U.S. ARMY GARRISON
FORT GORDON, GEORGIA
ROAD TO GROWTH STATIONING ACTIONS

Programmatic
Environmental Assessment

FINAL
December 2014

Prepared for:

U.S. Army Garrison Fort Gordon, Georgia

Prepared by:

U.S. Army Corps of Engineers, Savannah District

Planning Division

US Army Corps of Engineers ®

DRAFT FINDING OF NO SIGNIFICANT IMPACT (FNSI) FOR FORT GORDON ROAD TO GROWTH STATIONING ACTIONS

1.0 Title of the Action: Programmatic Environmental Assessment (PEA) for Fort Gordon Road to Growth Stationing Actions.

2.0 Background Information: The PEA evaluates the environmental and socioeconomic impacts associated with the Proposed Action and alternatives for a range of potential stationing actions collectively termed "Road to Growth" (RTG) at Fort Gordon, Georgia. The PEA also evaluates developable acreage and the installation's capacity for growth. Where activities are similar in nature, broad in scope, or at the planning level, applicable National Environmental Policy Act (NEPA) regulations authorize programmatic environmental review as a means to eliminate repetitive discussions of the same issues. As more detailed information for individual stationing actions becomes available a Record of Environmental Consideration would be prepared, tiered off this programmatic EA. More in-depth NEPA analysis, such as a supplemental Environmental Assessment, would be required if an activity is planned at a location that is not considered in the PEA, if the sum of the activities exceeds those identified in the Preferred Alternative, or if the action does not meet the screening criteria in 32 CFR, Part 651, Subpart D.

3.0 Description of the Proposed Action: The Army proposes to conduct re-stationings and realignments resulting in force increases of up to 6,000 active military, government civilians, and contract personnel at Fort Gordon by late 2021. This increase would require renovation of some existing facilities and construction of new facilities on the installation to adequately house and support the elements being re-stationed to Fort Gordon. The majority of these facilities would be located within the cantonment area, but some may be located in adjacent training areas.

Because of the relocation of ARCYBER headquarters to the installation, elements of a number of supporting and otherwise Cyber security-related organizations are expected to move to Fort Gordon or to increase personnel at existing units at Fort Gordon. The potential increase in personnel may also require additional Soldier support facilities and staffing. In addition, some stationing actions not related to ARCYBER may occur. Organizations that may realign elements to, or increase personnel at, Fort Gordon include, but are not limited to:

- TRADOC (Army Training and Doctrine Command)
- ARCYBER Joint Forces headquarters
- INSCOM (Army Intelligence and Security Command)
- FORSCOM (Army Forces Command)
- NETCOM (Army Network Enterprise Technology Command)
- DENCOM (Army Dental Command)
- NSA (National Security Agency)
- Air Force
- Navy
- Marines
- Other DoD active/reserve services or other Federal agencies

4.0 Alternatives: The No Action Alternative and three action alternatives were presented and discussed in this PEA:

- **High Growth Alternative -** A High Growth Alternative could result in a net increase of up to 6,000 personnel and renovation/construction of up to one million square feet of facilities on up to 2,000 acres of the installation. This is the maximum level of increase in personnel, renovation/construction, and development acreage analyzed in the PEA.
- **Medium Growth Alternative -** A Medium Growth Alternative could result in a net increase of up to 4,000 personnel and renovation/construction of up to 600,000 square feet of facilities on up to 1,500 acres of the installation.
- **Low Growth Alternative -** A Low Growth Alternative could result in a net increase of up to 3,000 personnel and renovation/construction of up to 500,000 square feet of facilities on up to 1,200 acres of the installation.

5.0 Development Categories: The PEA evaluated areas that the scoping process deemed to be buildable acreage within the cantonment area and several adjacent training areas for conducting the types of activities expected to come to Fort Gordon as part of the Road to Growth. Buildable acreage tracts are categorized as being in one of three categories based on environmental and other constraints:

- **GREEN -** having minor to no environmental or other constraints.
- **AMBER -** having moderate to minor environmental or other constraints that could be overcome by design or engineering solutions or that could be mitigated.
- **RED -** having major environmental or other constraints that would require relocation of existing facilities, changes in land use, or could exceed a significant impact threshold without extensive mitigation.

The GREEN-AMBER-RED development categories would be used to aid in locating projects according to levels of potential environmental impacts and mitigation required. The decision hierarchy would be GREEN, AMBER, and RED, respectively, for new construction. However, any of the growth alternatives could have actions occurring in any of the three development categories.

6.0 Summary of Environmental Effects: Table 1 provides a summary of the potential environmental and cumulative impacts associated with the implementation of the No Action and High Growth Alternative. It is understood that the correlation can be made that lower growth alternatives would have less impacts as there would be less growth. Accordingly, if the High Growth Alternative would not produce significant adverse impacts, neither would either of the lower growth alternatives.

As documented in Section 3.0 of the PEA, there would be expected minor adverse impacts to geology and soils and noise; negligible to moderate impacts to land use, biological resources, wetlands and water resources, cultural resources, facilities, and infrastructure and utilities; moderate impacts to air quality and hazardous materials and hazardous waste; short-term minor to moderate impacts and long-term beneficial impacts to socioeconomics; and significant

but mitigable impacts to traffic from implementation of the High Growth Alternative. While implementing the High Growth Alternative would produce adverse traffic effects to certain intersections, implementing the mitigation measures identified in the PEA would reduce the projected traffic impacts to acceptable levels, resulting in less than significant impacts. These mitigation measures must be implemented, otherwise an Environmental Impact Statement would be required.

7.0 Public Comments: The Final EA and draft FNSI were made available to Federal, state, and local agencies, Native American tribes, and the public for review and comment for 30 days. A Notice of Availability for the EA and draft FNSI were published in the *Augusta Chronicle*. During the public review and comment period, copies of the EA were made available at the Fort Gordon Public Affairs Office (Building 33720, Darling Hall, Chamberlain Ave., Fort Gordon, GA), Woodworth Library (Building 33500, Rice Road, Fort Gordon, GA), and the Augusta-Richmond County Library (823 Telfair St., Augusta, GA). During and immediately following this public comment period, the Army collected, logged, and incorporated any comments received into the EA and FNSI as necessary. The Army will prepare and release a final FNSI (and final EA, if necessary) to the appropriate local, state, and Federal repositories after receiving all comments.

8.0 Conclusion: Based on a careful review of the PEA, which is incorporated by reference, and all of the public comments received by Fort Gordon, the Army has concluded that no significant adverse environmental or socioeconomic impacts are likely to result from implementation of the Proposed Action under any of the alternatives analyzed. Therefore, an EIS is not required, and will not be prepared.

Appropriate supplemental NEPA analysis and documentation may need to be prepared at the installation as more details on implementing the Proposed Action become available.

COL Samuel G. Anderson
Garrison Commander, Fort Gordon

10 January 2015
Date

Table 1: Fort Gordon Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	High Growth Alternative (+ 6,000 Personnel)		
		GREEN Development Category	AMBER Development Category	RED Development Category
Geology and Soils	No Impact	Minor Impacts	Minor Impacts	Minor Impacts
Land Use	No Impact	Moderate Impacts	Moderate Impacts	Moderate Impacts
Biological Resources	No Impact	Negligible Impacts	Minor Impacts	Negligible Impacts
Wetlands and Water Resources	No Impact	Negligible Impacts to wetlands, floodplains; Moderate Impacts to groundwater, surface water, and stormwater	Negligible Impacts to wetlands, floodplains; Moderate Impacts to groundwater, surface water, and stormwater	Negligible Impacts to wetlands, floodplains; Moderate Impacts to groundwater, surface water, and stormwater
Air Quality	No Impact	Minor Impacts	Minor Impacts	Minor Impacts
Noise	No Impact	Minor Impacts	Minor Impacts	Minor Impacts
Cultural Resources	No Impact	Negligible Impacts	Negligible Impacts	Minor Impacts
Hazardous Materials and Hazardous Waste	No Impact	Minor Impacts	Minor Impacts	Minor Impacts
Facilities	No Impact	Negligible	Moderate Impacts	Minor Impacts for renovation; Moderate Impacts for new construction
Infrastructure and Utilities	No Impact	Negligible Impacts to potable water, domestic and industrial wastewater, electricity and natural gas; Minor Impacts to solid waste	Negligible Impacts to potable water, domestic and industrial wastewater, electricity and natural gas; Minor Impacts to solid waste	Negligible Impacts to potable water, domestic and industrial wastewater, electricity and natural gas; Minor Impacts to solid waste
Traffic[1]	No Impact	Significant but Mitigable	Significant but Mitigable	Significant but Mitigable

Valued Environmental Component	No Action Alternative	High Growth Alternative (+ 6,000 Personnel)		
		GREEN Development Category	**AMBER Development Category**	**RED Development Category**
Socioeconomics	No Impact	Short-term Moderate Impacts to housing and schools; Minor Impacts to public health/safety, family support, and recreation; Long-term Beneficial Impacts to all sub-categories	Short-term Moderate Impacts to housing and schools; Minor Impacts to public health/safety, family support, and recreation; Long-term Beneficial Impacts to all sub-categories	Short-term Moderate Impacts to housing and schools; Minor Impacts to public health/safety, family support, and recreation; Long-term Beneficial Impacts to all sub-categories
Cumulative Impacts	No Impact	No Significant Impacts	No Significant Impacts	No Significant Impacts

[1]While implementation of the High Growth Alternative would result in adverse traffic effects to a substantial number of intersections, implementation of the proposed mitigation measures described in the PEA would lessen the projected adverse effects and is expected to result in moderate impacts. These mitigation measures must be implemented, otherwise an Environmental Impact Statement would be required.

U.S. ARMY GARRISON
FORT GORDON, GEORGIA
ROAD TO GROWTH STATIONING ACTIONS

Programmatic
Environmental Assessment
December 2014

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APPROVED BY: _____ DATE: 10 January 2015
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Garrison Commander
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1.0 Purpose, Need, and Scope

1.1 Background

Fort Gordon encompasses approximately 55,590 acres in east-central Georgia. The majority of the installation and the entire cantonment area lie within Richmond County, with a small portion of the training area in Jefferson, Columbia, and McDuffie counties. Fort Gordon is located approximately 145 miles east of Atlanta, Georgia and approximately 115 miles northwest of Savannah, Georgia. Augusta, Georgia is the nearest urban center and is located approximately 9 miles northeast of the installation. Fort Gordon is bounded on the north by U.S. Highway 78/State Highway 10 (Gordon Highway), on the west by U.S. Highway 221, and on the south by U.S Highway 1. Interstate 20 (I-20), located 2 miles north of the installation, and Interstate 520 (Bobby Jones Expressway, I-520), located 2 miles east of Gate One, provide access to the installation. There are no public roads or highways on the installation (Figure 1-1). Approximately 50,000 acres (90 percent) of Fort Gordon are used for training missions. The installation is subdivided into 49 training areas, two restricted impact areas (small arms and artillery), and two cantonment areas (main and industrial) (Figure 1-2). Impact areas occupy approximately 13,000 acres and on-post maneuver and training areas occupy approximately 37,000 acres. The remaining 5,590 acres are cantonment areas which include military housing, administrative offices, community facilities, medical facilities, industrial facilities, maintenance facilities, supply/storage facilities, lakes and ponds, recreational areas, and forested areas (USAG Fort Gordon 2011b).

