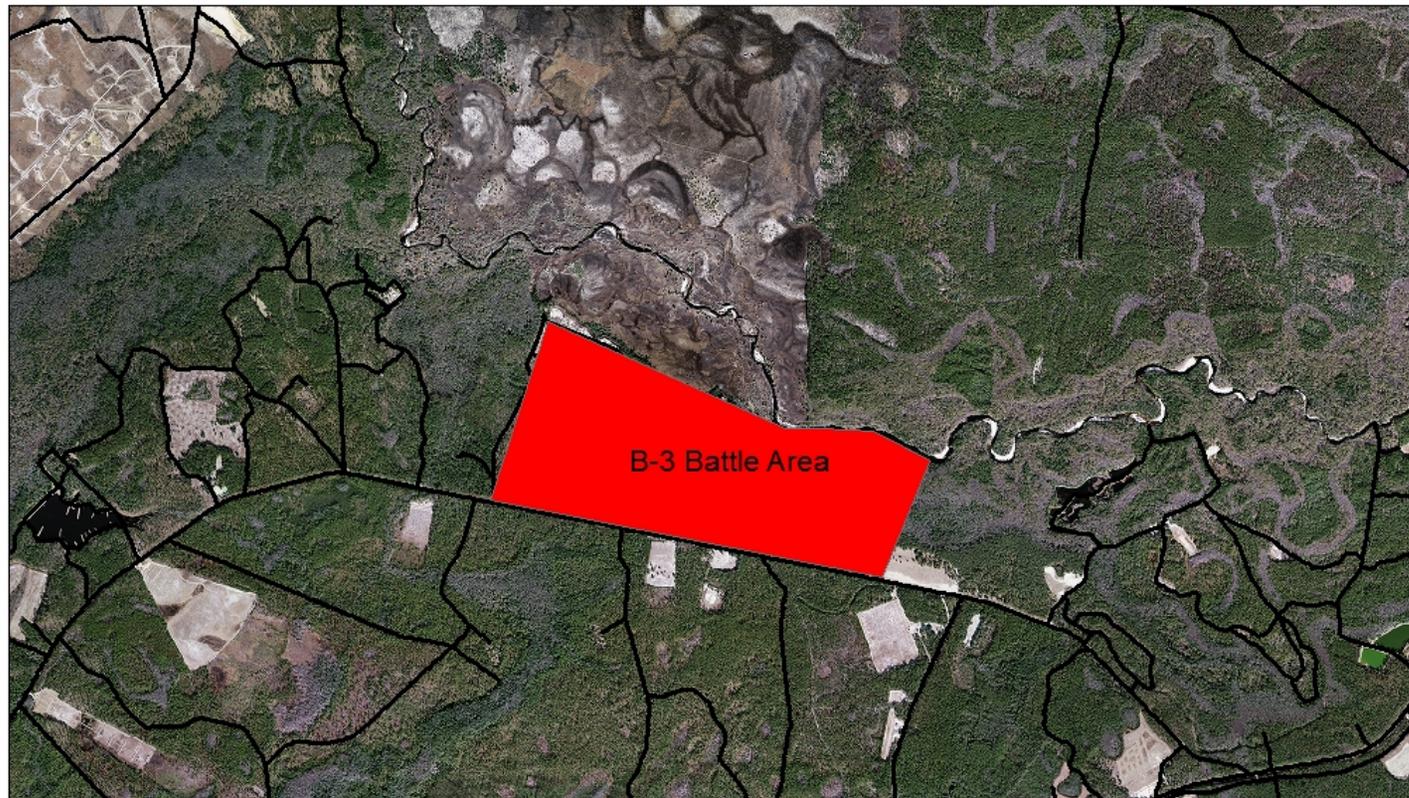
2.2 SCREENING CRITERIA

The Army developed the following screening criteria to determine feasible action alternatives that meet the purpose and need of the proposed action.

- **Army Training Doctrine.** Alternatives must maximize the current and future capability, availability and accessibility of the training land to support realistic indirect live fire training. These standards are described in Army Regulation 385-10, *The Army Safety Program* (DA, 2013), Training Circular (TC) 25-1, *Training Land* (DA, 2004), and TC 3-09.8, *Field Artillery Gunnery* (DA, 2013). Army training doctrine also includes the requirement for units to train to standard at the units' home station, as defined in AR 350-1, *Army Training and Leader Development DA*, (DA, 2014). This minimizes expenditures of the units' money and time related to transportation to another training site (OPTEMPO) and maximizes training efficiency.
- **Elevation and Visibility.** Alternatives must have an elevation providing an unobstructed view into the FSGA AIA. An elevation sloping downward into the AIA is a key feature for LOS to the targets lying the furthest within the AIA.
- **Minimal Environmental Impact.** Alternatives must minimize environmental impact and allow for sound natural resources management.

2.3 ALTERNATIVES

The Army conducted a thorough analysis to identify alternatives to meet the proposed action, utilizing the Screening Criteria discussed in Section 2.2, above. The analysis resulted in one alternative being carried forward for a more detailed analysis (as discussed in Section 2.3) and in other alternatives not being carried forward for more detailed analysis (for reasons discussed in Section 2.4).



Legend

- Fort Stewart Roads
- ▭ Installation Boundary



Figure 2: B-3 Battle Area Location Map.

2.3.1 ALTERNATIVE I: NO ACTION / STATUS QUO

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]). Under the No Action Alternative, the Army will not conduct any of the proposed improvements and continue to only offer limited indirect live fire training that does not meet Army training doctrine.

2.3.2 ALTERNATIVE II: PROPOSED ACTION

Under this alternative, the Army will improve the FSGA B-3 Battle Area (Figure 2), resulting in this location becoming a more realistic, safe, efficient, and sustainable training resource for indirect live fire training on FSGA. Requirements are broken down as follows and as illustrated in Figure 3; photographs of each location identified below are at Appendix A. This alternative meets the purpose and need of the proposed action and would provide indirect live fire training that meets Army training doctrine.

A. Clearcut to Establish Line of Sight (LOS), Widen Trails, Expand Helicopter Landing Zone, and Establish Training Event Start Lanes. The Army will conduct a clearcut (Type II Site Preparation) at the locations below, totaling approximately 15 acres, which will consist of removing all merchantable (saleable) trees and all non-merchantable trees, stumps, bushes, logging slash, and remaining debris; see corresponding figures for additional, site-specific details.

- **Locations 1, 7, and 9.** Line of Sight (LOS) issues will be corrected at OPs 1-4 via the removal of approximately 4.6 acres of standing timber. The targets in the AIA are set at different distances and locations from and between the OPs in the adjacent Battle Area. Currently, standing timber obstructs clear LOS to the targets in the AIA and between the OPs. There is also a safety issue regarding access into the Battle Area's eastern side. The LOS on the eastern side of OP1 is blocked by a sliver of trees. When Soldiers are in the training area, they cannot see approaching personnel from the western side, resulting in potential safety hazards due to these trees blocking their view. Removal of these trees will remove this safety hazard.
- **Location 6.** An existing single-helicopter landing zone will be expanded to a two helicopter landing zone. Removal of approximately 0.08 acres of trees along the landing zone's western edge will result in the size meeting the obstruction free zone requirements for the simultaneous landing and Troop drop-off of two helicopters at this site (DA, 2012). This will allow more Troops to be dropped in per training event. (*Note that this site is not utilized for emergency evacuations.*)
- **Locations 3, 4, and 10.** Tree removal (of varying acreage) will be required along these existing trails to achieve a final width of 40 feet. Currently, the existing trails range in width from 10-12 feet along some portions of their length, then narrow to six feet along other portions, too narrow to safely move equipment, supplies, and targets in and out of the western and eastern sections of the Battle Area. Equipment is frequently damaged during training events due to these narrow spans of trail. In addition, although military vehicles may maneuver off the trail and into the forest if required, these narrow trails become a safety hazard if emergency ingress/egress is required during a training event.

-
- **Location 8.** A clearcut of approximately one acre is required for the construction of a new 40-foot wide trail to allow trainers and senior observers to access OP1 without interrupting/impacting an ongoing training event. Currently, this is only possible via use of existing training roads and/or requesting a cease fire to allow access to the tower for observation.
 - **Location 5.** Approximately 1.3 acres of trees will be cleared to create four small start lanes along FS Road 144 within Location 5. These will serve as the training event start point for exercises at the B-3 Battle Area. No other clearcuts will be conducted within Location 5, the remainder of which will undergo selective timber thinning, as discussed below.

B. Thin Timber in Locations 5 and 11 of Battle Area to Improve Mounted Maneuver Access. The Army will conduct a merchantable timber removal of approximately 200 acres, in accordance with natural resource management guidelines (*discussed in further detail in Section 3.0 of this Draft EA*). This will improve maneuverability in the Battle Area and open up new lanes of travel through the Battle Area for mounted maneuver leading up to indirect live fire training events. The densely forested under- and midstory currently limits the directions in which military vehicles may maneuver, causing Troop to use only previously traveled, “beaten down” pathways from previous training. In doing so, Troops become accustomed or complacent knowing the common route has been used in previous training event. This hampers the realism and effectiveness of the training.

C. Heavy Mowing at Location 2 to Improve Dismounted Maneuver Access. The Army will remove heavy brush and small trees up to 6-inches in diameter (Type III Site preparation) throughout approximately 500 acres to improve dismounted maneuverability (on-foot maneuvers). The current thick understory impedes land navigation within the Battle Area, as it is difficult to make out the terrain, landmarks, and other points of interest often developed during pre-briefs prior to the training event. This not only impacts the efficiency of the training event, but can result in safety impacts as well, as the thick understory camouflages floor-level hazards such as fallen limbs, crevices, etc.

D. Routine Operations and Maintenance. Following the site improvements, training will resume at the B-3 Battle Area, and the ITAM Office will continue to conduct post-training site inspections, followed by as-needed repairs and site maintenance.

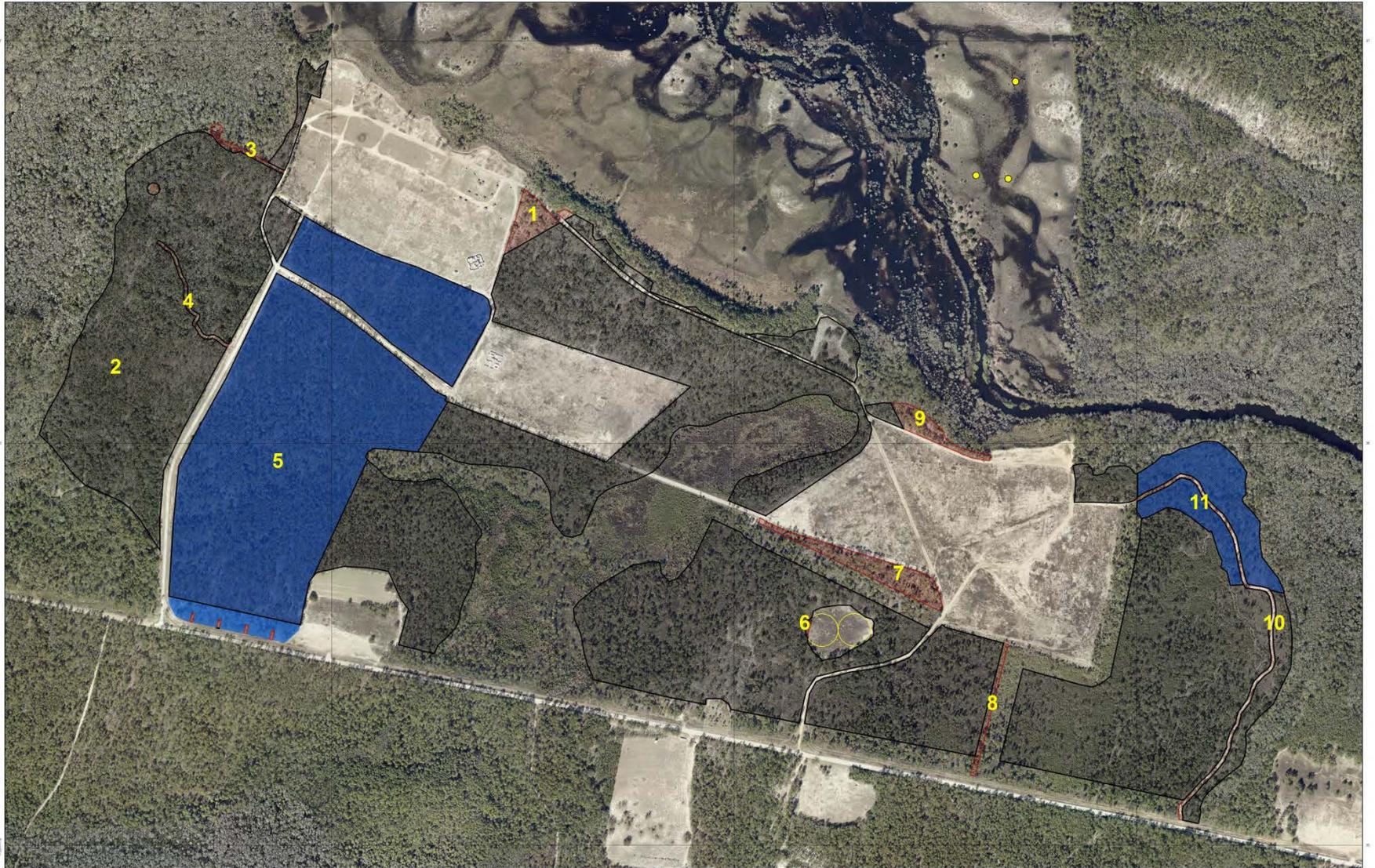


Figure 3: Proposed Action and No Action Alternative Areas.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED REVIEW

2.4.1 Build Towers or Mounds at Locations Other Than B-3 Battle Area

The ITAM Office has conducted several visibility assessments to determine if LOS to targets in the AIA could be achieved from structures other than OPs 1-4; specifically, from structures located outside of the B-3 Battle Area (hereafter, off-site locations).

One preliminary alternative proposed was to construct towers or mounds at off-site locations that would achieve the required elevation and visibility for the forward observer to see downward into the AIA and assist in the coordination of indirect fire (i.e., essentially taking the place of OPs 1-4 within the B-3 Battle Area). Alternative locations would also require adequate maneuver land acreage, as units conduct maneuver training during indirect live fire training events, as required by Army doctrine.

The ITAM Office determined that towers or mounds could be constructed and that sufficient maneuver acreage existed to support indirect live Fire training in Training Areas B-9, B-13 and B-18. However, these locations are heavily contaminated with UXO due to past and/or current military training and are located within the Surface Danger Zones of current ranges. In addition, conducting Indirect Live Fire Training at these locations would require temporarily shutting down the adjacent Red Cloud Range Complex and B-18 Live Fire Facilities, to ensure the safety of Soldiers' during training. Construction and subsequent training at these locations would therefore be prohibitive from both a safety standpoint (due to the large amount of UXO clearance required for the construction of the towers or mounds) as well as for the adverse impact to the Military mission associated with shutting down adjacent ranges.

The ITAM Office also determined that towers or mounds could be constructed on the western maneuver corridors, which are free of UXO. However, these locations are too far from the AIA to establish adequate LOS to targets within the AIA and would not improve indirect live fire training capability sufficient to meet Army training doctrine; therefore, construction and subsequent training at this location was also determined to be non-viable. Therefore, this preliminary alternative was not fully developed and carried forward for further analysis.

2.4.2 Off-Post Training

Another alternative explored was to conduct the indirect live fire training at other military installations. Individual Troop (one unit at a time) indirect live fire training can be accomplished at Fort Benning, Georgia, which is located 236 miles to the west of FSGA; however, the closest Installation that can accommodate collective Troop indirect live fire training (several units at a time per training event), such as that desired at the B-3 Battle Area, is Fort Bragg, N.C., which is located 300 miles to the north of FSGA. Conducting this training at another installation does not meet Army training doctrine requirements for units to train to standard at their home station, however, and this preliminary alternative was not fully developed and was not carried forward for further analysis.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

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

- *Beneficial.* A positive net impact.
- *Negligible.* No measurable impacts are expected. Any environmental impact would be barely perceptible, combined to a single location, or would not require a long recovery period (days to months).
- *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. Recovery may require several years or decades.
- *Potentially Significant.* Identifies when an impact would result in substantial adverse change or loss of resource.

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). If an alternative will not result in direct or indirect impacts to an environmental resource within the ROI, it will not contribute to cumulative impacts to that resource.

The ROI for the proposed action and its alternative consists of the B-3 Battle Area and the lands immediately surrounding it, as depicted on Figure 2. Implementation of the Proposed Action or the No Action Alternative may impact Water Quality and Resources, Biological Resources, and Health and Safety; therefore, only these three environmental resources are discussed in the ROI description below (Figure 4). Section 3.1 of this Draft EA presents a more detailed discussion of the affected environment, including which environmental resources are discussed/not discussed further in the remainder of this document.

- The Northern portion of the ROI consists of the Artillery Impact Area (AIA) and its buffer. Past and present actions consist of its use as a duded impact area into which large caliber live fire is directed. The AIA and AIA Buffer are undeveloped and sparsely forested, and no training or other activities currently occur within this area. Although some protected species are present, this portion of the Installation is not identified and managed as protected species habitat, due to the presence of excessive unexploded ordnance (UXO), which renders it unsafe to actively manage for this purpose (Carlile, 2014). The Canoochee River runs along the western and southern boundary of the ROI, and several (unnamed) tributary streams branch off to its northeast. No wetlands have been delineated within the AIA, also for safety reasons; however, the National Wetlands Inventory (NWI) indicates wetlands are likely adjacent to the Canoochee River and its tributaries, as is the 100 year floodplain at this location. Reasonably foreseeable future actions consist of its continued use as an AIA. There are no known projects within this portion of the ROI.

- The Western portion of the ROI is presently utilized by the Explosive Ordnance Detachment (EOD) to neutralize UXO and improvised explosive devices; it is also actively managed for wildlife/protected species. Past actions at this location have included mounted and dismounted training by various Military units. In advance of all training events, FSGA Range Control provides briefings and field cards to units that provide basic information on protected species, cultural resources, and other pertinent environmental information, in accordance with Fort Stewart Post Range Regulation 385-14 (DA, 1997). Habitat for the federally protected red-cockaded woodpecker (RCW) is at its southwestern edge and for the State of Georgia protected gopher tortoise throughout most of its western, northern, and southern portions. Unnamed tributaries of the Canoochee River flow within this portion of the ROI; although there are no wetlands delineations for this portion of the ROI, the NWI indicates wetlands are likely adjacent to its tributaries of the Canoochee River. Reasonably foreseeable future actions consist of its continued use as a training resource by the EOD and its active management for wildlife/protected species. There are no known construction projects within this portion of the ROI.
- The Southern portion of the ROI is mostly forested and undeveloped, with the exception of the Small Arms (SA) Ranges located directly along FS Road 144, including SAs India, Mike, and Golf. The past and present use of this portion of the ROI consists of SA training and management for wildlife/protected species. Although most of the ammunition remains within the boundaries of each SA Range (and their individual berms), the surrounding lands have the potential to contain UXO. There are small streams, wetlands, and ponds within this portion of the ROI, and several of the ponds have been identified as potential breeding ponds for the federally protected frosted flatwoods salamander; RCW habitat is also located within this portion of the ROI. Reasonably foreseeable future actions consist of continued training at the SA ranges and continued management for wildlife/protected species. There are no known construction projects within this portion of the ROI.
- The Eastern portion of the ROI is forested and undeveloped, and past and present actions in this location include training by various Military engineering units and wildlife/protected species management. Common engineering tasks include arming and disarming mines, and using explosives to breach windows, doors and walls, as well as earth moving activities with bulldozers and similar equipment. Prior to conducting these engineering training events, a pre-coordinated environmental review is completed and units are briefed on all required environmental protection measures applicable to the training site (for example: no mechanical digging within 200 feet of an RCW tree). In addition, units are provided with environmental briefings and field cards by FSGA Range Control, in accordance with Fort Stewart Post Range Regulation 385-14 (DA, 2008). The Canoochee River traverses the northern portion of the ROI at this location, and the NWI indicates there are potentially small streams and wetlands in this area. There are small areas of habitat suitable for the federally protected indigo snake and State of Georgia protected gopher tortoise. Reasonably foreseeable future actions consist of continued engineering training and continued management for wildlife/protected species. There are no known construction projects within this portion of the ROI.

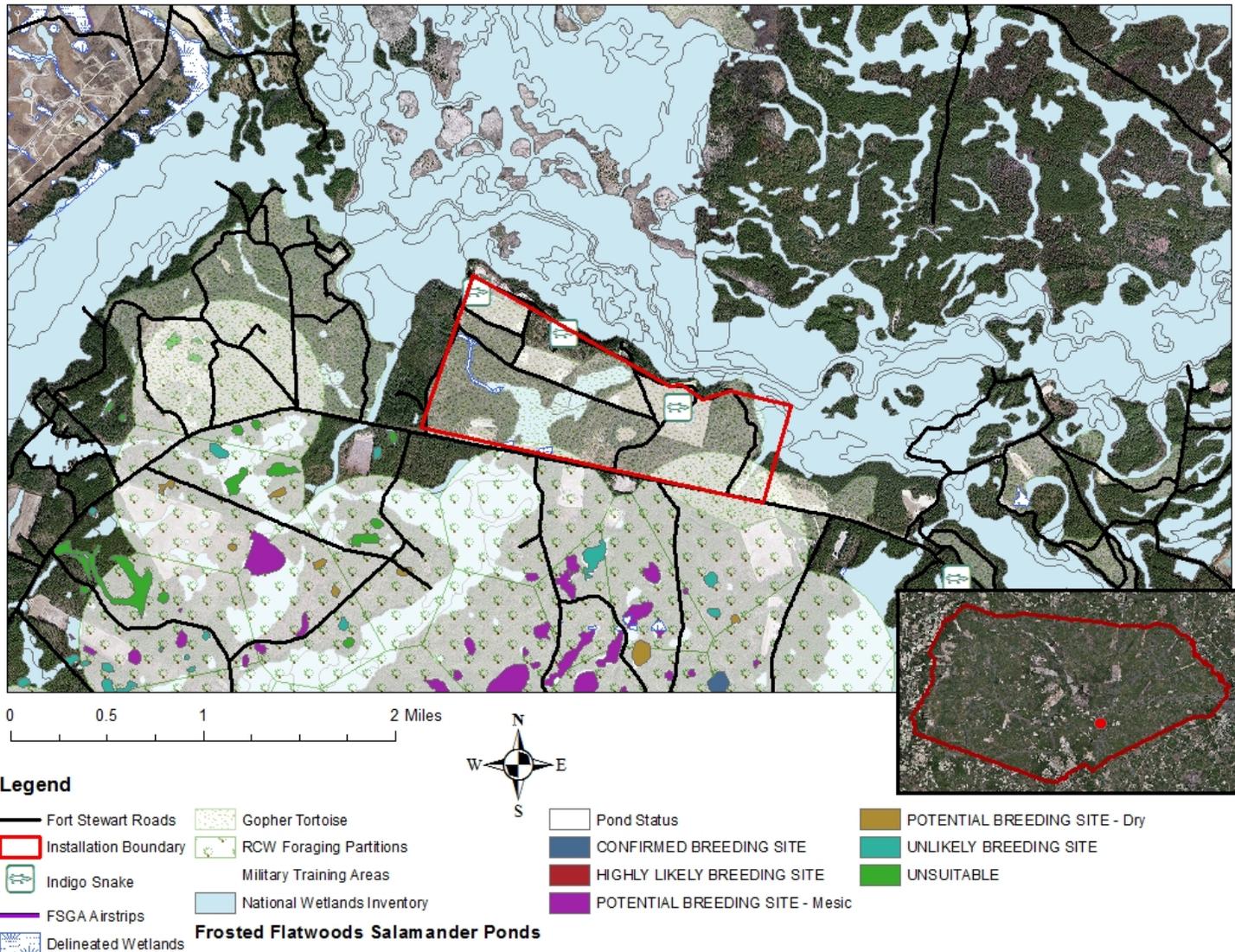


Figure 4: Sensitive Environmental Resources in the ROI.

3.1 RESOURCES ANALYZED

Implementation of the Proposed Action and/or its Alternative has the potential to result in impacts to Water Quality and Resources, Biological Resources, and Health and Safety, and their analysis is presented in detail in the remainder of this chapter. The Proposed Action and its Alternative will not result in impacts to Land Use, Cultural Resources, Air Quality, Groundwater Quality, Floodplains, Noise, Recreation and Visual Resources, Socioeconomics, Provision for the Handicapped/Environmental Justice/Protection of Children, and Transportation; accordingly, these resources are not discussed in detail in the main body of the Draft EA, but are instead briefly summarized in Appendix B.

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 U.S., including navigable waters, impoundments, tributary streams, and wetlands, is regulated and subject to federal permits under Section 404 of the CWA.

Wetlands. 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.” Approximately one-third of FSGA's 279,000 acres are wetlands of one type or another, based on the National Wetlands Inventory (NWI). The Army has made avoidance and minimization of wetlands impacts on FSGA a top priority. Wetlands are one of the primary factors considered when siting any project on FSGA.

Wetlands have been identified at the location of the proposed action and its alternative using the NWI and delineations associated with previously completed projects (Figure 5). Three wetlands delineations have been conducted at this location; one associated with the construction of a hardened water crossing where FS Road 104 crosses a tributary of the Canoochee River in the western portion of the project site; one for the construction of a hardened water crossing at the center of the project site; and one for an erosion control project along FS Road 144, which runs along the project site's southern border (*Note: denoted on Figure 5 as two separate wetlands along FS Road 144*). CWA Section 404 permits were obtained for all of these actions. No other delineations have been conducted at the proposed action site and FSGA utilized NWI data as a planning tool for actions proposed and analyzed within this Draft EA.