The U.S. Army Garrison at Fort Gordon operates the installation on behalf of the Cyber Center of Excellence and the other units and organizations that reside on Fort Gordon. The garrison supports the post through directorates and agencies that provide a full range of city services and quality-of-life functions — everything from facilities maintenance, recreation and family programs to training support and emergency services. The garrison is part of the Atlantic Region of the installation Management Command (IMCOM). IMCOM operates Army installations around the world. The mission of the U.S. Army Garrison at Fort Gordon is to deliver installation services, facilities and infrastructure to best support mission readiness and provide an enhanced quality of life for the Soldiers, families and civilians of Fort Gordon.

Fort Gordon is the home of the newly established U.S. Army Cyber Center of Excellence, which was previously called the Signal Center of Excellence. Fort Gordon is the largest communications training facility in the Armed Forces, and is the focal point for the development of tactical communications, information systems, and cyber security. The installation trains Soldiers with the most sophisticated communications equipment and technology in existence. The Leader College of Information Technology, located at Fort Gordon, is the U.S. Army's premiere site for all automation training and home to the Regimental Non-Commissioned Officer (NCO) Academy.

Fort Gordon is also the home to the 706th Military Intelligence Group; the Naval Security Group Activity (NSGA); United States Air Force 480th Intelligence, Surveillance, and Reconnaissance Group; 63rd Signal Battalion; 67th Signal Battalion; the Southeast Region Medical Command; the Southeast Region Dental Command; Southeast Region Veterinary Command; the Dwight D. Eisenhower Army Medical Center (DDEAMC); U.S. Army Dental Lab; Regional Training Site-Medical; National Science Center-Army; 35th Signal Brigade (deployable); 513th Military Intelligence Brigade (deployable); and Georgia National Guard Youth Challenge Academy.

Additionally, numerous Army Reserve and Georgia and South Carolina National Guard units utilize Fort Gordon's weapons ranges and training areas. The current workforce population on Fort Gordon (military and civilian) is approximately 23,000 of which approximately 15,000 are active and

Figure 1-1: Vicinity Map for Fort Gordon, Georgia

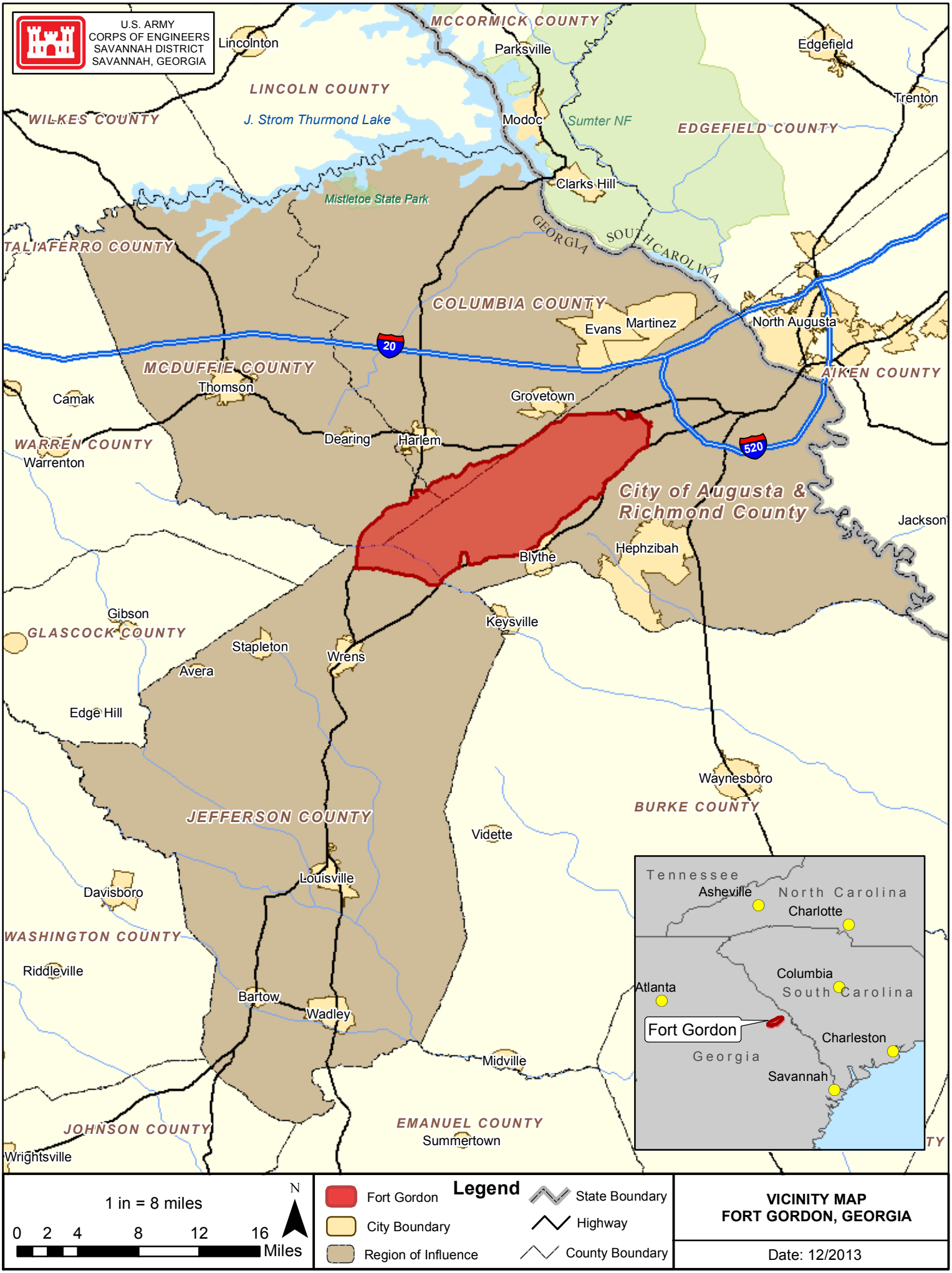
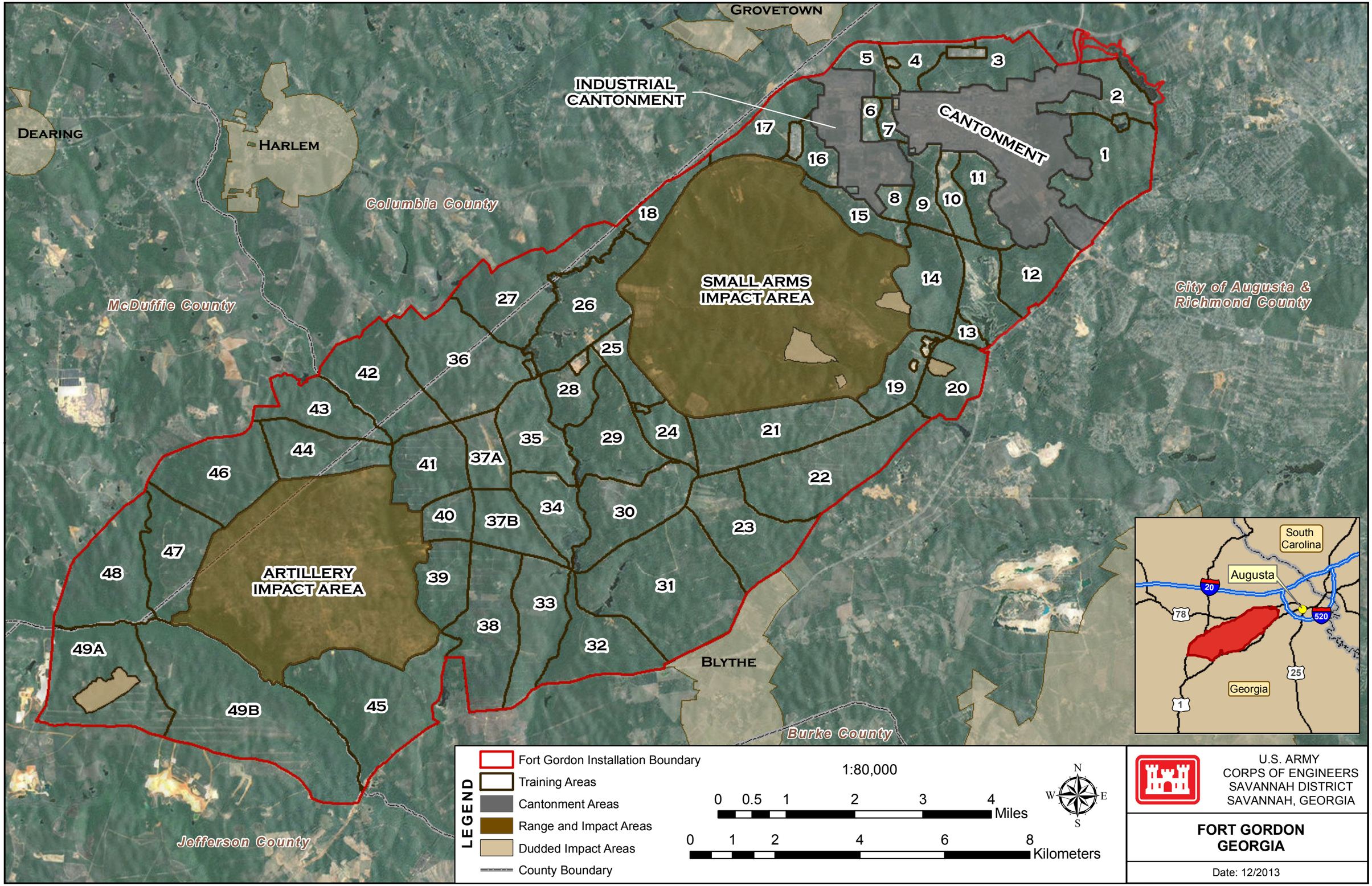


Figure 1-2: Fort Gordon, Georgia



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reserve military and 8,000 are civilians and contractors (USAG Fort Gordon 2014a).