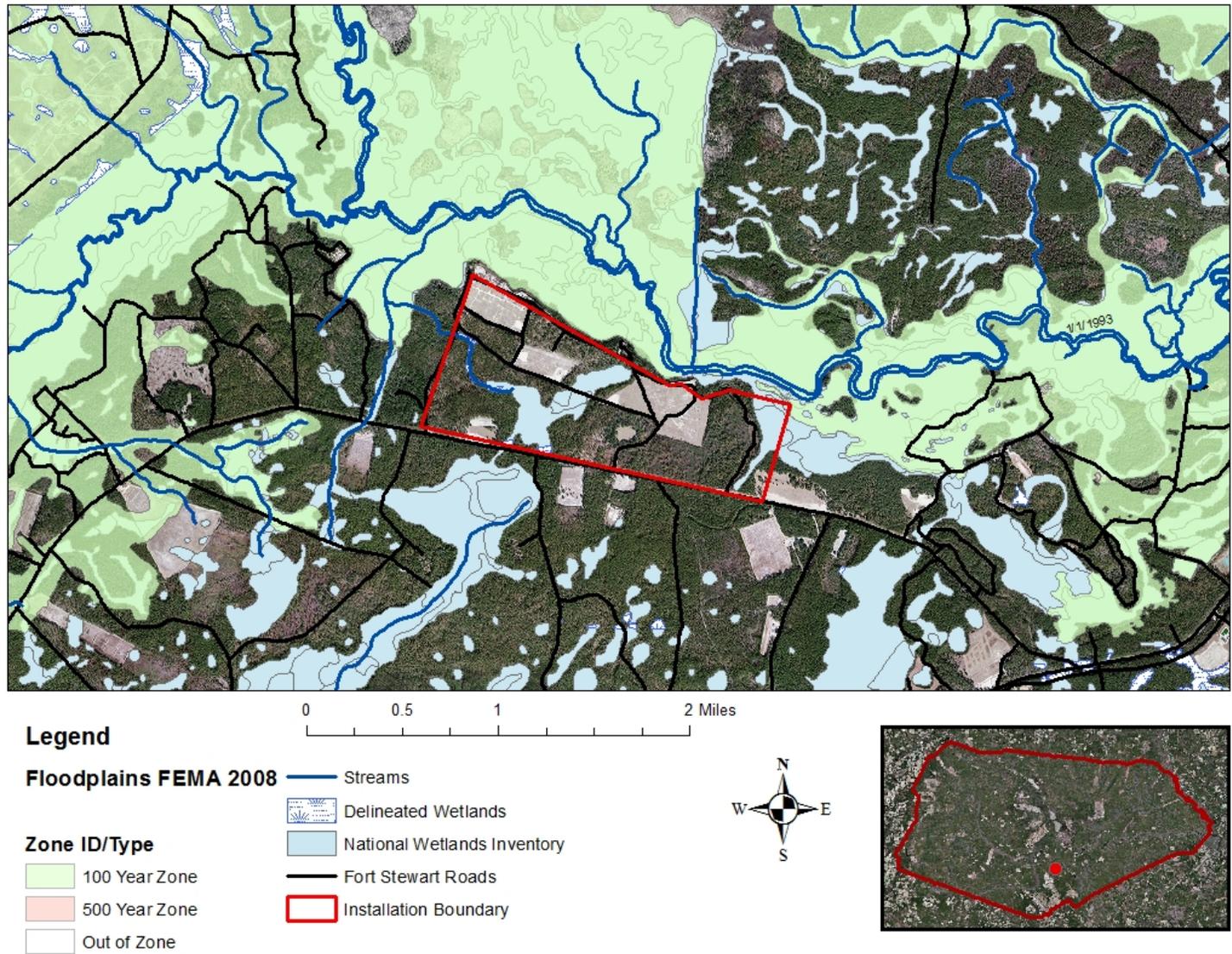


Figure 5: Water Resources in the ROI.

The FSGA ITAM Office and the FSGA Environmental Division proactively coordinated as proposed improvements for the B-3 Battle Area were identified in order to minimize and/or avoid impacts to wetlands. During project implementation, National Pollutant Discharge Elimination System (NPDES) permit requirements, requirements identified in the site-specific erosion and sedimentation (E&S) pollution control (ESPC) plan, and all pre- and post-construction best management practices (BMPs) will ensure minimization of potential impacts.

Surface Waters. Within the greater FSGA 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 FSGA occupies parts of four separate watersheds, the majority of the Installation lies within the Canoochee and Ogeechee Coastal Watersheds. The Canoochee River crosses the Installation from its northwest corner to its eastern side and flows along the northeastern border of the ROI for the Proposed Action, as seen on Figure 4. In addition, a small unnamed tributary stream flows within the boundaries of the proposed action (the B-3 Battle Area), at its western edge, also visible on Figure 4.

The CWA, Georgia Water Quality Act (GWQA) (Official Code of Georgia [OCGA] § 12-5-20), and Georgia Erosion and Sedimentation Control Act (OCGA § 12-7-1) establish specific requirements for land disturbing activities to minimize soil erosion and associated sedimentation of surface waters. On FSGA, these include the following.

- For all projects that disturb more than 0.75 acres, fees in the amount of \$80.00/disturbed acre must be paid to the Georgia Environmental Protection Division (EPD). A copy of the fee submission must be provided to the FSGA Environmental Division along with a prepared and initialed Notice of Intent (NOI) for coverage under the FSGA NPDES Permit for Stormwater Discharges Associated with Construction Activities and the project's approved ESPC Plan. The FSGA Environmental Division will complete the 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 acre 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.
- E&S Control Best Management Practices (BMPs) will be identified in the ESPC Plan and must be utilized by the site operator. The ESPC Plan will include those requirements identified in the "Green Book" (*Manual for Erosion & Sedimentation Control for the State of Georgia*), the *Coastal Stormwater Supplement*, the Energy Independence and Security Act Section 438, the US Environmental Protection Agency (EPA) Technical Guidance (EPA 841-B-09-001 December 2009), the United Facilities Criteria (UFC) Manual for Low Impact Design, and those additional applicable Federal and local requirements found at the following web link: [http://www.stewart.army.mil/info.asp?e=DPW/Environmental Division&p=Downloads](http://www.stewart.army.mil/info.asp?e=DPW/Environmental%20Division&p=Downloads), and a summary of how these materials apply is provided in the three sub-bullets below.
 - The ESPC Plan must also include flow calculations demonstrating concentrated runoff flows from peak rain events will not impact (a) any existing stream, (b) upstream systems and (c)

downstream systems of the site as required for Total Maximum Daily Loads to maintain water quality standards by the removal of any potential pollutants.

- When preparing the ESPC Plan, two Installation Policies (#10 and #11) must be utilized that require engineers / proponents to take a more holistic approach to stormwater management of individual construction projects. Specifically, engineers must use Low Impact Development (LID) and Green Infrastructure (GI) stormwater control practices along with water quantity management practices found in the *Georgia Stormwater Management Manual and the Coastal Stormwater Supplement*. This is necessary to completely satisfy aquatic resource protection, overbank flood protection, and extreme flood protection, which are criterion found in these documents for post-construction BMPs.
- Dry detention basins must be located downstream of other LID/GI structural controls. Hydraulic considerations are necessary to ensure dry detention basins are sized to store the entire water quality design volume or have adequate structural controls to meet the minimum criteria for a 1-year, 24-hour storm event. PLEASE NOTE: Wet retention ponds are not a BMP option for FSGA/HAAF; reference DPW Policy Letter #10.
- The operator of the project site (regardless of size, i.e., including sites less than or greater than 0.75 acres) is required to continuously maintain all BMPs through the duration of site disturbing activities. In order for the Army to accept the project as complete, the site must be stabilized to prevent silts and/or sediments from leaving the project site. The Army, through its Contracting Officer Representative, National Resource Conservation Service, and the FSGA Environmental Division, 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.
- At a minimum, a Level 1A E&S Control State Certified trained individual is to be on the site during ANY land disturbance activity, regardless of size.
- Site dewatering requires prior approval from the Fort FSGA Environmental Division. If approved, dewatering must incorporate BMPs to dissipate or disperse the flows.
- Equipment cleanout (brushes, rollers, spray guns/lines, etc.) must occur in designated areas (sink basins or washracks which discharge to sanitary or industrial wastewater treatment plants) and must not discharge to the stormwater conveyance system. Ensure all washouts of trucks and equipment is controlled and is discharged with adequate and appropriate BMPs for E&S Controls.
- Ensure proper drip pans and secondary containment are utilized for any of the equipment during these operations, for staging, storing, loading, fueling, maintenance, repairs, etc.
- Place all fuel storage tanks within plastic lined earthen berms, drive-on, or drive-over containment. The containment area must have a minimum capacity of 110% of the fuel storage tanks capacity for spill prevention, and to capture incidental spills.

3.2.2 ENVIRONMENTAL CONSEQUENCES

Alternative I: No Action/Status Quo.

Under this alternative, no impacts are anticipated to water quality and resources, as there will be no new land disturbance on site, only the current training and follow-up maintenance that has and will continue to occur. Historically, this has not resulted in adverse impacts to water quality and resources at this location.

Alternative II: Proposed Action (Figures 2 and 5).

Under this alternative, negligible adverse impacts are anticipated to Water Quality and Resources.

Clearing, grubbing, and grading will occur within the clearcuts at Locations 1 and 3-10 (totaling 15 acres). A lesser degree of soil disturbance is associated with the 200 acre thinning at Locations 5 and 11, as thinning involves the selective removal of marked trees only, with no grubbing and grading required. Negligible soil disturbance is associated with the 500 acre heavy mowing at Location 2, as the vegetation is cut above ground level, with little-to-no ground disturbance.

Surface water sources are located in the vicinity of Locations 2-5 and 10. Specifically, the Canoochee River forms the northern boundary of B-3 in the vicinity of Location 10, and a tributary of the Canoochee River runs through its west-central portion near Locations 2-5 (see Figures 2 and 5). Locations 2-5 also contain NWI-identified wetlands and one delineated wetland along FS Road 104, while Location 10 is adjacent to NWI-identified wetlands (Figure 5). Although the clearcuts and thinning will physically impact soils, the potential adverse impacts to these surface water sources will be minimized and mitigated through effective implementation of timber harvest E&S control BMPs, NPDES permit requirements, site-specific ESPC plans, and pre- and post-construction BMPs, to include establishing 25-foot buffers around all wetlands. Prior to any site disturbance, on-site boundaries of all 25-foot stream buffers shall be marked, and periodic inspections of work sites proximate to these buffer areas will include verification of compliance through turbidity sampling and E&S BMP checks. The Installation shall mandate immediate correction of all violations.

All Plans 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 (ESCA). These SMEs 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. Tree removal within wetlands at Location 2-5 and 10 and their 25-foot buffers is not anticipated as part of the proposed action. However, should tree removal within wetlands become necessary, additional coordination with the FSGA Environmental Division is required and may include applying for a CWA Section 404 permit from the U.S. Army Corps of Engineers. Following the clearcut, timber thinning, and heavy mowing, training will recommence, followed by periodic follow-up site maintenance, all of which is conducted in compliance with the CWA and ESCA and for which no adverse impacts are anticipated.

3.2.3 CUMULATIVE IMPACTS

Alternative I: No Action/Status Quo.

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 anticipated.

Alternative II: Proposed Action (Figure 5).

Negligible cumulative impacts to water quality and resources are anticipated as a result of the proposed alternative, with impacts primarily due to soil disturbance in the ROI. Past and present foreseeable future actions in the ROI consist of training consistent with what is presently occurring. Earth moving exercises conducted by military engineering units in the eastern ROI will continue, which results in large amounts of soil being displaced, relocated and used to backfill holes created during training events. Training on EOD lands (western ROI) will result in lesser amounts of soil disturbance, as it is primarily due to vehicular travel on established trails and within lands already utilized as maneuver areas. However, prior to each training event, units will continue to be briefed and provided with Environmental Field Cards, in accordance with Fort Stewart Post Range Regulation 385-14 (DA, 2008), educating trainees on the minimization of adverse effects during training activities. Following all training events, the FSGA ITAM Office will conduct ground stabilization and erosion minimization procedures, thereby reducing the potential for water quality impacts due to erosion to reach a level of significance. Soil disturbance is negligible within the SA Ranges (southern ROI) as it is contained within the range's footprint, most of which are not adjacent to surface water sources. Although munitions impacts in the AIA (northern ROI) do result in soil disturbance, impacts are insufficient to result in significant adverse impacts to water quality and resources. Therefore, minor cumulative impacts are anticipated.

3.3 BIOLOGICAL RESOURCES

3.3.1 AFFECTED ENVIRONMENT

Biological resources include native and naturalized plants, animals, and 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. Biological resources addressed in this Draft EA include plants, wildlife (to include migratory birds), and protected species.

Plants. FSGA is located in the Atlantic Coastal Plain physiographic province of Georgia and contains about 158,578 acres of upland forest, 82,148 acres of forested wetlands, and 38,253 acres of clearings. FSGA contains Georgia's largest remaining forest of longleaf pine. The longleaf pine/wiregrass ecosystem on FSGA is highly compatible with military training, as is evidenced by activities in the proposed action area (B-3), which is used for both mounted and dismounted maneuver exercises yet still supports a healthy population of wildlife and protected species (as discussed below).

Wildlife. Wildlife management activities on FSGA identified 46 species of mammals, 57 species of reptiles, 241 species of birds, 38 species of amphibians, and 64 species of fish, as identified in the FSGA Integrated natural Resources Management Plan (INRMP) (FSGA, 2005). Wildlife habitat is improved by several

management activities. Wildlife clearings, firing points, landing zones, and other open areas are disked and seeded to encourage the growth of annual vegetation, used by wildlife species as food sources. Common wildlife on FSGA includes white-tailed deer, wild boar, fox, bobcat, rabbit, squirrel, and other small mammals. In addition to a diverse assemblage of forest songbirds, game birds such as eastern wild turkey and northern bobwhite quail occur on the Installation (FSGA, 2005). This also includes several reptile, amphibian, and fish species, to include the American alligator, gopher tortoise, eastern diamondback rattlesnake, eastern indigo snake, frosted flatwoods salamander (FFS), shortnose sturgeon, striped bass, and numerous species of sunfish, catfish, shiners, and darters.

Migratory Birds. Approximately 170 species of birds protected under the Migratory Bird Treaty Act (MBTA) occur on FSGA, either seasonally or year-round, and many of these species can be expected to occur in the areas affected by the action alternatives. Fort Stewart complies with the MBTA by implementing Army Policy Guidance (17 August 2001) and EO 13186, *Responsibilities of Federal Agencies to Migratory Bird Treaty Act*. Impacts to wildlife and migratory birds will be negligible and temporary, with the species flushing from the area during construction, and returning to the area once it ceases; therefore, this resource will not be discussed further in this Draft EA.