1.2 Purpose and Need for the Proposed Action

1.2.1 Background to the Purpose and Need

On October 1, 2010, the U.S. Army activated the Army Cyber Command/2nd Army (ARCYBER). ARCYBER leads a corps of 21,000 Soldiers and civilians who serve worldwide operating and defending all Army communications networks with supporting organizations such as the Army Network Enterprise Technology Command (NETCOM). ARCYBER's mission is to plan, coordinate, integrate, synchronize, direct, and conduct network operations and defense of all Army networks. In August 2013, ARCYBER had approximately 156 active duty military, government civilians, and contract personnel employed at Fort Meade, Maryland, and approximately 343 active duty military, government civilians, and contract personnel employed at Fort Belvoir, Virginia. The Army proposed to consolidate the ARCYBER force structure currently at Fort Meade and Fort Belvoir into one location at either Fort Meade or Fort Gordon. This consolidation would lead to increased personnel at the new ARCYBER command and control facility. The proposed consolidation was analyzed in *Final Environmental Assessment, U.S. Army Cyber Command and Control Facility, Fort Meade, Maryland/Fort Gordon, Georgia*, and resulted in a Finding of No Significant Impact (FNSI). It concluded that locating a consolidated ARCYBER command and control facility at either Fort Meade or Fort Gordon would have no significant environmental impacts (ARCYBER 2013b). In December 2013, the Army announced its decision to locate the consolidated ARCYBER facility at Fort Gordon.

As a result of the ARCYBER headquarters relocation to Fort Gordon, elements of a number of supporting and otherwise cyber security-related organizations are expected to realign by either moving to Fort Gordon or increasing personnel in units already stationed on Fort Gordon. The potential increase in personnel may require additional Soldier support facilities and staffing. In addition, some stationing actions not related to ARCYBER may also occur. Organizations that may realign elements to, or increase personnel at Fort Gordon include, but are not limited to:

- TRADOC (Army Training and Doctrine Command)
- ARCYBER Joint Forces headquarters
- INSCOM (Army Intelligence and Security Command)
- FORSCOM (Army Forces Command)
- NETCOM (Army Network Enterprise Technology Command)
- DENCOM (Army Dental Command)
- NSA (National Security Agency)
- Air Force
- Navy
- Marines
- Other DoD active and reserve services
- Other Federal organizations

1.2.2 Purpose and Need

The purpose and need of the Proposed Action is to meet the space and mission requirements that will result from potential stationing actions at Fort Gordon that are collectively termed "Road to Growth (RTG)." These actions are associated with force alignment in a number of

Army, other Department of Defense (DoD) and non-DoD components. These RTG actions would allow the Army and DoD to maximize operational efficiency of military and other units with similar missions related to cyber security, military intelligence, and the missions of the National Security Agency (NSA) and the Army Cyber Center of Excellence (CoE).

1.3 Decision to be Made

The proponent for this project is the Garrison Commander (GC) of Fort Gordon. It is the responsibility of the GC to review the information and analyses in this environmental assessment (EA) and decide which alternative will be executed.

1.4 Project Scoping and Public Involvement

1.4.1 Scoping Letter

A scoping letter was sent out on March 18, 2014 to state and Federal agencies listed in Chapter 8. The purpose of this letter was to inform the agencies of the study effort and request:

- any information the agencies had on file that might be pertinent to the analysis;
- information on issues that the agencies felt should be considered in the EA process; and
- identification of additional interested parties that should be contacted.

The scoping letter and any responses received are in Appendix B.

1.4.2 Public Participation Process

The Final EA and draft FNSI were made available to Federal, state, and local agencies, Native American tribes, and the public for review and comment for 30 days. A Notice of Availability for the EA and draft FNSI were published in the *Augusta Chronicle*. During the public review and comment period, copies of the EA were made available at the Fort Gordon Public Affairs Office (Building 33720, Darling Hall, Chamberlain Ave., Fort Gordon, GA), Woodworth Library (Building 33500, Rice Road, Fort Gordon, GA), and the Augusta-Richmond County Library (823 Telfair St., Augusta, GA). During and immediately following this public comment period, the Army collected, logged, and incorporated any comments received into the EA and FNSI as necessary. The Army will prepare and release a final FNSI (and final EA, if necessary) to the appropriate local, state, and Federal repositories after receiving all comments.

1.5 Scope of this EA

Title 32 Code of Federal Regulations (CFR) Part 651 (29 March 2002) implements the National Environmental Policy Act (NEPA) of 1969 for the Army and requires Army installations to consider the environmental impacts of a proposed action and its alternatives prior to proceeding with those actions. The purpose of this PEA is to inform the decision makers and public of the likely environmental consequences of the proposed action and alternatives.

This programmatic EA (PEA) was written with the best data and information available at the time of its development. Any changes to the project scope or its potential impacts require that the project manager responsible for this project coordinate with the Fort Gordon NEPA team to re-evaluate this document for consistency and applicability to the revised project. This re-evaluation shall be performed based on the new information and shall result in either a finding of sufficiency between this EA and the new project scope, or the completion of a supplemental NEPA analysis to assess the potential impacts of the new project scope. All work on the action exceeding that described in the EA shall be halted until the new assessment is completed.

This PEA is limited to assessing the environmental and socioeconomic impacts associated with the Proposed Action and alternatives. This PEA will evaluate developable acreage and the installation's capacity for growth. The expected effects on the various environmental resources will be evaluated based on their respective Region of Influence (ROI). The PEA will analyze environmental impacts resulting from construction, renovation, and increase in traffic as a result of these re-stationing actions.

Where activities are similar in nature, broad in scope, or at the planning level, applicable National Environmental Policy Act (NEPA) regulations authorize programmatic environmental review as a means to eliminate repetitive discussions of the same issues. Due to their broad scope, programmatic reviews may also offer advantages in terms of examining the cumulative effects of various activities over time and space. Follow-on site-specific NEPA documentation will be required for activities as they are planned and sited when the AR 5-10 Stationing Package or other new construction requirements are processed through the installation. As more detailed information for individual stationing actions becomes available, additional NEPA documentation would be prepared, tiered off this PEA. In most cases, a Record of Environmental Consideration (REC) would be the appropriate document if the scale and potential location(s) of a proposed activity are covered in this PEA. An EA would be required if (1) an activity is proposed at a location that is not considered in this PEA, (2) the sum of the activities implemented exceeds those evaluated in this PEA, or (3) a future proposed action does not meet the screening criteria in 32 CFR, Part 651, Subpart D.

1.6 Applicable Environmental Statutes and Regulations

This PEA was prepared in accordance with the provisions of the NEPA of 1969 as amended (42 U.S. Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality's (CEQ) NEPA implementing regulations at 40 CFR Part 1500, and 32 CFR Part 651. Table 1-1 summarizes the pertinent environmental regulations, laws, and Executive Orders (E.O.) that guided the development of this PEA.

Table 1-1: Applicable Environmental Statutes and Regulations

Federal Laws and Regulations
Archaeological and Historic Preservation Act
Clean Air Act of 1970, as amended
Clean Water Act of 1987, as amended
Comprehensive Environmental Response, Compensation and Liability Act of 1986
Endangered Species Act of 1973, as amended
Magnuson-Stevens Fisheries Conservation and Management Act
Federal Laws and Regulations
Migratory Bird Treaty Act of 1972
National Environmental Policy Act of 1969, as amended
National Historic Preservation Act of 1966, as amended
Native American Graves Protection and Repatriation Act of 1990
Resource Conservation and Recovery Act of 1976
Safe Drinking Water Act of 1974
Watershed Protection and Flood Prevention Act of 1954
10 U.S.C. 2665 (Provides for reimbursable forestry funds)
10 U.S.C. 2687 Base Closures and Realignments
40 CFR Part 1500-1508 Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, 2005
Executive Orders and Army Regulations
Army Regulatory Guidance Memorandum for Reimbursable Agriculture/Grazing and Forestry Programs dated 17 August 1999
Environmental Effects of Army Actions (32 CFR Part 651)
Environmental Protection and Enhancement (AR 200-1)
Exotic & Non Native Species (E.O. 13112)
Protection of Migratory Birds and Game Mammals (E.O. 11629)
Executive Orders and Army Regulations (continued)
Army's 2007 Management Guidelines for the RCW on Army Installations
Army's 2008 Management Guidelines for the Gopher Tortoise on Army Installations
Flood Plain Management (E.O. 11988) Protection of Wetlands (E.O. 11990)
Federal Actions to Address Environmental Justice in Minority Populations And Low-Income Populations (E.O. 12898)
Protection of Children from Environmental Health Risks (E.O. 13045)

Source: USAG Fort Gordon 2011

2.0 Description of the Proposed Action and Alternatives

2.1 Description of the Proposed Action

The Army will potentially conduct re-stationings and realignments resulting in force increases at Fort Gordon. These actions are collectively referred to as "Road to Growth." RTG actions would increase active military, government civilians, and contract personnel at Fort Gordon by late 2021. The increase in personnel would result in expanded space and mission requirements. The Proposed Action includes the renovation of existing facilities and construction of new facilities needed to adequately house and support the elements being re-stationed to Fort Gordon. The majority of these facilities would be located within the cantonment area, but some may be located in adjacent training areas. Figure 2-1 shows the cantonment area and the training areas included in the analysis of the Proposed Action and alternatives.

2.2 Alternatives Considered in this EA

The potential stationing actions at Fort Gordon collectively termed "Road to Growth" include actions associated with force realignment in a number of Army, other DoD, and non-DoD components. The dynamic nature and timing in planning multiple re-stationing actions to one facility does not allow for specific site locations to be reserved early in the analysis stage. Therefore, a specific location for an activity is not identified or evaluated in this NEPA analysis. Rather, this PEA considers potential sites within the installation where RTG activities could occur. The document evaluates the potential environmental effects of those activities for a range of personnel increases that reasonably might occur. Fort Gordon identified three action alternatives based on numbers of additional military and civilian personnel that might occur, and the amount of renovation and/or construction of facilities and the acreage of the installation that would be required to accommodate the renovation/construction to support the personnel increases. The PEA identifies where the maximum amount of proposed growth activities could be performed with acceptable levels of impacts. The impact analysis identifies what additional environmental studies and/or approvals may be needed - if any - for the proposed activities to be performed at specific sites. The goal is to identify the maximum amount of developable areas on the installation where the proposed activities can be performed with the least environmental impacts.

During the scoping for this PEA, some areas of the installation were initially identified and removed from consideration because they were not considered buildable acreage. These include the installation's Ammunition Storage Point, environmental restoration areas, wetlands, stream buffers, 100-year flood zones, known threatened and endangered species locations and areas managed for these species, archaeological sites, historic properties, and areas not considered suitable for RTG actions because of topography, traffic impacts, or potential conflict with existing activities on the installation.

2.2.1 Alternative 1: No Action Alternative

As required by CEQ Regulations for implementing NEPA and 32 CFR Part 651, continuation of the status quo (i.e., No Action Alternative) is also considered in the analysis. The No Action Alternative represents the baseline against which the action alternatives (representing a range of potential personnel increases) can be measured. Included in the baseline is an increase of 1,500 personnel associated with the ARCYBER stationing action from 2012 levels at Fort Gordon that was evaluated in the *Final Environmental Assessment, U.S. Army Cyber Command and Control Facility, Fort Meade, Maryland/Fort Gordon, Georgia* (ARCYBER 2013b). In this PEA, the No Action Alternative assumes that the construction and operation of the ARCYBER command and control facility is occurring now and will be fully implemented by 2020. This

PEA also assumes that the traffic improvement projects identified as mitigation in the ARCYBER EA will be implemented.

2.2.2 Alternative 2: High Growth Alternative

The High Growth Alternative would increase personnel by up to 6,000 and would require renovation/construction of up to one million square feet of facilities on up to 2,000 acres of the installation.

2.2.3 Alternative 3: Medium Growth Alternative

The Medium Growth Alternative would increase personnel by up to 4,000 and would require renovation/construction of up to 660,000 square feet of facilities on up to 1,500 acres of the installation.

2.2.4 Alternative 4: Low Growth Alternative

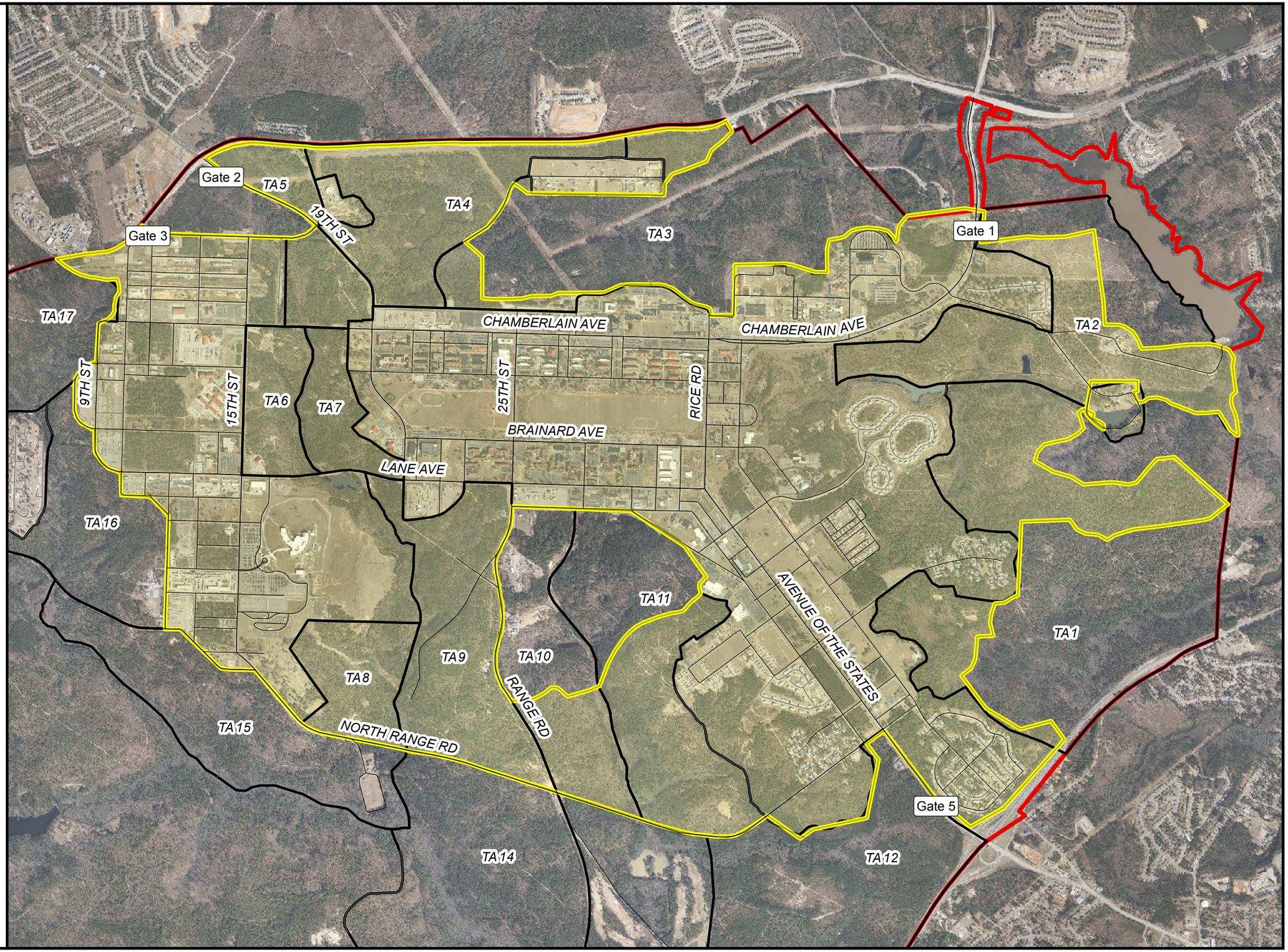
The Low Growth Alternative would increase personnel by up to 3,000 and would require renovation/construction of up to 500,000 square feet of facilities on up to 1,200 acres of the installation.

2.3 Alternative Evaluation

This PEA evaluates the impacts of only the No Action Alternative and the High Growth Alternative for each resource area, herein referred to as Valued Environmental Components (VEC). If the High Growth Alternative is expected to produce less-than-significant impacts to a VEC, then it is assumed that the Medium and Low Growth Alternatives would also produce less-than-significant impacts to that VEC. Therefore, impacts of the Medium and Low Growth Alternatives need only be analyzed if the High Growth Alternative would produce significant impacts.

Impacts to VECs are largely qualitative, but where a unit of measure is available, quantitative evaluation is used. In compliance with CEQ and Army NEPA guidance, an EA is only intended to identify the impacts that are expected and determine if the impact is significant. Table 2-1 defines the significance thresholds for each VEC.

Figure 2-1: Fort Gordon Road to Growth Study Area



Study Area Boundary
Training Area Boundary
Installation Boundary

Projection Based on:
World Geodetic System of 1984
UTM Zone 17 North
Units: Meters

1:26,000

0 0.25 0.5 Mi

0 0.25 0.5 1 Km

This map documents areas with Environmental restrictions. It was produced by the Savannah District Corps of Engineers - Planning Division in April 2014.

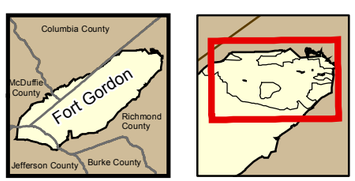


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Table 2-1: Thresholds of Significance for Valued Environmental Components

Resource	Significance Threshold
Air	A significant impact would occur if the project would (a) violate any National Ambient Air Quality Standard (NAAQS); (b) increase the number or frequency of violations; (c) contribute substantially to an existing or projected air quality violation; (d) conflict with or obstruct implementation of any air quality plans; (e) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment; (f) expose sensitive receptors to substantial pollutant concentrations; (g) create objectionable odors affecting a substantial number of people.
Cultural Resources	A significant impact would occur if the project would (a) cause a significant adverse change in the significance of a historical or archeological resource as defined in the National Historic Preservation Act; (b) directly or indirectly destroy a unique paleontological resource or site of unique geologic feature; (c) disturb any human remains, including those buried outside of formal cemeteries.
Geology and Soils	A significant impact would occur if the project would (a) expose people or structures to substantial adverse effects, including the risk of loss, injury, or death; (b) result in substantial soil erosion or loss of topsoil; (d) be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
Biological Resources	A significant impact would occur if the project would (a) have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies or regulations by the Georgia Department of Natural Resources (GADNR) or the U.S. Fish and Wildlife Service (USFWS); (b) have a substantial adverse effect on any sensitive or unique natural community identified in local or regional plans, policies or regulations GADNR or USFWS; (c) interfere substantially with the movement of native resident or migratory fish or wildlife, obstruct wildlife corridors, or harm wildlife nursery sites; (d) conflict with local policies ordinances protecting biological resources, such as a tree preservation policy or ordinance; or (e) conflict with the provisions of an approved local, regional, or state habitat conservation plan. Specific significance thresholds for Fort Gordon include (a) reduction of the installation RCW population; (b) reduction of forage habitat at active clusters below threshold levels and (c) direct effect to a living RCW or active cavity tree.
Wetlands	A significant impact would occur if the project would have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act.
Land Use	A significant impact would occur if the project would (a) physically divide an established community; (b) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project; or (c) conflict with any applicable habitat conservation plan or natural community conservation plan.
Water Resources	A significant impact would (a) violate any water quality standards or waste discharge requirements; (b) substantially deplete groundwater supplies or interfere substantially with groundwater recharge; (c) substantially alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion or siltation on- or off-site; (d) substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site; (e) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (f) otherwise substantially degrade water quality.
Noise	A significant impact would occur if the project would require reclassification of Noise Zones (NZ) to NZ II or III around sensitive receptors (e.g., residences, schools, hospitals, churches, or daycares.