Protected Species. There are seven federally-listed species known to occur on FSGA; red-cockaded woodpecker (RCW), shortnose sturgeon, Atlantic sturgeon, wood stork, eastern indigo snake, FFS, and smooth coneflower. Of these species, the only federally protected species with the potential to be impacted by the proposed action is the RCW and the indigo snake. There is also one State of Georgia protected species, the gopher tortoise, due to the fact that the federally protected Indigo snake often resides in this land tortoise's burrows. Therefore, these three protected species are the only ones discussed in further detail in this Draft EA.

The RCW is listed by the United States Fish and Wildlife Service (USFWS) as endangered, and is a highly social species that lives in extended family groups known as colonies or clusters. The quality of RCW foraging habitat varies depending upon vegetation in the understory, weather, soils, season, and fire frequency and intensity. The highest populations of RCWs occur on areas with active prescribed burning programs that control hardwoods (frequency of every 2-3 years). On FSGA, the Army reached its RCW recovery goal of 350 potential breeding groups (an adult female and adult male that occupy the same cluster) during the breeding season of 2012 and has enough suitable or potentially suitable HMU to support 657 RCW clusters. The Army adheres to guidelines established in the USFWS' Recovery Plan for the RCW, as well as to requirements of existing Biological Opinions prepared in accordance with the UFWS Recovery Plan and as approved in consultation with the USFWS.

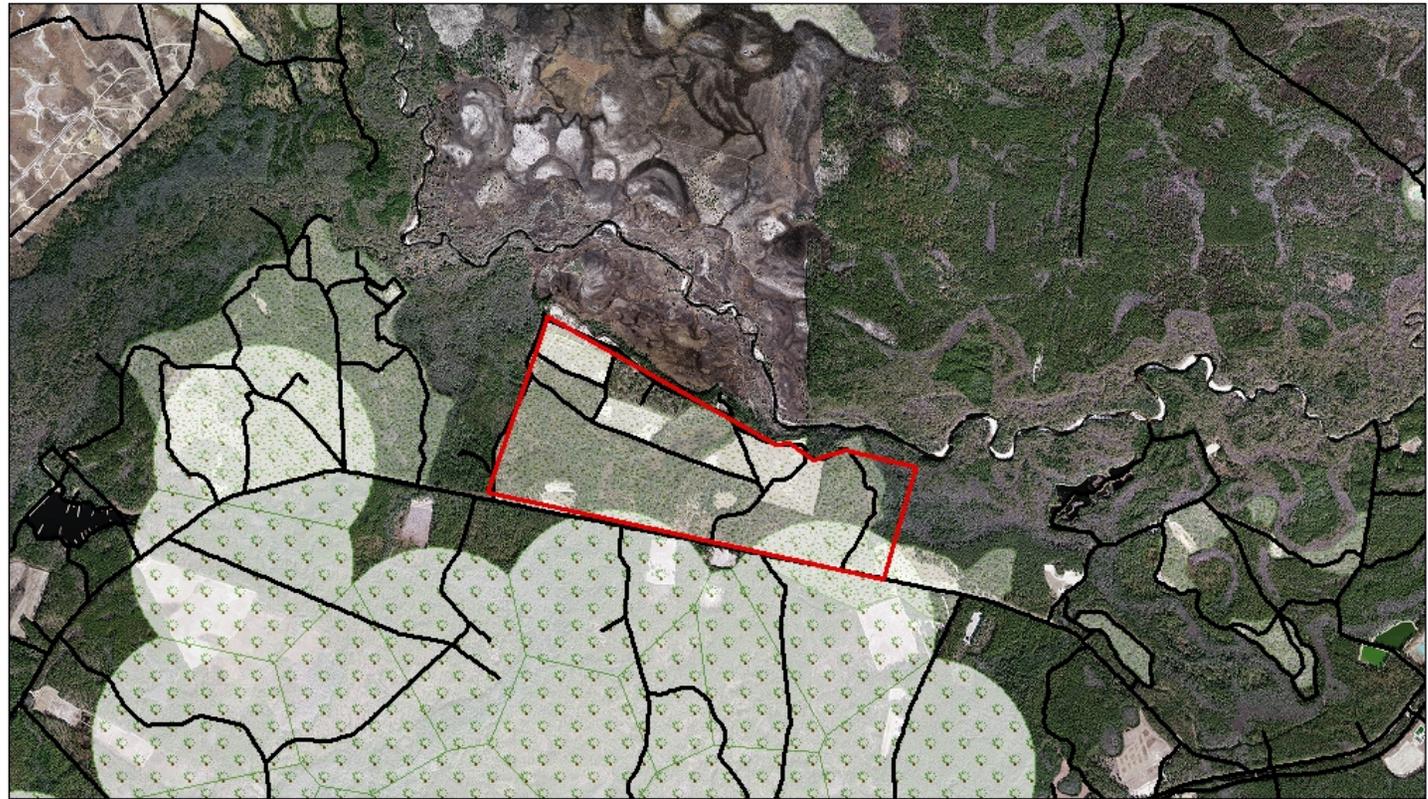
RCW HMU (and specifically, foraging habitat) is present in the southern portion of the proposed action (Figure 7). Based on the USFWS Recovery Plan, good quality RCW foraging habitat contains large pines 60 years old or older, few small and medium sized pines, few to no hardwoods, and a healthy ground cover of grasses. Tree density is measured in Basal Area, which is the square footage of trees at a certain diameter at breast height (dbh) per acre, or BAA. Within FSGA RCW HMU, the Army strives to maintain the following:

- 20 BAA of pines equal to or greater than 14" dbh (or 18 trees per acre of the oldest/largest trees);
- Up to 40 BAA of pines 10-14" dbh (or 72 trees per acre of the medium sized/aged trees); and

- 10 BAA of pines less than 10” dbh (or 18 trees per acre of the smallest trees); and
- Hardwoods kept at a minimum (USFWS, 2003).

The Eastern indigo snake is listed by USFWS and the state of Georgia as threatened (USFWS, 2003) and primarily resides and forages in dry areas interspersed with wetland habitats, such as the drainage ways and rivers to the northern and western portions of the proposed action site (Figure 7). These species frequently nest in the burrows created by Gopher tortoises (*discussed later in this section*) and are often associated with the same habitat as these species for that reason. Four known populations have been identified on FSGA, specifically along the Canoochee River, Beards Creek, and the Ogeechee River, and the species has been reported in the AIA and B-3 and B4, adjacent to the Ogeechee River. Research by FSGA Environmental Division indicates the AIA may be among the best sites in GA for this species, and the Installation’s conservation goal for it is to maintain areas in which it is known to occur and to encourage expansion into suitable unoccupied habitat.

The Gopher tortoise is one of the important keystone vertebrates in longleaf pine forests because its long-lasting burrows are used by numerous vertebrates and invertebrates, such as the eastern indigo snake, and its habitat is interspersed throughout the proposed action area (Figure 7). The species is a dry land turtle with a high, domed shell, a length of up to 15 inches, and elephant-like hind feet and flattened shovel-like front feet for digging. The Gopher tortoise digs a long sloping burrow up to 30 feet long and extending up to 9 feet below the surface. The traditional habitat of the gopher tortoise is the same as that discussed for the RCW and the Indigo snake, and contains an abundance of herbaceous ground cover and a generally open canopy with a sparse shrub midstory. The tortoise favors disturbed habitats that are cleared and maintained, and on military lands they often place their burrows in areas maintained for training, such as the proposed action site. To aid in conservation of this species, buffer zones for military training are maintained at least 25 feet from burrows. The tortoises and their burrows are surveyed at least every five years to document numbers and distribution of active burrows and habitat quality for the tortoises and indigo snakes, and the information is sent to the USFWS annually (Fort Stewart, 2005).



0 0.5 1 2 Miles

Legend

- Fort Stewart Roads
- Installation Boundary
- RCW Foraging Partitions
- Gopher Tortoise & Indigo Snake Habitat

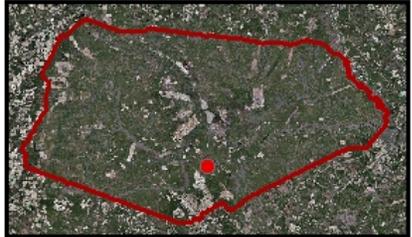
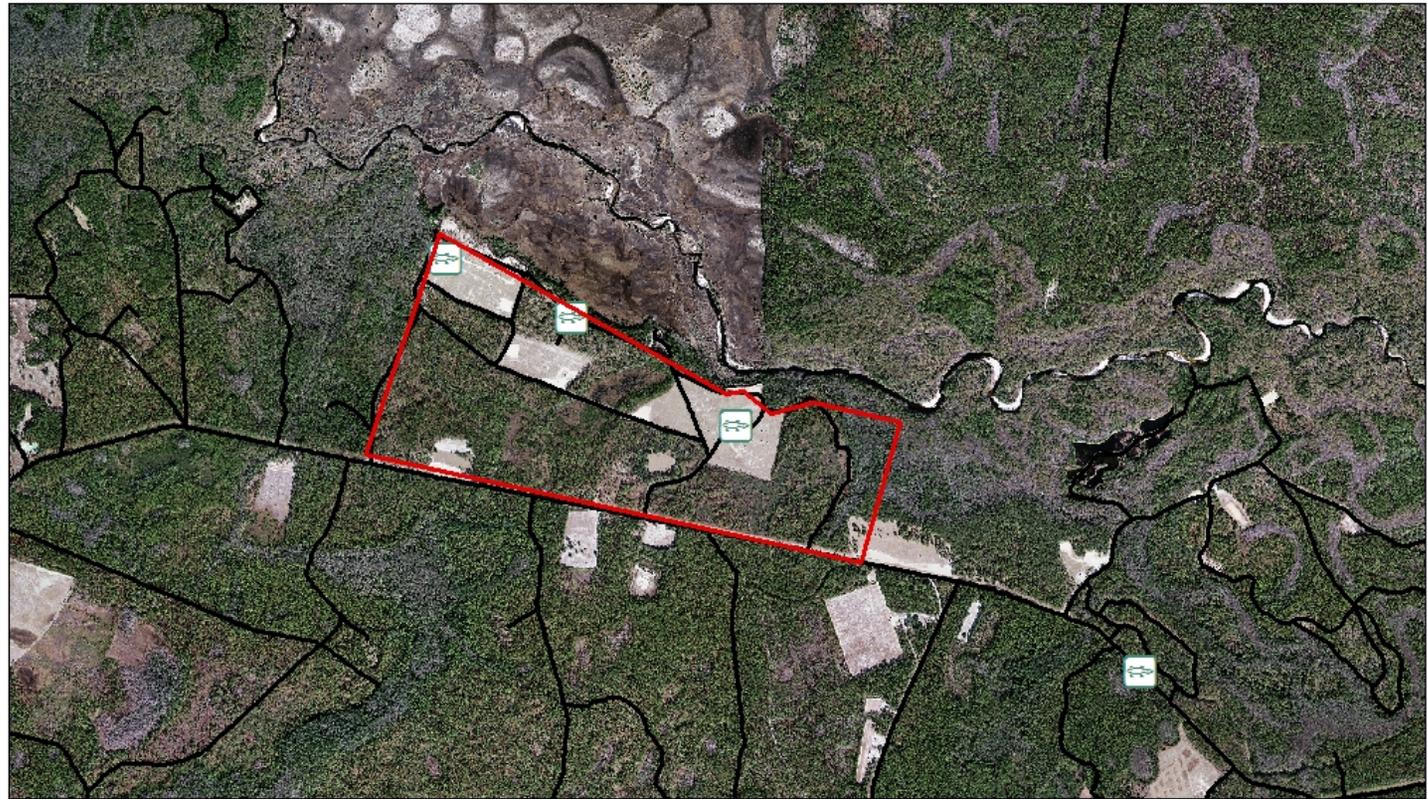


Figure 6: Protected Species Habitat in the ROI.



0 0.5 1 2 Miles

Legend

-  Indigo Snake Sightings
-  Fort Stewart Roads
-  Installation Boundary



Figure 7: Eastern Indigo Snake Sightings in the ROI.

3.3.2 ENVIRONMENTAL CONSEQUENCES

Alternative I: No Action/Status Quo.

Under this alternative, there will be no impacts to biological resources. FSGA lands will continue to be managed in accordance with existing FSGA management plans, such as the INRMP, and in accordance with existing reasonable and prudent measures identified in BOs issued by the USFWS for recently completed EAs.

Alternative II: Proposed Action (Figures 2, 6, and 7).

Under this alternative, the proposed action will result in negligible adverse impacts to biological resources.

Vegetation. Clearcuts will occur at Locations 1 and 3-10, totaling 15 acres, and will involve grubbing and grading the area where trees are removed. Areas slated for merchantable timber removal will be clearly delineated on the ground in advance of the harvest with a FSGA Environmental Division Forestry Branch representative. The Forestry Branch will require up to 90 days to harvest the merchantable timber and is not responsible for site cleanup to include stump removal, logging slash, and non-merchantable timber. In areas that will only undergo timber thinning operations (versus clearcut), care must be taken not to damage trees remaining on-site that are greater than 6-inches in diameter, causing after-project mortality of these trees. Adherence to timber harvest BMPs, as well as standard E&S requirements established in the project-specific ESPC Plan, will also minimize potential adverse impact to vegetation on site, including minimization of soil erosion and re-establishment of post-project ground level vegetation.