Resource	Significance Threshold
Infrastructure and Facilities	Transportation: A significant impact would occur if the project would (a) cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system; (b) cause 50% or more of the intersections evaluated in the ROI to decline from LOS D or better to LOS E or F; (c) substantially increase hazards due to a design feature; (d) noticeably hinder emergency access; or (e) overwhelm existing parking capacity; Facilities: A significant impact would occur if the project would result in the need for new or physically altered facilities, construction for which could cause significant environmental impacts. Infrastructure/utilities: A significant impact would occur if the project would result in a substantial increase in any utility consumption to the extent that generation capacity is exceeded, based on currently available projections, or unacceptable demands are placed on infrastructure supply and distribution system.
Socioeconomics	A significant impact would occur if the project would (a) induce a substantial population growth or decline in an area, either directly or indirectly; (b) displace substantial numbers of existing housing units or people, necessitating the construction of replacement housing elsewhere; (c) produce a regional job decline or regional income decline that exceeds 5 percent according to the RECONS economic model; (d) produce an impact to the regional economy that would exceed the historical precedent for past economic fluctuation for employment and regional income; (e) produce substantial disproportionate adverse environmental, economic, social, or health impacts on minority or low-income populations; (f) produce disproportionate environmental health or safety risk to children; (g) produce a substantial increased public safety hazard from military operations; or (h) produce a long-term substantial loss of recreational opportunities and resources relative to baseline.
Hazards and Hazardous Materials	A significant impact would occur if the project would (a) create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials; (b) create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; (c) emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within 0.25 mile of an existing or proposed school; (d) result in a safety hazard for people residing or working in the project vicinity; or (e) impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

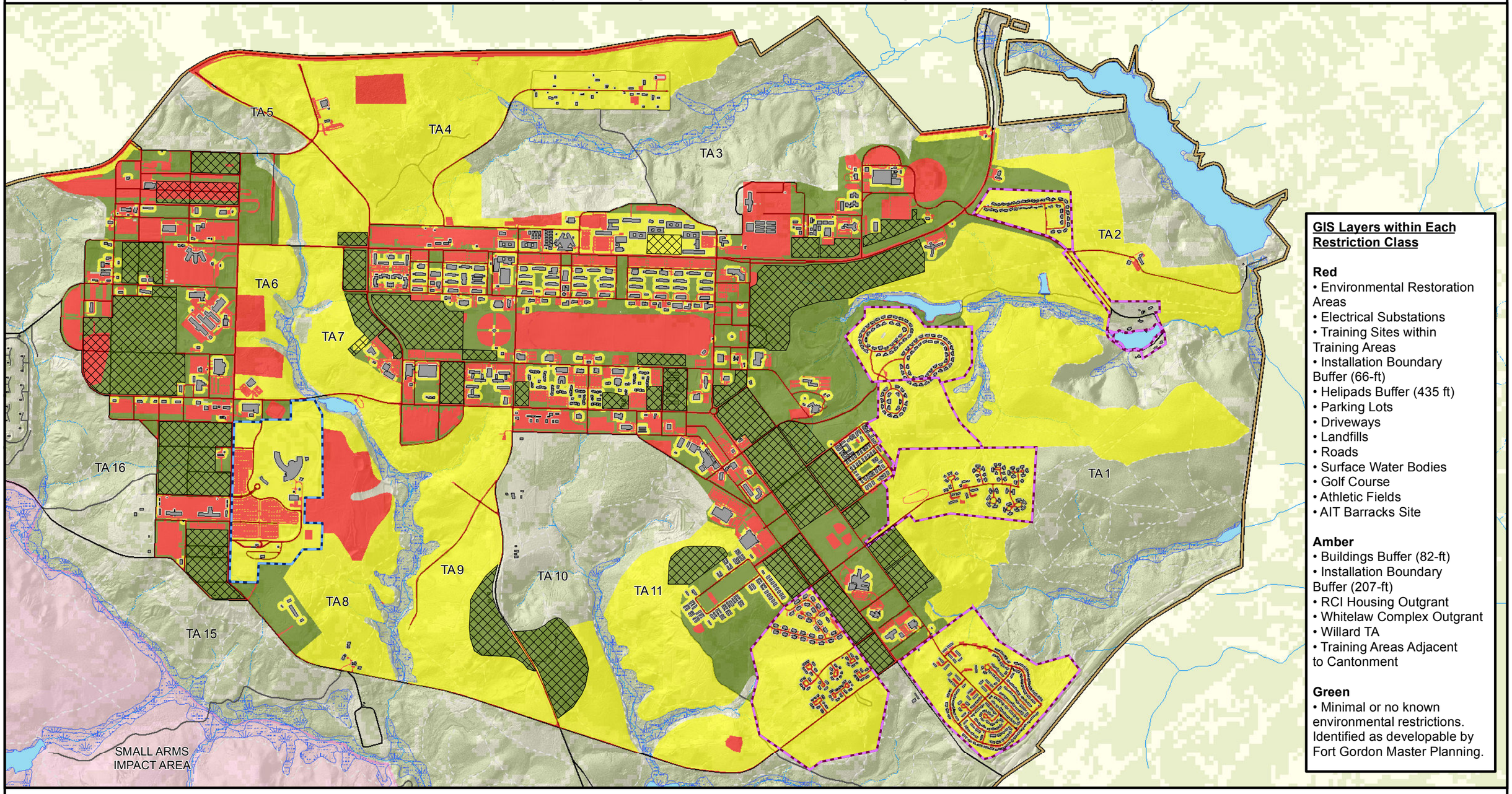
During the scoping process for this PEA, areas of buildable acreage within the cantonment area and several adjacent training areas for conducting the types of activities expected to come to Fort Gordon as part of the RTG were identified. Buildable acreage tracts are categorized as being in one of three following categories based on environmental and other constraints:

- GREEN – areas having minor to no significant environmental or other constraints;
- AMBER – areas having moderate to minor environmental or other constraints that could be overcome by design or engineering solutions or that could be mitigated; or
- RED – areas having major environmental or other constraints that would require relocation of existing facilities, changes in land use, or could exceed a significant impact threshold without extensive mitigation.

The GREEN-AMBER-RED constraint categories (Figure 2-2) would aid in selecting a site for projects. A tiered approach would be used to place any new construction in a GREEN area first; if the GREEN area is full or some other requirement prevents its use, an AMBER area would be considered second. As a last resort, a RED area would be used. The justification for using a RED area may be that a new facility must be co-located with an existing facility, causing some additional impacts or analysis. Any of the growth alternatives could have

Figure 2-2 Road to Growth Development Categories

Road to Growth EA Development Categories on the Cantonment and in Adjacent TAs, Fort Gordon, US Army



GIS Layers within Each Restriction Class

Red
- Environmental Restoration Areas
- Electrical Substations
- Training Sites within Training Areas
- Installation Boundary Buffer (66-ft)
- Helipads Buffer (435 ft)
- Parking Lots
- Driveways
- Landfills
- Roads
- Surface Water Bodies
- Golf Course
- Athletic Fields
- AIT Barracks Site

Amber
- Buildings Buffer (82-ft)
- Installation Boundary Buffer (207-ft)
- RCI Housing Outgrant
- Whitelaw Complex Outgrant
- Willard TA
- Training Areas Adjacent to Cantonment

Green
- Minimal or no known environmental restrictions. Identified as developable by Fort Gordon Master Planning.

Projection Based on:
World Geodetic System of 1984
UTM Zone 17 North
Units: Meters
1:25,000

0 250 500 1,000 Meters
0 2,000 4,000 Feet

Installation Boundary
Master Planning Development Zones
Whitelaw Complex Boundary
RCI (Housing) Lease Boundary

Roads
Primary
Secondary
Tertiary

Development Restriction Classes
Green (1511 Acres) Minimal Obstruction to Development.
Amber (2807 Acres) Moderate Obstruction to Development.
Red (989 Acres) Major Obstruction to Development.

This map was produced by the Fort Gordon Environmental Division-Natural Resources Branch.
June 2014

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actions occurring in any of the three constraint categories. Each VEC is analyzed in the PEA for impacts of actions by constraint category.

2.3.1 Site Specific NEPA Analysis

After the PEA is complete, Fort Gordon would evaluate each stationing action by comparing the specific proposal and site selected against those described in this PEA. This would ensure that all growth actions have been evaluated in a NEPA document and determined acceptable before their implementation. The appropriate NEPA documentation for these site-specific analyses is likely to be a Record of Environmental Consideration (REC). The installation will track future RTG projects to ensure that they do not exceed the personnel increases, construction/renovation, and change in land use evaluated in this PEA.

2.4 Assessing Impacts

2.4.1 General Information

As discussed in Chapter 2, potential implementation alternatives being analyzed for environmental impacts include the following:

- No Action Alternative
- High Growth Alternative
- Medium Growth Alternative
- Low Growth Alternative

An impact is defined as a noticeable change in a resource from the existing environmental baseline conditions caused by an action. The degree of change is determined by measuring the difference between the baseline conditions and the conditions that result following the assessed action. Any difference between the baseline conditions and the site conditions following an action suggests that the action has an impact on that resource.

2.4.2 Types of Impacts

Context and intensity are taken into consideration in determining a potential impact's significance, as defined in 40 CFR Part 1508.27. The intensity of a potential impact refers to the impact's severity and includes consideration of beneficial and adverse impacts, the level of controversy associated with a project's impacts on human health, whether the action establishes a precedent for future actions with significant effects, the level of uncertainty about project impacts, or whether the action threatens to violate Federal, State, or local law requirements imposed for the protection of the environment. The severity of environmental impacts is characterized as negligible, minor, moderate, significant, or beneficial.

- **Negligible** – No measurable impacts are expected. Any environmental impact would be barely perceptible; confined to a single location; or would not require a long recovery period.
- **Minor** – Short-term but measurable impacts are expected. The resource would recover in a relatively short period of time (days to months).
- **Moderate** – Measurable and long term impacts that may not remain localized. Recovery may require several years or decades.

- **Significant but Mitigable** – A significant impact anticipated, but the installation can put management actions or other mitigation measures in place to reduce impacts to a less than significant level.
- **Significant** – Impact would have substantial effects. The threshold of significance is defined for each resource area in Table 2-1.
- **Beneficial** – Impacts that result in a positive change in the current or future condition of the VEC.

Quantitative and qualitative analyses have been used, as appropriate, in determining whether, and the extent to which, a threshold would be exceeded. Based on the results of these analyses, this EA identifies whether a particular potential impact would be adverse or beneficial, and to what extent. Impacts can further be categorized as direct, indirect, or cumulative.

- **Direct** – caused by the action, occurring at the same time and place
- **Indirect** – caused by the action and foreseeable, but occur at a later time or different place
- **Cumulative** – effects on the environment that result from the incremental effect of a project in combination with other past, present, or reasonably foreseeable future actions, regardless of jurisdiction or entity. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time.

2.4.3 Intensity of Impact

Once an impact is identified, it must also be determined if an impact approaches a level of significance. Significance, as defined by the CEQ in 40 CFR 1508.27 (Regulations for Implementing NEPA), requires consideration of both the context and intensity of the impact evaluated. Significance can vary in relation to the context of the Proposed Action, and thus, where significance is not defined by regulation or policy it must be evaluated in several contexts. These contexts vary with the setting of the Proposed Action, and can include consideration of effects across both time (short vs. long-term effects) and space (local vs. regional scale). Certain thresholds of significance have been set for the analysis of the Proposed Action. Table 2-1 shows the thresholds of significance for each resource.

3.0 Affected Environment and Environmental Consequences

3.1 Geology and Soils

3.1.1 Affected Environment

Geology

Fort Gordon is located along the Fall Line between the Lower Piedmont and Upper Coastal Plain physiographic provinces. In this zone of transition, the topography ranges from the gentle undulating sand hills of the southern and middle sections, to areas of steep slopes and near bluffs adjacent to some of the streams, which are characteristically small and bordered by heavy hardwood swamp areas. The elevation of Fort Gordon ranges between 221 feet and 561 feet above mean sea level (msl), and the majority of the land area (35,852 acres) is between 378 feet and 489 feet above msl (USAG Fort Gordon 2008). The GREEN and RED portions of the study area are mostly flat, and almost entirely previously developed. The AMBER portions are mostly forested, with more pronounced topography.

Soils

The majority of the installation is overlain by well-drained medium to fine sands in upland areas. There are scattered areas near the central and southwestern portion of the installation that consist of moderately well drained to well drained fine sands over sandy silts or sandy clays. The areas bordering drainage ways consist mainly of poor to moderately well drained fine silty sands over sandy silts or sandy clays. Twenty-six soil classes have been indentified on the installation. The predominant soil types are the Troup and Lakeland series. The next overall predominant soil types include the Vaucluse and Ailey soil series. Twelve soil types on Fort Gordon are considered Prime Farmland under the Farmland Protection Policy Act (FPPA) and six soil types are considered Farmland of Statewide Importance (USAG Fort Gordon 2008). However, land used for national defense purposes, like that on Fort Gordon, is not subject to the provisions of the FPPA. Table 3-1 summarizes the soil series found in the RTG study area and their characteristics, including suitability for different uses. Figure 3-1 shows the soil series found within the RTG study area.

Table 3-1: Common Soil Series Occurring in the RTG Study Area

Soil Series	Characteristics
Troup	Deep, well drained, gently sloping sands, occurring on Coastal Plains ridgetops. Low in natural fertility, strongly acidic, rapid permeability in the surface layer. Slopes typically to 10 percent, up to 17 percent on steep slopes. Moderately suitable for loblolly, longleaf and slash pine; well suited for most urban uses; not suitable for recreational uses.
Lakeland	Deep, excessively drained soils occurring on Sand Hills ridgetops and hillsides. Low fertility, strongly acidic and very permeable. Slopes range from 0 - 10 percent and greater on steep slopes. Moderately suitable for common pine species. Suitable for urban uses but unsuitable for recreational uses.
Orangeburg	Deep, well-drained soils on gently sloping Coastal Plain hillsides. Medium fertility, strongly acidic and moderately permeable. Suitable for loblolly and slash pine and well suited to urban uses.
Lucy	Deep, well-drained, level to gently sloping soils on broad ridgetops and hillsides of the Coastal Plain. Low natural fertility, strongly acidic, and moderately permeable. Moderately suitable to longleaf and slash pine. Suited to urban land uses and limited recreational uses.
Dothan	Deep, well-drained, level to gently sloping soils on broad ridgetops and hillsides of the Coastal Plain uplands. Low natural fertility, strongly acidic, and moderately permeable. Well suited to loblolly and slash pine and urban uses.

Soil Series	Characteristics
Vaucluse-Ailey Complex	Well-drained, gently sloping soils occurring on narrow ridgetops and hillsides of upland Sand Hills and Coastal Plain. Low fertility and strongly acidic. Permeability is slow in Vaucluse soils and the subsurface of Ailey soils, but rapid in the surface layer of Ailey soils. Moderately-suitable for loblolly and slash pine. Well suited to urban uses but too sandy for recreational uses.
Bibb-Osier	Poorly-drained, level, frequently flooded soils of the Coastal Plain floodplains. Strongly acidic with moderate to rapid permeability. Moderately suited to loblolly and slash pine, sweetgum and water tupelo. Poorly suited to agriculture and urban land use.

3.1.2 Environmental Consequences

Threshold of Significance for Geology and Soils: A significant impact would occur if the project would (a) expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death; (b) result in substantial soil erosion or loss of topsoil; (d) be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

3.1.3 No Action Alternative

No impacts to geology or soils would occur under this alternative. No addition in personnel, military training, demolition, renovation, or construction would occur beyond the baseline conditions established in this EA.

3.1.4 High Growth Alternative

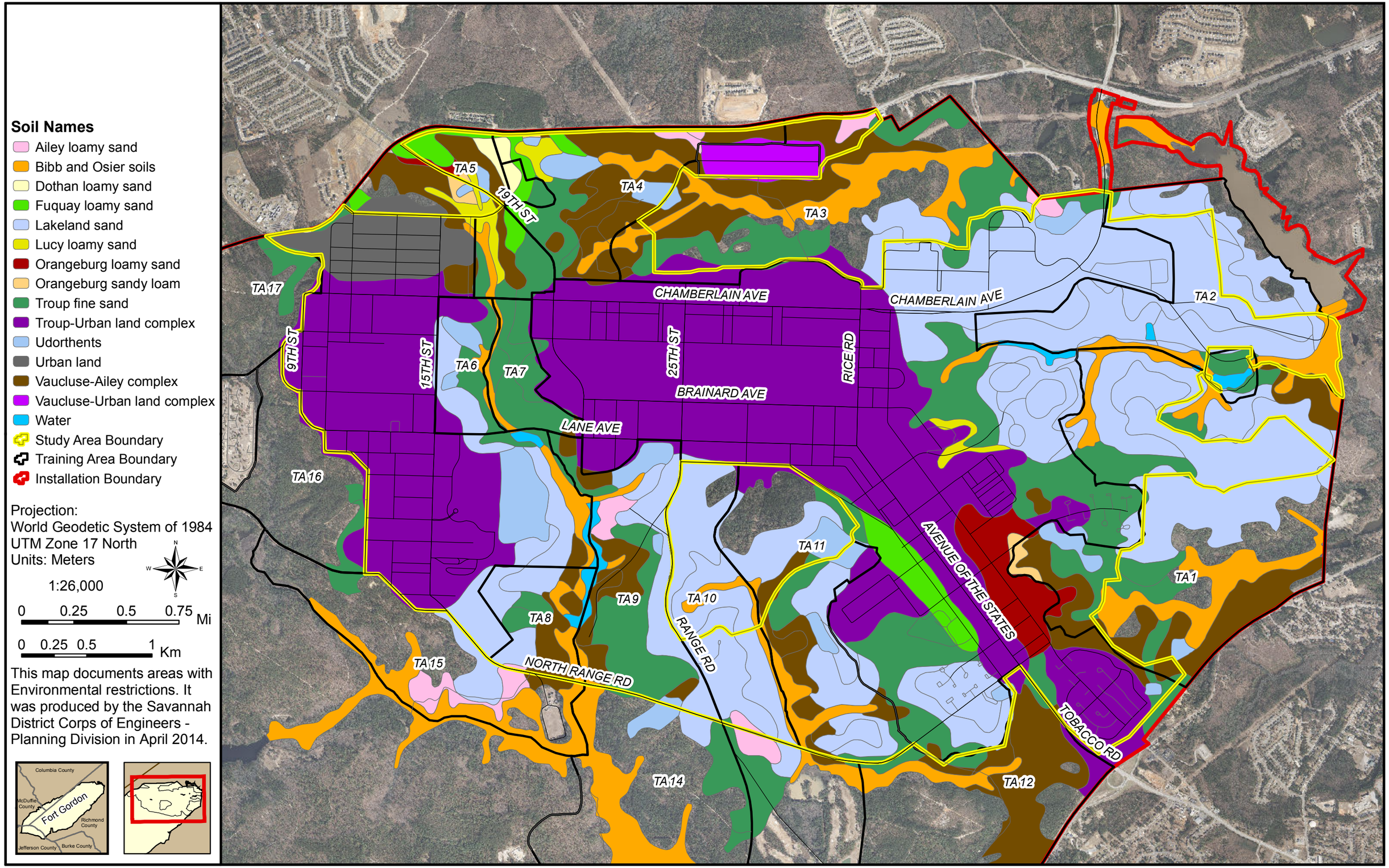
It is understood that the Low Growth Alternative would have less impacts than the High Growth Alternative as discussed in Section 2.3. For simplicity, only the High Growth Alternative impacts are described.

Short-term and long-term minor adverse impacts to soils are anticipated under the High Growth Alternative as a result of constructing new facilities. Soil disturbance in the form of excavation, grading, earthmoving, and compaction would result from new construction activities. As a result, soils would be compacted; soil layer structure would be disturbed and modified; and soils would be exposed increasing the overall potential for erosion at the site. Soil productivity (i.e., the capacity of the soil to produce vegetative biomass) would decline in disturbed and developed areas. Adverse impacts to soils from the construction activities would be minimized by proper construction management and planning, and the use of appropriate site-specific BMPs for controlling runoff, erosion, and sedimentation during construction activities. Areas disturbed within the equipment staging area would be reseeded, replanted, and/or re-sodded following construction activities. This would decrease the overall erosion potential of the site and improve soil productivity.

The Clean Water Act (CWA), Georgia Water Quality Act (Official Code of Georgia [OCGA] § 12-5-20), and Georgia Erosion and Sedimentation Control Act (OCGA § 12-7-1) require erosion and sediment controls during projects that disturb one acre or more of land. Erosion and Sediment Control Plans (ESCP) must be designed and approved prior to construction, and would include measures to protect surface water resources. Fort Gordon will coordinate with local, state, and Federal agencies to obtain any necessary permits and ensure the protection measures are implemented.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* requires that all new construction comply with the *Guiding Principles for Federal Leadership in High*

Figure 3-1 Soils – Road to Growth Study Area



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Performance and Sustainable Buildings. This includes employing design and construction strategies that reduce stormwater runoff. Section 438 of the Energy Independence and Security Act of 2007 (EISA) requires that any development or redevelopment project involving a Federal facility with a footprint exceeding 5,000 square feet shall use site planning, design, construction, and maintenance strategies to maintain or restore the predevelopment hydrology of the property with regard to temperature, rate, volume, and duration of flow. Compliance with this requirement can be met through the implementation of Low Impact Development (LID) technologies. LID techniques would maintain or restore natural hydrologic functions of a site and achieve natural resource protection. Examples include, but are not limited to, minimizing total site impervious areas, directing building drainage to vegetative buffers, using permeable pavements where practical, and breaking up flow directions from large paved surfaces. Where possible, pervious pavers will be used in parking lots to minimize stormwater runoff.

With implementation of the protective measures described above, implementing the High Growth Alternative would have only minor impacts on geology and soils whether the activity occurs in GREEN, AMBER, or RED portions of the study area.

3.2 Land Use

3.2.1 Affected Environment

On-Post Land Use

Fort Gordon encompasses approximately 55,590 acres. Approximately 50,000 acres are used for training missions and the remaining 5,590 acres are occupied by cantonment areas which include military housing, administrative offices, community facilities, medical facilities, industrial facilities, maintenance facilities, supply/storage facilities, lakes and ponds, recreational areas, and forested areas. There are 49 training areas (TA) that occupy approximately 37,000 acres and two restricted impact areas (small arms and artillery) that occupy approximately 13,000 acres.