Timber thinning of 200 acres total will occur at Locations 5 and 11, and will be in accordance with the RCW Guidelines as follows:

- Each location has a BAA of 30 for pines equal to or greater than 14" dbh (19 trees per acre of the oldest/largest trees). Under the proposed action, this will be thinned down to 20 BAA (or 18 trees per acre)
- Each location is already within the recommended 20 BAA for pines between 10" and 14" dbh (18 trees per acre of the medium-sized trees) and the recommended 10 BAA for pines less than 10" dbh (18 trees per acre of the smallest trees); therefore, tree removal in these areas is not technically required. However, the FSGA Environmental Division's Forestry Branch and its Fish and Wildlife Branch may choose to selectively mark and remove some of the trees in these size groups. This will be determined during the walk-through occurring prior to timber harvest.
- Each location has a hardwoods count of approximately 6 BAA (15 trees per acre). Under the proposed action, the majority (if not all) of the hardwoods within each location will be removed.

Heavy mowing will occur at Location 2, totaling 500 acres, cutting the vegetation above ground level, with little-to-no ground disturbance. Routine operations and maintenance by the ITAM Office following training events will resume, but is not anticipated to result in any adverse impacts. The land will continue to be managed in accordance with existing FSGA management plans, such as the INRMP. Overall, negligible impacts to vegetation are anticipated.

Protected Species. The protected species discussed in this section are the RCW, eastern indigo snake, and gopher tortoise, all others having been eliminated from future evaluation of impacts, as these species are not located within the proposed action location.

RCW - Of the 15 acres of clearcuts (1, 3-10) in the proposed action, only two are located within RCW HMU. Approximately 1.3 acres of trees will be cleared to create four training event start lanes at the southwestern portion of the B-3 Battle Area in Location 5. Although within RCW HMU, they are immediately adjacent to FS Road 144 and contain little-to-no pine timber that would be suitable for the RCW's foraging or other uses. Approximately one acre of trees will be cleared in Location 8 to create a new trail connecting FS Road 144 to OP1. Although within RCW HMU, its removal will not render any RCW clusters deficient or otherwise adversely affected. Therefore, none of the clearcuts in the proposed action will result in potential adverse impact to RCWs or their habitat. There is no RCW HMU in the locations proposed for thinning (5, 11) or heavy mowing (Location 2), and accordingly, no adverse impacts are anticipated.

Eastern Indigo Snake and Gopher Tortoise - Clearcuts will occur within Indigo snake and gopher tortoise HMU in Locations 5-11. Historically, the primary risk to the eastern indigo snake is direct mortality from vehicle traffic or damage to the gopher tortoise burrows or other retreats in which it seeks shelter (Fort Stewart Endangered Species Management Team, July 2001); therefore, contractors shall be advised to take extra precautions while on roads and trails transporting felled timber during the timber harvest in this area, as well as while conducting trail work at Locations 3, 4, 8, and 10. Similar precautions shall be taken during thinning operations in Locations 5 and 11. The burrows/open areas in which these two species seek shelter are often found on open areas, and there have been three sightings of eastern indigo snakes within the B-3 Battle Area (in 1989, 1997, and 2003) (L. Carlile, personal communication, September 8, 2014), two of which were in existing clear-cuts and one was on a tank trail (Figure 7). Thinning operations will benefit these species, which prefer these open areas for their burrows. There is no eastern indigo snake or gopher tortoise HMU on Locations 1-4. Heavy mowing and subsequent operations and maintenance at the B-3 Battle Area will not adversely impact these species.

Following completion of all proposed improvements, routine operations at the B-3 Battle Area and follow-up maintenance by the ITAM Office will resume, but is not anticipated to result in any adverse impacts to biological resources. The land will continue to be managed in accordance with existing FSGA management plans, such as the INRMP, and in accordance with existing reasonable and prudent measures identified in BOs issued by the USFWS for recently completed EAs. Overall, as a result of these BMPs and measures, negligible impacts are anticipated.

3.3.3 CUMULATIVE IMPACTS

Alternative I: No Action/Status Quo.

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

Alternative II: Proposed Action.

Past, present, and reasonably foreseeable future actions in the ROI consist of training consistent with what is presently occurring, with no known potential to result in adverse impacts to protected species or their habitat in the ROI. Eastern indigo snake and gopher tortoise HMU is present in the western and eastern portions of the ROI, in which UXO/IED and engineering earth-moving exercises are conducted, respectively. Some mortality of eastern indigo snakes and gopher tortoises may occur in these portions of the ROI along established trails and in areas where heavy equipment engineering training occurs. However, protection of these species is encouraged in FS Post Range Regulation 385-14 (DA, 2008, and awareness of the need to protect/avoid these species is included in the training provided to each Soldier prior to entering the field to train. RCW HMU is present in the southern ROI, but all training in this area is within established SA Ranges with the majority of ammunition fired remaining within the range footprint and its berm. Although some rounds may land beyond the range and its berm, impacting RCW HMU, it is not enough to reach a level of significance for this species and/or its habitat. The northern ROI consists primarily of the AIA and its associated AIA Buffer, which is not managed for biological resources. Therefore, overall, negligible cumulative impacts to biological resources are anticipated.

3.4 HEALTH AND SAFETY

3.4.1 Affected Environment

Health and Safety includes the evaluation of fire and police protection, healthcare services availability, traffic hazards, and safety danger zones (SDZ) associated with on-Post training ranges and airfields, as well as worker safety issues during construction, operations, repairs/maintenance on Installation job sites and facilities, and range/training safety. 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 performed in accordance with applicable OSHA regulations to protect human health and minimize safety risks.

The “Army Safety Program,” implemented under Army Regulation (AR) 385-10, governs Army policies, responsibilities, and procedures to protect and preserve Army personnel and property against accident loss (DA, 2013b). This provides for operational safety and mandates compliance with applicable safety laws and regulations. Related key impacts include aviation safety (meeting Federal Aviation Administration and United Facilities Criteria requirements) and construction safety. To ensure worker health, compliance with OSHA standards and the Army Safety Program is required and only authorized personnel will be allowed within the footprint for construction; in addition, all workers must adhere to safety standards established by OSHA.

The “Range Safety Program,” implemented under Army Regulation 385-63, governs Army policies, responsibilities, and procedures for firing ammunitions, lasers, guided missiles, demolitions, explosives, rockers, and the delivery of bombs on Army and Marine Corps ranges and live-fire training facilities (DA, 2012). It is applicable to operational ranges, non-range training lands (to include maneuver lands), bombing ranges, artillery impact areas, target areas, all live fire weapons firing areas, recreational ranges utilized for rod and gun clubs, and test and evaluation ranges. Range safety program goals include enhancing safe and realistic live fire training, protection of personnel and property while improving combat readiness,

protection of civilian and military populations living and working near live-fire operational training ranges and lands, and minimization of environmental, personnel, and equipment impacts.

Preliminary analysis determined there will be no impacts to fire and police protection, healthcare services availability, and safety danger zones (SDZ) as a result of the proposed action and its alternative; therefore, they will not be discussed further in this Draft EA.

3.4.2 ENVIRONMENTAL CONSEQUENCES

Alternative I: No Action/Status Quo.

Under this alternative, there will be minor adverse impacts to Health and Safety.

No impacts are anticipated to Worker Safety, as no improvements will be implemented and accordingly no workers will be on site. However, there will be adverse impacts to Range Safety, as the failure to implement the proposed improvements will result in the continuation of existing safety concerns. Three of the existing trails (Locations 3, 4, and 10) on the B-3 Battle Area currently vary from 10-12 at some locations and narrow to just a few feet in width along their path, too narrow to safely move equipment, supplies, targets, and personnel, and forcing travelers needing to traverse these routes to veer off into the forest, which is a safety hazard. The removal of trees and widening them to a consistent 40 feet along their length will greatly improve the safety of these trails.

A clearcut at Locations 1, 7, and 9 is also needed to correct safety hazard associated with OPs 1-4, removing trees currently obstructing clear LOS at these locations. When Soldiers are in the training area, they cannot see approaching personnel from the western side, resulting in potential safety hazards due to these trees blocking their view. Removal of these trees will remove this safety hazard. Heavy mowing is required throughout Location 2 to create a safer dismounted training environment, as the dense understory and floor level vegetation camouflages crevices, ruts, fallen limbs and other hazards on the training area's floor. Failure to implement these proposed improvements will result in these safety hazards remaining and overall in minor adverse impacts.

Alternative II: Proposed Action (no figures).

Under this alternative, there will be minor positive impacts to Health and Safety.

Worker Safety. Traffic hazards will temporarily increase along GA Highway 144, where the timber harvest activities will occur and, accordingly, where the logging trucks will be entering/exiting the FSGA traffic network, causing potential traffic delays and hazards. These impacts will cease once timber harvest is complete; therefore, adverse impacts to traffic hazards are only temporary and minor.

There are no SDZs overlapping the B3 Battle Area; however, as FSGA has been an active military training site for more than 70 years, it is possible that UXO could be found within its boundaries. Therefore, all personnel working on the site improvements shall receive UXO avoidance awareness training prior to entering the work area. To minimize impacts to worker safety, in the event a worker should encounter or suspect they have encountered military explosives or its constituents (MEC) on the project, they shall not attempt to disturb, remove or destroy it, but shall cease any intrusive or ground disturbing activities being conducted at the project and immediately notify the local Range Control Office. The Army will dispose of the UXO/MEC at no expense to the contractor.

Before commencing work, all activities must be coordinated between the site contractor and the Installation Safety Office. The contractor must have a Health and Safety plan that is approved by the Installation Safety Office prior to land disturbance. The plan must sufficiently address potential safety risks and response actions, including the discovery of UXO/MEC.

Range Safety. As discussed under the No Action Alternative, there are several safety improvements proposed for the B-3 Battle Area. Clearcuts of trees proposed for Locations 3, 4, and 10 will result in widening trails from their current 10-12 foot width to a final width of 40 feet; clearcuts at Locations 1, 7, and 9 will correct a safety hazard associated with the OPs; and heavy mowing throughout Location 2 will result in the removal of the dense understory currently camouflaging crevices, ruts, fallen limbs and other hazards on the training area's floor. All of these actions will result in minor positive impacts.

3.4.3 CUMULATIVE IMPACTS

Alternative I: No Action/Status Quo.

Although minor impacts to health and safety are anticipated as a result of the no action alternative, future actions in the ROI consist of routine operations and training, to include EOD training to the west, SA Ranges to the south, and engineering tasks to the east, and the AIA artillery impacts to the north, none of which have historically resulted in adverse impacts to health and safety. Therefore, there are no cumulative impacts anticipated as a result of implementation of this alternative.

Alternative II: Proposed Action.

As with the no action alternative, although there are minor adverse impacts to health and safety anticipated under the proposed action, the future operations and training in the ROI are not anticipated to result in cumulative impacts to health and safety. Therefore, there are no cumulative impacts to health and safety as a result of implementation of this alternative.

4.0 CONCLUSIONS

The Draft EA for Improvements to the B-3 Battle Area on Fort Stewart, Georgia, was prepared to analyze the potential environmental impacts associated with providing the Army the capability to conduct realistic indirect live fire training in accordance with Army doctrinal standards on FSGA. Based on this analysis, no significant environmental impacts are anticipated from implementation of the Proposed Action (Alternative II). Therefore, an Environmental Impact Statement is not required, and the preparation of a FNSI by the Army for the proposed action is appropriate.

Type of Impact	Alternative I (No Action)	Alternative II (Preferred) Proposed Action
Water Quality and Resources		
Direct / Indirect	No Impact	Negligible
Cumulative	No Impact	Minor
Biological Resources		
Direct / Indirect	No Impact	Negligible
Cumulative	No Impact	Negligible
Health and Safety		
Direct/Indirect	Minor	Beneficial
Cumulative	No Impact	Negligible

Table 1: Summary of Environmental Impacts.