The cantonment area consists of two distinct areas (main and industrial) and encompasses approximately 5,600 acres. The main cantonment area is located in the northeast corner of the installation. The industrial cantonment area borders the main cantonment area directly to the west. Land use categories in these areas include military housing, administrative offices, community, medical, industrial, maintenance, supply/storage facilities, lakes and ponds, recreational areas, and forested areas (USAG Fort Gordon, 2008).

Land use management falls under the authority of the Directorate of Public Works and the Installation Real Property Planning Board (RPPB). The RPPB assists the installation commander in managing and developing the installation or area facilities and real estate in an orderly manner to satisfy the current and future known installation missions.

The installation operates 14 live fire ranges, one dud impact area; one demolition pit; one indoor shoot house; one convoy live fire familiarization course; two military operations on urban terrain (MOUT) site/building clearings; and one nuclear, biological, and chemical (NBC) chamber. Training primarily consists of advanced individual signal training and unit employment of tactical communications/electronics operations. Additionally, artillery demolition, aerial gunnery load master drop zone, and airborne troop training are conducted on Fort Gordon.

Portions of 11 TAs are located within the RTG study area. These TAs are used for Battalion and Brigade Combat Support, Service Support, Heavy/Light Company level maneuver or Light Airborne Battalion level maneuver. The annual summer training period sees a large influx of reserve medical training units for the Golden Medic exercise. This exercise occurs over a 3-month period and involves reserve and National Guard medical training units (USAG Fort Gordon 2008).

In addition, changing mission and training requirements are causing the range and TAs of Fort Gordon to be used in increasingly different ways. Some of the new and expanded mission requirements include:

- Convoy training, including convoy live fire, and qualification record fire response. In the future this will include night operations on major training complex roads with the use of night vision devices;
- Improvised Explosive Device situations incorporated into all tactical ground training events;
- Training in a projectile-based environment (paintball and Special Effects Small Arms Marking System); and
- Weapons qualifications for all Advanced Infantry Training soldiers.

Nearly 56,000 acres on Fort Gordon are considered forestland. U.S. Army regulations currently specify two forestland classifications: reimbursable (commercial) and non-reimbursable (noncommercial). Reimbursable forestland (RFL) is managed land that is capable of producing economical crops of industrial wood in excess of 30 cubic feet per acre per year under and is not programmed for another use that would preclude future forest development. Non-reimbursable forestland (NRFL) consists of the cantonment areas, golf course and other designated recreation areas, the direct bullet impact areas on the SAIA and AIA, and the known dud areas in TAs (USAG Fort Gordon 2008). Table 3-2 shows the acreages of RFL and NRFL on Fort Gordon.

Table 3-2: Acreage of Fort Gordon Lands by Forestland Classification

Forestland Classification	Area (acres)
Reimbursable	45,492.0
Non-reimbursable	10,095.5
Total Installation	55,587.5

Source: USAG Fort Gordon 2008

The installation also provides multiple-use recreation opportunities including camping, horseback riding, picnicking, water sports, archery, boating, hiking, and nature education. Hunting and fishing on the Installation is authorized for active and retired military, active and retired civilian Federal government employees, base operations contractors with multiyear contracts, reserve and national guard soldiers, and a limited number of public access permits offered through a lottery draw. Hunters and fishermen accounted for 14,566 training area user days collectively in 2013.

Approximately 43,516 acres on-post are managed for hunting. Fishing areas on Fort Gordon include 28 lakes managed for fisheries and 74 square miles of drainage from streams and creeks. Access to hunting is covered in the Army Signal Center and Fort Gordon Regulation

420-5, *Hunting, Fishing, Trapping, and Horseback Riding Regulations*. Fort Gordon allows hunting and fishing in most TAs. Some areas are restricted for safety reasons (i.e., impact areas) or their location near a permanent training site or the cantonment area (USAG Fort Gordon 2008).

A formal Outdoor Recreation Plan (ODRP) for Fort Gordon was last completed through contract with the USACE Savannah District in August 2006. Several projects in recent years have been implemented based on this plan, such as an outdoor water park and updated sports fields.

Off-Post Land Use

Land use within one mile of Fort Gordon varies from semi-urban to rural. The area east of Fort Gordon is developed and makes up the greater Augusta area. The major land use east of the installation along U.S. Highway 1 and U.S. Highway 78/Gordon Highway is commercial. Further west of Augusta on the north and south sides of the installation, land use becomes a mixture of rural residential, commercial, and undeveloped land. Land use south of the installation along U.S. Highway 1 to the west of Gate 5 in western Richmond County is agricultural. In Columbia County, land use closest to Fort Gordon is mixed, with single-family residential and some mobile home development. Some multifamily development is also scattered throughout the area. Suburban areas are concentrated in the Evans-Martinez area and in the City of Grovetown. Land use adjacent to Fort Gordon in Jefferson and McDuffie counties is agricultural. More than 88 percent of Jefferson County's land is devoted to agriculture and forestry (USAG Fort Gordon 2008).

Land use planning in Richmond, Columbia, McDuffie, and Jefferson counties is conducted by local governmental entities through land development policies they enact for the benefit of their communities. No local governments currently have zoning or land use programs that directly affect Fort Gordon. However, allowing certain land uses adjacent to the installation boundaries may impact the installation's use of its lands. Richmond, Columbia, McDuffie, and Jefferson counties each have land use development plans, and have worked with Fort Gordon regarding a Joint Land Use Study (JLUS). As a result of this study, these four counties have agreed to direct development in ways that should allow Fort Gordon's mission to continue without conflicts with land use outside the installation (CSRA Regional Development Center 2005).

The 2005 JLUS made the following assumptions about future land use trends through 2025:

- moderate to high residential growth;
- moderate commercial growth;
- moderate industrial growth;
- declining agricultural and forestry uses; and
- moderate parks, recreation, and conservation growth.

The JLUS concluded that projected growth rates identified in local comprehensive plans would not raise compatibility issues with Fort Gordon. It also included the following conclusions:

- Columbia County will undergo substantial conversion from undeveloped to residential uses. The area to the northeast of Fort Gordon, around the

Grovetown area, is expected to undergo significant population growth through the next two decades.

- Lands in Jefferson and McDuffie Counties, to the south and southwest of Fort
- Gordon , a re project ed t o remain primarily agr icul tural and forestry.
- The future land use map for Richmond County includes growth areas away from Fort Gordon's noise zones.

Fort Gordon requested funding to update the 2005 JLUS and the installation obtained approval and funding from the Office of Economic Adjustment (OEA) in November 2014. The current JLUS has had limited success in preventing encroachment, as evidenced by recent explosive and uncontrolled growth along the installation's boundary between Gate 1 and Gate 2 and in Grovetown west of Gate 2 which is closer to Fort Gordon's weapons ranges and maneuver training areas. The new JLUS is expected to be complete in June 2016.

3.2.2 Environmental Consequences

Threshold of Significance for Land Use: A significant impact would occur if the project would (a) physically divide an established community; (b) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project; or (c) conflict with any applicable habitat conservation plan or natural community conservation plan.

3.2.3 No Action Alternative

No impacts to land use on- or off-post would occur under the No Action Alternative. No addition in personnel, military training, demolition, renovation, or construction would occur beyond the baseline conditions established in this EA.

3.2.4 High Growth Alternative

It is understood that the Low Growth Alternative would have less impacts than the High Growth Alternative as discussed in Section 2.3. For simplicity, only the High Growth Alternative impacts are described.

On-Post Land Use

Changes to land use under the High Growth Alternative would occur in GREEN, AMBER, and RED portions of the RTG study area. Actions in the GREEN area would be consistent with the installation's existing land use plans and uses; therefore impacts would be minimal. New construction in the AMBER and RED areas could produce training land impacts if they would involve displacing existing missions. The displaced missions would then require relocation to some other portion of the installation.

Construction in GREEN, AMBER, and RED areas could produce natural resources management impacts if they result in the removal of trees from forested areas now considered RFL, and reclassification of these sites as NRFL. Current Federal law and DoD/U.S. Army policy prohibits the use of reimbursable forestry funds for activities that cannot reasonably be expected to produce forest revenues or in areas that are classed as NRFL. An increase in NRFL acres would increase the need for other funds to cover forest ecosystem management and protection activities, which historically have been paid for with reimbursable forestry funds. Natural resource management and outdoor recreation impacts could also result if areas currently managed for fishing, hunting, and other forms of outdoor recreation are withdrawn from management due to construction and operation of RTG facilities.

An increase in the installation population could also impact the availability of both outdoor and indoor recreation facilities. This may lead to additional requirements to expand services and recreational facilities to assure there is no lose in service for military service members.

Based on these factors, implementing the High Growth Alternative would result in moderate impacts to land use. The installation has sufficient space in buildings that could be renovated to accommodate the influx of additional personnel, or has sufficient land available to build the facilities needed for RTG stationing actions. The installation also has sufficient land to accommodate the missions, natural resource management, and outdoor recreation that might be displaced by RTG development.

Off-post Land Use

The High Growth Alternative would impact off-post land use by increasing demand for off-post housing, since all of the additional 6,000 personnel would live off-post. This increase in demand could further fuel the ongoing surge in new construction in the Grovetown area and other high-growth areas adjacent to the installation. This new construction could include single family and multifamily housing, commercial development, and recreational development.

There are compatibility issues with off-post residential and commercial development adjacent to the installation and the High Growth Alternative will potentially increase the occurrence of more of those issues. The JLUS to be completed in June 2016 will aid the local community in planning for this off post growth and try to prevent further impacts to the installation from incompatible development. Impacts to off-post land use are expected to be moderate.

3.3 Biological Resources

3.3.1 Affected Environment

Vegetation

Fort Gordon encompasses approximately 55,590 acres. Approximately 51,152 acres are forested, of which 83 percent (approximately 46,145 acres) is managed forest. Common onsite plant species include longleaf pine (*Pinus palustris*), loblolly pine (*Pinus taeda*), southern wiregrass (*Aristida stricta*), white oak (*Quercus alba*), hickory (*Carya* spp.), dogwood (*Cornus florida*), blueberry (*Vaccinium* spp.), water oak (*Quercus nigra*), and broomsedge (*Andropogon virginicus*) (USAG Fort Gordon 2008).

Eight distinctive vegetative communities have been identified within Fort Gordon, as described below in decreasing order of area covered (USAG Fort Gordon 2008):

1. **Pine Forest** (50 percent of the installation)- Overstory dominated by loblolly pine, longleaf pine, shortleaf pine (*Pinus echinata*), and slash pine (*Pinus elliottii*) with an understory consisting of immature pines, honeysuckle (*Lonicera japonica*), scrub oak (*Q. ilicifolia*), sumac (*Rhus* spp.), and short grasses.
2. **Pine Plantation** (19 percent of the installation) – A result of reforestation practices on Fort Gordon. The primary species of this planted community include loblolly pine and slash pine with an understory of sumac, rhododendron (*Rhododendron* spp.), wax myrtle (*Myrica cerifera*), and short grasses.
3. **Pine/Scrub** (8 percent of the installation) – Dominant overstory species include longleaf pine, loblolly pine, shortleaf pine, scrub oak, wax myrtle, greenbrier (*Smilax* spp.),

sumac, honeysuckle, and short grasses. The largest stand occurs within the Artillary Impact Area.