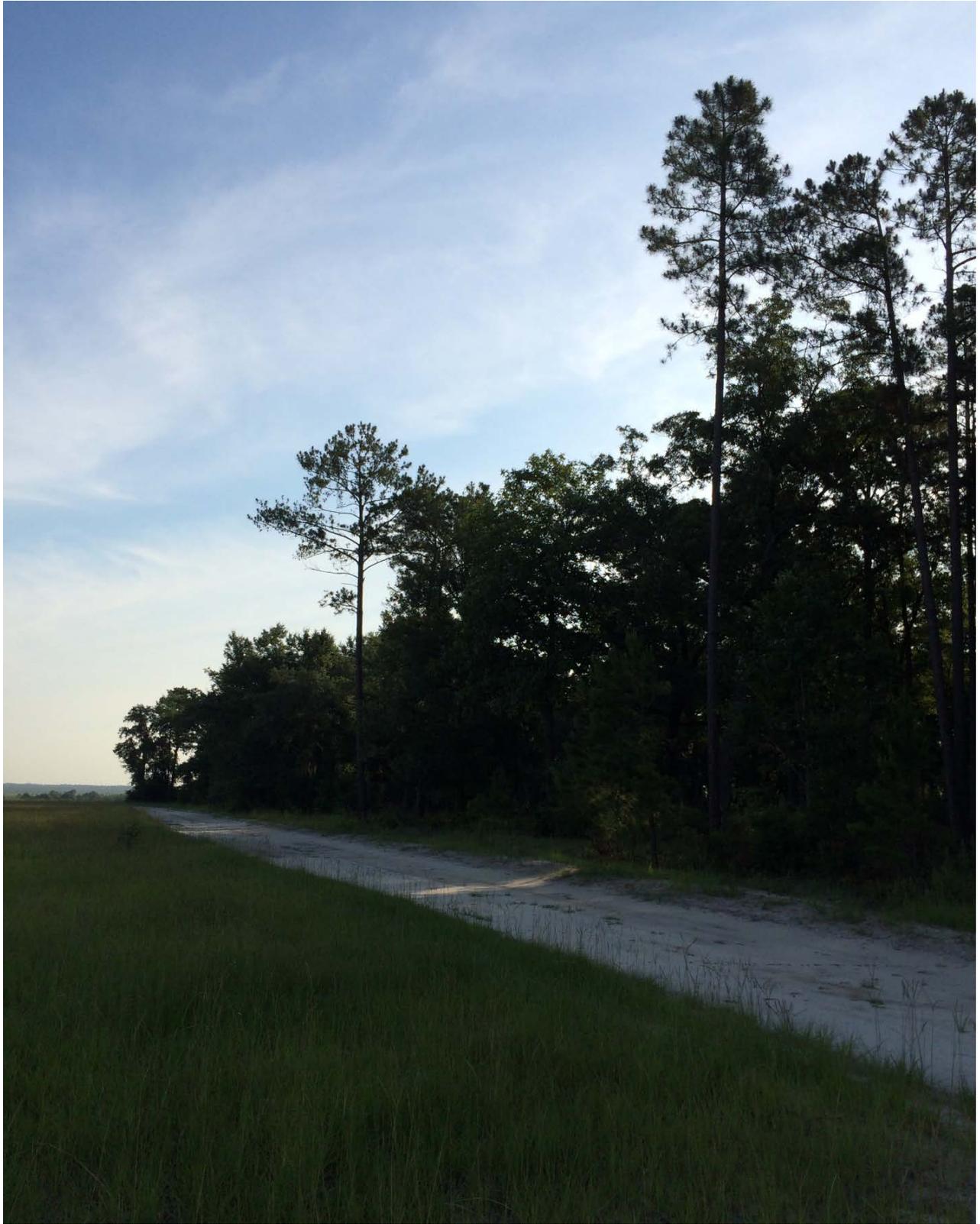
5.0 ABBREVIATIONS AND ACRONYMS

AIA	Artillery Impact Area
AR	Army Regulation
BAA	Basal Area per Acre
BLM	Bureau of Land Management
BO	Biological Opinion
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
DA	Department of the Army
DoD	Department of Defense
EA	Environmental Assessment
EOD	Explosive Ordnance Detachment
EIS	Environmental Impact Statement
EISA 2007	Energy Independence and Security Act of 2007
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPD	Environmental Protection Division
ESCA	Erosion and Sediment Control Act
ESPC	Erosion and Sedimentation Pollution Control
FFS	Frosted Flatwoods Salamander
FNSI	Finding of No Significant Impact
FS Road	Fort Stewart Road
FSGA	Fort Stewart, Georgia
FY	Fiscal Year
GA Highway	Georgia Highway
GA EPD	Georgia Environmental Protection Division
HMU	Habitat Management Unit
INRMP	Integrated natural Resources Management Plan
ITAM	Integrated Training Area Management
LOS	Line of Sight
MEC	Munitions and Explosives of Concern
NEPA	National Environmental Policy Act
NIOSH	National Institute for Occupational Safety and Health
NOA	Notice of Availability
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Act
RCW	Red Cockaded Woodpecker
SA	Small Arms
SDZ	Safety Danger Zone
TLS	Threshold Level of Significance
TMDL	Total Maximum Daily Load
TLS	Threshold Level of Significance
USC	U.S. Code
USFWS	United States Fish and Wildlife Service
UXO	Unexploded Ordnance

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APPENDIX A
Site Photographs



This photograph at Location 1 shows a portion of the B-3 Battle Area where a clearcut (Type II site preparation) is proposed to correct current Line of Sight issues at OP3. Standing trees not only obstruct the view from the OP to the targets in the AIA, but also result in safety hazards if incoming Troops cannot be visually observed by Troops already engaged in the training area.



This photograph was taken within Location 2 and will undergo heavy mowing (Type III site preparation). This will remove the dense understory and improve dismounted maneuver access within this portion of the Battle Area (foot traffic). This will improve training efficiency, as well as safety for Troops training at this location.



This photograph shows a portion of an existing access trail within Location 3. Located nearest to OP4, this trail will be widened to a proposed width of 40 feet to more safely move equipment, supplies, and targets in and out of the western sections of the Battle Area. The narrow trails are difficult to maneuver due to standing trees, which cause damage to wheeled vehicles and prevent rapid emergency evacuation of injured personnel.



This photograph shows another existing access trail that will be widened to a proposed width of 40 feet. This trail is within Location 4, to the south of Location 3's trail, but will also allow easier transport of equipment, Troops and, if needed, emergency ingress/egress in the western portion of the Battle Area.



This photograph shows a portion of the wooded area to the south of OPs 3 and 4, and east of FS Road 104, noted as Location 5. This area will undergo a merchantable timber thinning to within RCW recovery guidelines, which will open up the terrain for improved mounted (vehicular) maneuverability during training events. Currently, the thickly wooded terrain allows Troops to travel only along established trails or “beaten down,” previously utilized paths, hampering realism of the training events.



This photograph shows a small row of trees at Location 6 that will be removed to expand the existing single-helicopter landing zone to a double-helicopter landing zone. This will enable more Troops to be dropped in per training event, increasing the efficiency of the training on site.



This photograph shows a forested area at Location 7 where a clearcut (Type II site preparation) is proposed to correct current LOS issues at OP3. Standing trees not only obstruct the view from the OP to the targets in the AIA, but also result in safety hazards if incoming Troops cannot be visually observed by Troops already engaged in the training area.



This photograph shows where a new 40-foot wide access trail will be clearcut and constructed at Location 8, from the vicinity of OP1 to its connection at FS Road 144. The road will allow trainers and senior observers to access OP1 without interrupting/impacting an ongoing training event. Currently, this is only possible via use of existing training roads and/or requesting a cease fire to allow access to the tower for observation.



This photograph shows a portion of Location 9 just in front of the bluff sloping down and into the AIA. This site will also undergo a clearcut (Type II site preparation) to correct LOS issues at adjacent OP1.



This photograph represents an existing trail at Location 10 that connects from FS Road 144 to target areas along the bluff nearest OP1. This trail will be widened to a proposed width of 40 feet to more safely move equipment, supplies, and targets in and out of the western sections of the Battle Area



This photograph shows a portion of the wooded area at Location 11. This area will undergo a merchantable timber thinning to within RCW recovery guidelines, which will open up the terrain for improved mounted (vehicular) maneuverability during training events.

APPENDIX B
RESOURCES CONSIDERED BUT NOT ANALYZED IN DETAIL

As discussed in Chapter 3, implementation of the No Action and Proposed Action alternatives had the potential to result in impacts to Water Quality and Resources, Biological Resources, and Health and Safety, and Utilities, and these resources are discussed in detail in the Draft EA. Preliminary analysis predicted no impacts to Land Use, Cultural Resources, Air Quality, Groundwater Quality, Floodplains, Noise, Recreation and Visual Resources, Socioeconomics, Provision for the Handicapped/Environmental Justice/Protection of Children, and Transportation. The basis for excluding these resources is discussed below.

Land Use. Land use generally refers to human modification of land, often for residential, commercial, industrial, agricultural, recreational, and economic purposes, but may also refer to the use of land for preservation or protection of natural resources such as wildlife habitat, vegetation, or unique features. The Army Real Property Master Plan (RPMP) process is specified in AR 210-20 (DA, 2005a), and the RPMP Technical Manual (DA, 2008) provides assistance in developing an RPMP at Army installations. An Army RPMP determines the types of activities that are allowed or that protect specially designated or environmentally sensitive uses. In compliance with AR 210-20, Fort Stewart maintains an RPMP that assists efficient and appropriate land use and development decisions across the Installation.

The majority of land use at Fort Stewart (68%, or 191,000 acres) is classified as Ranges and Training, which is divided into 120 training areas (including live-fire ranges, non-live-fire ranges, and special training areas such as confidence courses, driver's training, or land navigation). The process through which lands historically used for training activities may be transferred to other uses (AR 350-19) involves Garrison Command, environmental and planning staff, and Installation Management Command. This extensive process ensures the continued safety of the site as the Army's needs transform. The threshold limit for land use will be met if the proposed future use is incompatible with surrounding land uses or results in a change of land use that will degrade mission-essential training. The proposed future use of the B-3 Battle Area under the proposed action or its alternative will remain compatible with surrounding land uses, and there will be no change in the land use at the B-3 Battle Area as a result of the proposed action. Therefore, this resource is not carried forward for further analysis.

Cultural Resources Management (CRM). 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. 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. Both the proposed action and its alternative would be implemented at the B-3 Battle Area location. The B-3 Battle Area was previously surveyed for cultural resources, during which time no sites potentially eligible for the National Register of Historic Places were identified (see Appendix C of Draft EA for CRM Memorandum For the Record). Therefore, this resource is not carried forward for further analysis.

Air Quality. Air quality in a given location is described by the concentration of various pollutants in the atmosphere, with the significance of the pollutant concentration determined by comparing it to the Federal and State National Ambient Air Quality Standards (NAAQS). Fort Stewart's air quality is better than the

NAAQS and implementation of the proposed action or its alternative will not change this status. Therefore, this resource is not carried forward for further analysis.

Groundwater Quality. There are several aquifer systems on Fort Stewart, to include the Floridan aquifer system, from which the Installation withdraws its drinking water. No impacts to these groundwater resources are expected under either alternative, as clearcut, timber thinning, and heavy mowing-related impacts will be temporary for which impacts are routinely minimized through standard erosion and sedimentation control measures. Therefore, this resource is not carried forward for further analysis.

Floodplains. The Federal Emergency Management Agency (FEMA) maps flood-prone areas and lands. There are approximately 120,000 acres of land lying within the 100-year floodplain on Fort Stewart. Based upon the most recent FEMA floodplain data for FSGA (2008), none are found within the B-3 Battle Area, as indicated on Figure 5 (Water Resources in the ROI) of the Draft EA. Therefore, this resource will not be impacted by the proposed action or no action alternative. Therefore, this resource is not carried forward for further analysis.

Noise. No noise impacts are expected from implementation of the proposed action all timber removal and heavy mowing will occur during normal business (i.e. daylight) hours; no sensitive noise receptors will be in the vicinity of the B-3 Battle Area during the proposed work; the noise generated (during timber harvest, improvements) will be temporary in duration; and because the proposed action will not change the existing noise contours on or off the Installation. Under the No Action Alternative, none of these activities will occur and, accordingly, no noise generated. As such, no impacts are expected, and this resource is not carried forward for further analysis.

Recreation & Visual Resources. Recreational opportunities on Fort Stewart are abundant and include hunting, fishing, and camping. Visual resources include the natural and manmade physical features that give a particular landscape its aesthetic character and value. At present, the B-3 Battle Area is utilized for military training only and is not utilized for recreation or its visual resources. Although additional tree removal will occur, it will not detract from the existing viewshed and overall aesthetics at this location, which will remain a forested training land environment, negating potential impacts to these resources as a result of the proposed action. Under the No Action Alternative, no impacts will occur to these resources as no tree removal or other landscape altering activities will occur. Therefore, this is not carried forward for further analysis.

Socioeconomics/Environmental Justice/Protection of Children. Socioeconomics focuses on the general features of the local economy that could be affected by the proposed action. Completion of the proposed action or its alternative is not expected to result in the creation of new jobs and/or a change in the local economy. Because the proposed action or its alternative will occur entirely within the Installation boundary, where no low-income or minority populations reside, and where there are no children residing and/or frequently visiting, environmental justice and protection of children are also not carried forward for further analysis.

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. The proposed action or its alternative does not come under the purview of the ADA; therefore, this provision has been eliminated from further analysis in this EA.

Transportation. Adverse impacts are not expected because any contractors working on the proposed action will be required to coordinate with the Installation prior to working on the site. A plan will be developed to ensure on-Post traffic remains unhindered. Should the No Action Alternative be chosen, there would be no change in the existing transportation network/environment on FSGA. Therefore, this resource is not carried forward for further analysis.

APPENDIX C
Cultural Resources Management
Memorandum for the Record

MEMORANDUM FOR RECORD

SUBJECT: CRM Review of Proposed B-3 Battle Area Improvements at Fort Stewart

1. **PURPOSE:** This Memorandum for Record (MFR) summarizes the potential impacts to cultural resources and documents the efforts to analyze and determine effects for the purposes of complying with the National Historic Preservation Act and the Installation's Programmatic Agreement (PA) with the Georgia State Historic Preservation Office (SHPO) and other applicable cultural resource laws and regulations. The results of this MFR are summarized and incorporated into the Installation's Cultural Resource Management Annual Report to the SHPO in accordance with the PA.

2. **PROPOSED ACTION AND AREA OF POTENTIAL EFFECT (APE):** Fort Stewart proposes to improve Training Area (TA) B3 to further facilitate Indirect Live Fire training. Currently, the existing B3 Battle Area is heavily wooded and overgrown with dense vegetation. The preferred alternative would include the following actions (see Figure 1):

- a. Clearcut to establish Line of Sight (LOS), widen trails, expand Helicopter Landing Zone, and establish Training Event Start Lanes. 15 acres of clearcut are anticipated.
 1. Locations 1, 7, and 9, the LOS will be corrected at Observation Points (OPs) 1-4 via the removal of approximately 4.6ac of timber. This location has been previously surveyed for cultural resources (PCI DO#1) and one archaeological site (9LI699) is within the APE at Location 1.
 2. Location 6, an existing single helicopter landing zone will be expanded to a two helicopter landing zone through the removal of approximately 0.08ac of timber along the western edge. This location has been previously surveyed for cultural resources (PCI DO#1) and two archaeological sites are within the APE of Location 6 (9LI687 & 9LI703).
 3. Locations 3, 4, and 10, timber removal of various acreage to accommodate a 40 ft. width along existing trails. This location has been previously surveyed for cultural resources (PCI DO#6) and one archaeological site is located within Location 3 (9LI1303) and four archaeological sites within Location 10 (9LI706, 9LI710, 9LI716, and 9LI717).
 4. Location 8, a clearcut of approx. 1ac to construct a new 40 ft. wide trail. This location has been previously surveyed for cultural resources (PCI DO#1) and no archaeological sites are within the APE.

5. Location 5, approx. 1.3ac of timber will be cleared to create four small start lanes along FS Road 144. This location has been previously surveyed for cultural resources (PCI DO#1) and one archaeological site (9LI682) is within the APE.
- b. Thin approx. 200ac of timber in Locations 5 & 11 of Battle Area to improve mounted maneuver access. Location 5 has been previously surveyed for cultural resources (PCI DO#1) and seven archaeological sites (9LI682, 9LI683, 9LI691, 9LI692, 9LI693, 9LI695, and 9LI698) are within the APE. Location 11 has been previously surveyed for cultural resources (PCI DO#1) and five archaeological sites (9LI706, 9LI707, 9LI711, 9LI712, & 9LI717) are within the APE.
- c. Heavy mowing of approx. 500ac at Location 2 to improve dismantled maneuver access. This location has been previously surveyed for cultural resources (PCI DO#6) and three archaeological sites (9LI1302, 9LI1303, and 9LI1318) are within the APE. Portions of Location 2 were not surveyed due to inundation and are presumed to also not be accessible for heavy mowing. Wells Cemetery (9LI1816) is located approximately 60m south of the proposed heavy mowing location. Per Fort Stewart Regulation 385-14, a 60m “No training – no ground disturbance” painted buffer has been established around this cemetery. Any mowing or routine operations & maintenance within the buffer area must be further coordinated with CRM.
- d. Routine operations and maintenance of the improved facilities. APEs are defined as above.

3. CULTURAL RESOURCE IMPACTS: All archaeological sites within the APE have been determined ineligible for the NRHP and therefore no adverse effects to historic properties will occur. Although small portions of the APE within Location 2 were not accessible for survey due to inundation/wetlands, heavy mowing as well as routine operations and maintenance are unlikely to occur within those locations.

4. OTHER CULTURAL RESOURCE CONSIDERATIONS: No areas of Tribal Interest (i.e. Sacred Sites, Traditional Cultural Properties and/or NAGPRA-related concerns) have been previously identified within the APE.

5. ACCIDENTAL DISCOVERY OF ARCHAEOLOGICAL DEPOSITS AND/OR HUMAN REMAINS: Although the risk is low, if the project uncovers artifacts and/or human remains, all work must cease and the Fort Stewart or HAAF CRM office (767-0992/2010 or 315-6027) must be notified. If human remains are encountered, the Military Police must also be notified. The Standard Operating Procedure regarding Accidental Discovery of Archaeological Deposits and/or Human Remains must be followed to remain in compliance with cultural resource laws and regulations and prevent Archaeological Resource Protection Act (ARPA) violations.

6. SUMMARY: As proposed, no significant impacts to cultural resources are anticipated to occur associated with the proposed undertaking. The overall potential for cultural resource concerns exceeding the threshold level of significance for cultural

resource impacts in accordance with NEPA (i.e. unmitigated adverse effects to historic properties and/or cultural resources of concern) is negligible. The results of this MFR are summarized and incorporated into the Installation's Cultural Resource Management Annual Report to the SHPO in accordance with the PA. In order to take into account the potential effects of the proposed undertaking by interested stakeholders, the results of this MFR are also included within the associated Environmental Assessment which is made available for public review for 30 days per the terms of the PA.

7. Point of Contact for this action is Brian K. Greer, Consulting Archaeologist, Directorate of Public Works, Environmental Division, Prevention & Compliance Branch at (912) 767-4961/2010. Email correspondence can be directed to brian.k.greer2.ctr@mail.mil.

Brian K. Greer
Cultural Resource Program Manager
Consulting Archaeologist
DPW, ENV DIV, P&C Branch

SOP for ACCIDENTAL DISCOVERY OF ARCHAEOLOGICAL DEPOSITS AND/OR HUMAN REMAINS

Prior to approval of Individual Job Orders and other land disturbing activities, archaeological surveys are routinely conducted to identify areas of archaeological concern. If archaeological materials are encountered during your authorized work, you may have encountered a previously unrecorded archaeological site. In most cases, these archaeological sites are previously recorded and taken into consideration as part of the review process. However, there is potential for inadvertent damage to previously unrecorded archaeological sites that require further investigation.

Do the right thing when you discover archaeological artifacts or human remains on a job site — inform the authorities and cooperate with the Installation on getting the issue resolved. Cultural Resource personnel are on staff here to support your mission and resolve the discovery in a timely manner. The process consists of three simple steps: STOP, CONTACT, and COORDINATE.

SHOULD YOU DISCOVER ARTIFACTS (arrowheads, pottery, glass, brick, etc...):

1. **STOP** work in the immediate vicinity of the suspected artifacts (at least 30 feet).
2. **CONTACT** Cultural Resource Management (CRM) office immediately, Fort Stewart at 767-0992/1402/3359/2010 and HAAF at 315-6027.
3. **COORDINATE** with CRM prior to resuming work at the location where the artifact was found, although work can be continued in another location at least thirty feet from the initial discovery. If additional artifacts are discovered, return to step 1.

SHOULD YOU DISCOVER WHAT APPEARS TO BE HUMAN REMAINS (bones, headstone fragments, etc...):

1. **STOP** work immediately and protect the potential human burial from additional disturbance.
2. **CONTACT** Installation Police immediately, Fort Stewart at 767-2965/4895 and HAAF at 315- 6133/6134, then **CONTACT** the Cultural Resource Management office, Fort Stewart at 767-0992/1402/3359/2010 and HAAF at 315-6027. Wait for on-scene investigators to arrive to make an initial assessment.
3. **COORDINATE** with on-scene investigators (CRM and Installation Police) prior to resuming work at that particular location where the incident occurred.

REMEMBER...STOP!...CONTACT!...COORDINATE!

And most importantly...failure to report damage to archeological sites or human burials may result in violations of the Archaeological Resources Protection Act (ARPA). Violations of ARPA may result in civil and/or criminal penalties up to \$100,000 and up to one year in jail for the 1st offense. Furthermore, unauthorized collection of artifacts from federal land is also an ARPA violation.



Figure 1: Proposed B-3 Battle Area Improvements at Fort Stewart, GA (cultural resource locations omitted from public disclosure in accordance with the Archaeological Resources Protection Act of 1979).

APPENDIX D
FS/HAAF Stormwater Policies



DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
DIRECTORATE OF PUBLIC WORKS
1587 FRANK COCHRAN DRIVE
FORT STEWART, GEORGIA 31314

REPLY TO
ATTENTION OF

IMSH-PW

MEMORANDUM FOR CONTRACTORS

SUBJECT: DPW Policy Letter #10 – Dry Detention Basins (Revised 14 March 2012)

1. REFERENCES.

- a. Federal Clean Water Act (CWA), as amended (33 U.S.C.1251 et seq.), and Clean Water Act stormwater regulations 40 CFR 122.26.
- b. Executive Orders #13423 Energy Independence and Security Act-2007, and #13514 Federal Leadership in Environmental, Energy, and Economic Performance-2009; Section 438-Stormwater.
- c. Policy Memo 19 JAN 10, Office of the Under Secretary of Defense, DoD Implementation of Stormwater Requirements under Section 438 of the Energy Independence and Security Act.
- d. Georgia Water Quality Control Act, as amended, O.C.G.A. §12-5-20, *et seq.*, and the Rules for Water Quality Control, Chapter 391-3-6, promulgated pursuant thereto, as amended
- e. Erosion & Sedimentation Control Act, as amended, O.C.G.A §12-7-1, *et seq.*, and the Rules for Erosion & Sedimentation, Chapter 391-3-7, promulgated pursuant thereto, as amended

2. PURPOSE. This memorandum replaces the former Policy Letter #10 and re-establishes the Directorate of Public Works policy concerning erosion and sedimentation controls, standards, and specifications for dry detention basins and stormwater controls for flooding.

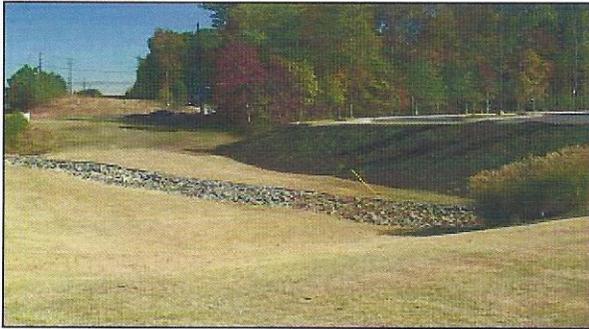
3. APPLICABILITY. This policy applies to all contractors and government employees at Fort Stewart and Hunter Army Airfield.

4. RESPONSIBILITIES. The following are the minimum standards for contractors to use to ensure uniformity of the use of dry detention basins throughout the Installation.

- a. Fort Stewart/Hunter Army Airfield (FS/HAAF) must comply with the State of Georgia National Pollutant Discharge Elimination Systems Permitting reference; the DPW Stormwater Policy #11, FS/HAAF Construction Site Runoff Control and FS/HAAF Post-Construction New-Redevelopment requirements which can be found with other Stormwater Management documents at the following web link: http://www.stewart.army.mil/dpw/EN_Downloads.asp.

Therefore, overall stormwater designs must focus on maintaining or restoring the hydrologic performance of the watershed in its pre-development condition. Traditional, centralized stormwater management connects impervious surfaces to efficiently route stormwater to regional or site specific detention facilities to mitigate peak flow. Although these facilities may be successful in reducing the peak flow rate to the pre-development level immediately downstream of these facilities they serve, this approach may become ineffective in addressing the water quality of surface runoff and reducing downstream flooding since a greater volume of stormwater still runs off from these developed areas below the peak flow rate.

As noted above, centralized stormwater practices must now be replaced with *Low Impact Development (LID)* and *Green Infrastructure (LID/GI)* stormwater control practices. The LID/GI approach focuses on disconnecting the impervious surfaces and intercepts and treats surface runoff at the source. LID/GI stormwater control practices utilize *Best Management Practices (BMPs)*, such as bio-retention, rain gardens, vegetative enhanced swales, and other infiltration practices, which increase groundwater recharge, and improves surface water quality along with detention and extended detention basins, which protect stream channels, and reduces downstream flooding. The objective of the LID/GI method is to reduce the volume of stormwater required to be detained and effectively improve water quality via the treatment train LID/GI BMPs.



Dry Detention Basins-Description:

A dry detention basin is a surface storage basin or facility designed to provide water quantity control through detention of stormwater runoff.



Extended Detention Basins (EDBs)-Description

An extended detention basin (EDB) is a basin designed to detain stormwater for many hours after storm runoff ends. This BMP is similar to a detention basin used for flood control, however; the EDB uses a much smaller outlet that extends the emptying time of the more frequently occurring runoff events to facilitate pollutant removal. The EDBs drain time for the water quality volume (WQv) is recommended to remove a significant portion of total suspended solids (TSS).

- b. As referenced within the *Georgia Stormwater Management Manual and Coastal Stormwater Supplement (GASWMM/CSS)*, water *quantity* management practices can only be used to *manage* the post-construction stormwater runoff rates and volumes generated by larger, less frequent rainfall events (e.g., 1-year, 24-hour event, 25-year, 24-hour event). They provide little, if any, stormwater runoff reduction or stormwater quality protection (Storm Water Management [SWM])

Criteria #1 & #2, respectively). Consequently, it is recommended they be used in conjunction with LID/GI practices and general application stormwater management practices to completely satisfy the aquatic resource protection (SWM Criteria #3), overbank flood protection (SWM Criteria #4) and extreme flood protection (SWM Criteria #5) criteria presented in the GASWMM/CSS. Two (2) of the water quantity management practices that may be used in coastal Georgia with LID/GI treatment trains include:

- Dry Detention Basins
- Extended Detention Basins

c. General Description

Dry detention basins or Extended Detention basins (EDBs) are surface facilities intended to provide for the temporary storage of stormwater runoff to reduce downstream water quantity impacts. These facilities temporarily detain stormwater runoff, releasing the flow over a period of time. They are designed to completely drain following a storm event and are normally dry between rain events.

Dry detention basins are intended to provide overbank flood protection (peak flow reduction of the 25-year storm) and can be designed to control the extreme flood (100-year) storm event.

Dry EDBs provide downstream channel protection through extended detention of the channel protection volume, and can also provide 25-year and 100-year control.

Both dry detention and EDBs provide limited pollutant removal benefits and are not intended for water quality treatment. Detention-only facilities must be utilized with a treatment train approach with other LID/GI structural control BMPs which provide treatment of the water quality volume requirements. Compatible multi-objective use of dry detention facilities is strongly encouraged.

d. Design Criteria and Specifications

Dry Detention and EDBs should be incorporated into the overall stormwater design for development and redevelopment projects as follows:

e. Location

Dry detention and EDBs are to be located downstream of other LID/GI general application structural controls (*bioretention, sand filters, infiltration trench and enhanced swale*) which are typically used in combination with detention controls for treatment of the water quality volume (WQv). The detention facilities are located downstream from the water quality controls either on-site or combined into a regional or neighborhood facility. See Section 3.1 GASWMM/CSS and the United States Environmental Protection Agency Technical Guidance for Implementation of Section 438 for more information on the use of multiple structural controls such as LID/GI in a treatment train.

- The maximum contributing drainage area to be served by a single dry detention or EDB is 75 acres.
- EDBs are well suited for watersheds with at least five impervious acres up to approximately one square mile of watershed. Smaller watersheds can result in an orifice size prone to clogging. Larger

watersheds and watersheds with base flows can complicate the design and reduce the level of treatment provided. EDBs are also well suited where flood detention is incorporated into the same basin. The depth of the seasonable high groundwater table should be investigated. Groundwater depth should be one (1) or more feet below the bottom of the basin in order to keep this area dry and maintainable.

- Always maximize the distance between the inlet and the outlet. It is best to have a basin length (measured along the flow path from inlet to outlet) to width ratio of at least 2:1. A longer flow path from inlet to outlet will minimize short circuiting and improve reduction of TSS. To achieve this ratio, it may be necessary to modify the inlet and outlet points through the use of pipes or swales.

f. General Design

- Dry detention basins are sized to temporarily store the volume of runoff required for a minimum of 24 hours and to provide overbank flood protection (i.e., reduce the post-development peak flow of the 25-year storm event to the pre-development rate), and control the 100-year storm.

EDBs are sized to provide extended detention of the channel protection volume for a minimum of 72 hours and can also provide additional storage volume for normal detention (peak flow reduction) of the 25-year and 100-year storms.

Routing calculations must be used to demonstrate that the storage volume is adequate. Hydraulic considerations are needed to ensure the basin is sized to store the entire (or remaining volume after installation of LID/GI BMPs) water quality design volume (removal of Total Suspended Solids [TSS] by 80%) and the outlet structure must be sized as to provide desired hydraulic detention time of 24 hours as a minimum for the 1-year, 24-hour storm.

- Storage volumes greater than 100 acre-feet are subject to the requirements of the Georgia Safe Dams Act (see Appendix H of the GASWMM) unless the facility is excavated to this depth.
- Vegetated embankments shall have side slopes no steeper than 3:1 or 4:1 (horizontal to vertical). The basin side slopes should be stable and gentle to facilitate maintenance and access. Slopes that are flatter should be utilized to allow for conventional maintenance equipment, and for improved safety and aesthetics. Riprap-protected embankments shall be no steeper than 3:1.
- The maximum depth of the basin should not exceed 4 feet. The final grade of the basin floor shall be no deeper than one (1) foot above seasonal high water table.
- Areas above the normal high water elevations of the detention facility should be sloped toward the basin to allow drainage. Careful finish grading is required to avoid creation of upland surface depressions that may retain runoff. A low flow or pilot channel across the facility bottom from the inlet to the outlet (often constructed with geotextile underlayment and riprap) is recommended to convey low flows and prevent standing water conditions.
- Forebay Designs for EDBs: The forebay provides an opportunity for larger particles to settle out in an area that can be easily maintained. The length of the flow path through the forebay should be maximized, and the slope minimized to encourage settling.

- a) The appropriate size of the forebay may be as much a function of the level of development in the tributary area as it is a percentage of the WQv.
- b) When portions of the watershed may remain disturbed for an extended period of time, the forebay size will need to be increased due to the potentially high sediment load. The forebay outlet should be sized to release 2% of the un-detained peak 100-year discharge.
- c) A soil riprap berm with 3:1 side slopes (or flatter) and a pipe outlet or a concrete wall with a notch outlet should be constructed between the forebay and the main EDB.
- d) Micropool EDBs: Micropool extended detention basins are a variation of the standard wet extended detention pond that have only a small permanent pool (i.e., micropool). The “micropool” provides enough storage for approximately 10% of the stormwater runoff volume generated by the target runoff reduction rainfall event (e.g., 85th percentile rainfall event). The remainder of the stormwater runoff volume generated by the target runoff reduction rainfall event is managed in an extended detention zone provided immediately above the “micropool” and released over an extended 24-hour period.

- The following areas will be sodded: (1) Bottom of the detention basin, (2) Inside side slopes of the detention basin, and (3) Outward, ten feet from the edge of the detention basin. All other disturbed areas will be seeded with temporary and permanent grasses; contact the Natural Resources Conservation Service for appropriate seasonal seed mixes. Utilization of erosion control blankets, permanent and/or temporary, as required, for prevention of erosion rills is required.
- Adequate maintenance access must be provided for all detention basins.
- All detention basins within one-thousand (1000) feet of any housing and/or school facility shall be secured with a four (4) foot chain link style fence.
- During construction of any project on FS/HAAF the following erosion and sedimentation best management practices are not permitted:
 - 1) Man made “haybales”
 - 2) The use of slotted board dams as a retrofit on less than 30 acres is not allowed. Instead, a perforated half-round pipe with a stone filter ring must be utilized.

g. Inlet and Outlet Structures

There are a wide variety of outlet structure types, the most common of which are, orifices, perforated risers, pipes/culverts, sharp-crested weirs, broad-crested weirs, V-notch weirs, proportional weirs, and combination outlets. Reference Section 2.3 of the GASWMM/CSS for more information on the design criteria for *Outlet Structures*.

Each of the above outlet types has a different design purpose and application:

- 1) Water quality and channel protection flows are normally handled with smaller, more protected outlet structures such as reverse slope pipes, hooded orifices, orifices located within screened pipes or risers, perforated plates or risers, and V-notch weirs.

2) Larger flows, such as overbank protection and extreme flood flows, are typically handled through a riser with different sized openings, through an overflow at the top of a riser (drop inlet structure), or a flow over a broad crested weir or spillway through the embankment. Overflow weirs can also be of different heights and configurations to handle control of multiple design flows.

- Inflow channels are to be stabilized with flared riprap aprons, or the equivalent. A sediment forebay sized to 0.10 inches per impervious acre of contributing drainage should be provided for dry detention and EDBs that are in a treatment train with off-line ⁽¹⁾ water quality treatment structural controls.

⁽¹⁾ Structural stormwater controls are designed to be either "on-line" or "off-line." On-line structural controls must be able to handle the entire range of storm flows. Off-line facilities such as bioretention areas, and infiltration trenches on the other hand are designed to receive only a specified flow rate through the use of a flow regulator (i.e. diversion structure, flow splitter, etc). Flow regulators are typically used to divert the WQv to an off-line structural control sized and designed to treat and control the WQv. After the design runoff flow has been treated and/or controlled meeting this WQv, it is returned to the conveyance system or "on-line" structure.

A key decision whether to locate a BMP on-line or off-line. On-line refers to locating a BMP such that all of the runoff from the upstream watershed is intercepted and treated by the BMP. A single on-line BMP should be designed to treat both onsite runoff and upstream (offsite) runoff. Locating BMPs off-line requires that all onsite catchment areas flow through the BMP(s) prior to combining with flows from the upstream (offsite) watershed.

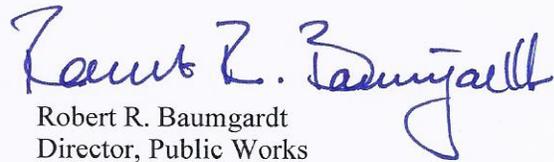
Designers should also be aware that WQv BMPs, especially those that promote infiltration, could result in volume reductions for flood storage. These volume reductions are most pronounced for frequently occurring events, but even in the major event, some reduction in detention storage volume can be achieved if WQv-reduction BMPs are widely used on a site.

- For a dry detention basin, the outlet structure must be sized as to provide desired hydraulic detention time of 24 hours as a minimum for the 1-year, 24-hour storm (based upon hydrologic routing calculations) and can consist of a weir, orifice, outlet pipe, combination outlet, or other acceptable control structure. Small outlets that will be subject to clogging or are difficult to maintain are not acceptable.

The Inlet and Outlet structures must be separated as much as possible to avoid short-circuiting and the positioning of these structures and/or orifices should be above the dry detention basin bottom to provide space for captured sediments and to minimize resuspension of any TSS captured in the basin. The inlet must be designed to safely bypass flows which would exceed the design volume and dissipate flow energy at concentrated points of inflow. This also will limit erosion and promote particle sedimentation.

- For EDBs, a low flow orifice capable of releasing the channel protection volume over 24 hours must be provided. The channel protection orifice should have a minimum diameter of 3 inches and should be adequately protected from clogging by an acceptable external trash rack. The orifice diameter may be reduced to 1 inch if internal orifice protection is used (e.g., an over perforated vertical stand pipe with 0.5-inch orifices or slots that are protected by wirecloth and a stone filtering jacket). Adjustable gate valves can also be used to achieve this equivalent diameter. Reference Section 2.3.1 (*Outlet Structures*) of the GASWMM/CSS for more information on the design of outlet works.

- Seepage control or anti-seep collars should be provided for all outlet pipes.
 - A conveyance shall be installed from all inlets to outlets. The inlet and outlet conveyance final grade is to be a minimum of one (1) foot above the seasonal high water table elevation. The conveyance is required to be lined with geo-textile and with four inches (4") of stone over same (Graded 2"- 4" stone). The conveyance is to be a minimum of 4 feet wide.
 - Riprap, plunge pools or pads, or other energy dissipators are to be placed at the end of the outlet to prevent scouring and erosion (See Section 4.5 of the GASWMM, *Energy Dissipation Design*, for more guidance).
 - An emergency spillway is to be included in the stormwater basins design to safely pass the extreme flood flow. The spillway prevents pond water levels from overtopping the embankment and causing structural damage. The emergency spillway must be designed to State of Georgia guidelines for dam safety (see Appendix H of the GASWMM) and must be located so that downstream structures will not be impacted by spillway discharges.
 - A minimum of 1 foot of freeboard must be provided, measured from the top of the water surface elevation for the extreme flood, to the lowest point of the embankment not counting the emergency spillway.
5. PROPONENT: The Directorate of Public Works (DPW) is the proponent for this policy. The point of contact is DPW, Environmental Division, at commercial (912) 767-2010 or DSN 870-2010.


Robert R. Baumgardt
Director, Public Works

NOV 04 2011

MEMORANDUM FROM DPW

MEMORANDUM FOR CONTRACTORS AND TENANTS

SUBJECT: DPW Policy Letter # 11 - Stormwater Management Program

1. REFERENCES.

a. Federal Clean Water Act (CWA) at 33 U.S.C. §1251, *et seq.*; and its implementing regulations found at 40 CFR § 122.26, *et seq.*

b. Section 438 of the Energy Independence and Security Act at 42 U.S.C. §17094.

c. Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance, 5 October 2009.

d. Georgia Water Quality Control Act, O.C.G.A. §12-5-20, *et seq.*, and its implementing rules found at Ga. Admin. Comp. ch. 391-3-6, *et seq.*

e. Georgia Erosion & Sedimentation Control Act, O.C.G.A. §12-7-1, *et seq.*, and its implementing rules found at Ga. Admin. Comp. ch. 391-3-7, *et seq.*

f. Deputy Under Secretary of Defense (Installations and Environment) Memorandum, DoD Implementation of Storm Water Requirements under Section 438 of the Energy Independence and Security Act, 19 January 2010.

g. AR 200-1, Environmental Protection and Enhancement, 13 December 2007.

2. APPLICABILITY. This policy is applicable to Contractors and Tenants on Fort Stewart/Hunter Army Airfield.

3. PURPOSE. To provide guidance on the Stormwater Management Program.

4. POLICY. The Installation's stormwater systems are regulated under National Pollutant Discharge Elimination System (NPDES) Permits, as defined in above references.

a. To protect water quality, the Installation is required to have a stormwater management program that reduces the discharge of pollutants from industrial activities, construction activities, and

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SUBJECT: DPW Policy Letter # 11 - Stormwater Management Program

the Municipal Separate Storm Sewer System (MS4) to the "maximum extent technically feasible."

b. For any new development and redevelopment that occurs on the Installation, the stormwater management program must include best management practices (BMPs) for construction site stormwater runoff control and post-construction stormwater management.

c. For new development or redevelopment of 5,000 sq ft or greater that occurs on the Installation, the stormwater management program must include, to the "maximum extent technically feasible," additional stormwater low impact development BMPs.

d. All personnel are required to comply with the Installation's Stormwater Management Plan, as detailed in the following documents located on the Team Stewart web site at http://www.stewart.army.mil/dpw/EN_Downloads.asp.

(1) Stormwater Pollution Prevention Plan (SWP3) for Industrial Activities

(2) Municipal Separate Storm Sewer Systems (MS4) Notices of Intent

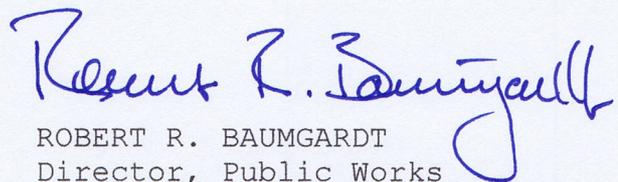
(3) Illicit Discharge, Detection and Elimination (IDDE) Plan

(4) Stormwater Guidance for Construction Site Stormwater Runoff Control

(5) Post-Construction Stormwater Management Guidance for New Development and Redevelopment

(6) Stormwater Maintenance Standard Operating Procedures

5. PROPONENT. The DPW Environmental Division is the proponent for this policy at commercial (912) 767-2010.


ROBERT R. BAUMGARDT
Director, Public Works