4. **Bottomland Hardwood Forest** (7 percent of the installation) – Overstory species include white oak, American beech (*Fagus grandifolia*), hickory, red maple (*Acer rubrum*), ash (*Fraxinus* spp.), blackgum (*Nyssa sylvatica*), swamp chestnut oak (*Q. michauxii*), willow oak (*Q. stellata*), and yellow-poplar (*Liriodendron tulipifera*). The medium to dense understory includes wax myrtle, sumac, scrub oak, and honeysuckle.
5. **Scrub Oak** (4 percent of the installation) – This community primarily consists of scrub oak, but associated species include blackjack oak (*Q. marilandica*), turkey oak (*Q. laevis*), wax myrtle, honeysuckle, sumac, and short grasses. The largest stands occur within the Small Arms Impact Area.
6. **Streamside Forest** (3 percent of the installation) – Common on seasonal wetlands along Brier Creek in the southwestern portion of the installation. Dominant species include black willow (*Salix nigra*), river birch (*Betula nigra*), swamp cottonwood (*Populus heterophylla*), willow oak, and water oak with an understory of greenbrier, honeysuckle, and alder (*Alnus* spp.).
7. **Mixed Pine/Hardwood Forest** (1 percent of the installation) – Found in scattered small tracts in the western portion of the installation. Dominant species include loblolly pine, sweet gum (*Liquidambar styraciflua*), yellow-poplar, and blackgum, although longleaf pine, white oak, red oak, honeysuckle, wax myrtle, sumac, and scrub oak are also present.
8. **Grassland** (1 percent of the installation) – Consists of broomsedge, southern wiregrass, Johnson grass (*Sorghum halepense*), and crab grass (*Digitaria* spp.), and many other species of grasses, sedges, and composites. This community is isolated to clearings in forested areas, and in the understory of open forest types.

Vegetation found in RED portions of the study area is most likely landscaped interspersed with small pockets of natural area. The GREEN portions are either landscaped like RED areas or larger forested areas. The AMBER areas are primarily forested land.

Fish and Wildlife

Fort Gordon is inhabited by a wide variety of wildlife species. Approximately 136 species of birds have been identified on the installation. It is estimated that approximately 31 species of mammals and approximately 67 species of reptiles and amphibians inhabit Fort Gordon. These species are dispersed throughout the various habitats on the installation.

Common mammal species found on the installation include, but are not limited to: white-tailed deer, raccoon, eastern grey squirrel, Virginia opossum, red fox, gray fox (*Urocyon cinereoargenteus*), striped skunk (*Mephitis mephitis*), eastern cottontail rabbit (*Sylvilagus floridanus*), and coyote (*Canis latrans*). Common bird species found on Fort Gordon include, but are not limited to, northern bobwhite quail (*Colinus virginianus*), turkey vulture (*Cathartes aura*), pileated woodpecker (*Dryocopus pileatus*), northern mockingbird, red-eyed vireo (*Vireo olivaceus*), tufted titmouse (*Parus biocolor*), and Carolina chickadee (USAG Fort Gordon 2008).

Common reptile and amphibian species found on the installation include, but are not limited to: eastern box turtle, eastern mud turtle (*Kinosternon subrubrum subrubrum*), southern

fence lizard (*Sceloporus undulatus undulatus*), brown water snake (*Nerodia taxispilota*), and eastern kingsnake (*Lampropeltis getula getula*).

White-tailed deer, red fox, eastern gray squirrel, raccoon, eastern cottontail rabbit, wood duck (*Aix sponsa*), eastern wild turkey (*Meleagris gallopavo silvestris*), northern bobwhite quail, and mourning dove are actively managed for sport hunting on Fort Gordon.

Approximately 56 species of fish are known to occur on Fort Gordon, including the bluebarred pygmy sunfish (*Elassoma okatie*) (the only known occurrence of this state protected species in Georgia), the Savannah darter (*Etheostoma fricksium*), and sawcheek darter (*Etheostoma serriferum*). These three species have been found in several locations on the installation, including McCoys Creek, a tributary of Spirit Creek (USAG Fort Gordon 2008; Rohde, Hoover and Killgore 2004). McCoys Creek flows through the RTG study area, thus there is potential for adverse impacts to these species if a RTG project would affect water quality or other relevant environmental parameters important to these species. In addition, there are six lakes and ponds within the RTG study area, four of which are managed for recreational fishing.

Protected Species

Protected species refers to federally protected threatened or endangered species, Species of Concern, Army Species at Risk, state listed species, and state-tracked species, and Fort Gordon target species identified in the INRMP. Federally listed species that are known to occur on Fort Gordon include the red-cockaded woodpecker (RCW) and the wood stork, which are both endangered. The RCW is a resident species and is managed under a Biological Opinion (BO) issued by the U.S. Fish and Wildlife Service (USFWS). The wood stork is a transient species that has been observed foraging and roosting on the installation, but is not known to nest on the installation. The bald eagle is known to forage on the installation but is not a resident. The gray bat has been acoustically recorded on the installation but it is unknown if it is a resident species. The gopher tortoise is a federal candidate species and is managed by the Army as a Species at Risk under a Candidate Conservation Agreement with numerous federal and state agencies. Fort Gordon has established Habitat Management Units (HMUs) for the RCW and gopher tortoise. The HMUs include all potential habitats for these species excluding the cantonment area, areas where the future or current military mission is not compatible with target species management, and areas of non-habitat (e.g., bottomland hardwood forest). The RCW HMU excludes the AIA. Also excluded from the HMU are areas of planned and ongoing development of lands for the future and current military mission, respectively (USAG Fort Gordon 2008).

None of the RTG study area includes HMUs for RCW or gopher tortoise. Fort Gordon also manages Southeastern American kestrels, which are prevalent in the RTG study area. The installation has installed nesting boxes for kestrels throughout the cantonment area and TAs.

Wildlife found in GREEN and RED portions of the RTG study area are primarily those species that inhabit the developed areas of the installation, and consist of wildlife accustomed to human interaction. More natural habitats are found in the TAs located outside the cantonment area. Table 3-3 provides a list of protected species potentially occurring on Fort Gordon (USAG Fort Gordon 2008). Figure 3-2 shows the known locations of protected species in the RTG study area.

Table 3-3: Federal/State Protected Species Potentially Found at Fort Gordon

Scientific Name	Common Name	Federal Status	State Status	Description of Habitat
Mammals				
Corynorhinus rafinesquii	Rafinesque's big eared bat	SC	R	Buildings in forested regions
Myotis austroriparius	Southeastern bat	SC	TR	Caves used for hibernating, maternity colonies, and summer roosting
Myotis grisescens	Gray bat	E	E	Caves near streams and rivers used for hibernating, maternity colonies, and summer roosting
Myotis septentrionalis	Northern long-eared bat	C	TR	Caves and mines used for hibernating, maternity colonies, and summer roosting; also roosts beneath bark of live and dead trees
Birds				
Aimophila aestivalis	Bachman's sparrow	SC	R	Abandoned fields with scattered shrubs, pines, or oaks
Falco sparverius paulus	Southeastern American kestrel	SC	R	Breeds in open or partly open habitats with scattered trees and in cultivated or urban areas
Haliaeetus leucocephalus	Bald eagle	TR	TR	Inland waterways and estuarine areas
Lanius ludovicianus migrans	Migrant loggerhead shrike	SC	TR	Open woods, field edges
Mycteria americana	Wood stork	E	E	Feeds primarily in fresh and brackish wetlands and nests in cypress or other wooded swamps
Picoides borealis	Red-cockaded woodpecker	E	E	Nests in mature pines with low understory vegetation; forages in pine and pine hardwood stands
Reptiles/Amphibians				
Ambystoma tigrinum tigrinum	Eastern tiger salamander	NL	TR	Breeds in isolated wetlands; burrows in pine dominated uplands and open fields

Scientific Name	Common Name	Federal Status	State Status	Description of Habitat
Gopherus polyphemus	Gopher tortoise	C	T	Well-drained, sandy soils in forested and grassy areas; associated with pine overstory
Heterodon simus	Southern hognose snake	SC	T	Open, sandy woods, fields, and floodplains
Necturus punctatus	Dwarf waterdog	NL	TR	Sluggish streams with substrate of leaf litter or woody debris
Pituophis melanoleucus mugitus	Florida pine snake	SC	TR	Arid pinelands, sandy areas, often associated with gopher tortoise burrows
Fish				
Elassoma okatie	Bluebarred pygmy sunfish	NL	E	Heavily vegetated creeks, sloughs, and roadside ditches
Etheostoma fricksium	Savannah darter	NL	TR	Shallow creeks with moderate current and sandy or gravel bottoms
Etheostoma serriferum	Sawcheek darter	NL	TR	Sluggish streams and swamps with sand or mud bottoms
Notropis scepticus	Sandbar shiner	R	NL	Large streams to medium-sized rivers
Plants				
Ceratiola ericoides	Rosemary	NL	T	Driest, openly vegetated scrub oak sandhills and river dunes with deep white sands of the Kershaw soil series
Sarracenia rubra var. *rubra*	Sweet pitcher-plant	NL	T	Acid soils of open bogs, sandhill seeps, Atlantic White Cedar swamps, and wet savannas
Silene caroliniana	Carolina pink	NL	TR	Granite outcrops and sandhills near the Ogeechee and Savannah Rivers
Stewartia malacodendron	Silky camelia	NL	R	Steepheads, bayheads, and edge of swamps
Stylisma pickeringii var. *pickeringii*	Pickerings's morning glory	SC	T	Coarse white sands on sandhills near the Fall Line and on a few ancient dunes

Scientific Name	Common Name	Federal Status	State Status	Description of Habitat
				along the Flint and Ohoopee Rivers
Carphephorus bellidifolius	Sandy-woods chaffhead	NL	TR	Sandy scrub
Chamaecyparis thyoides	Atlantic white cedar	NL	R	Wet sandy terraces along clear streams and in acidic bogs
Cypripedium acaule	Pink ladyslipper	NL	U	Upland oak-hickory-pine forests
Liatris secunda	Sandhills gay-feather	NL	TR	Fall Line sandhills
Macbridea caroliniana	Carolina bogmint	SC	R	Bogs, marshes, and alluvial woods
Nestronia umbellula	Indian olive	SC	R	Dry open upland forest of mixed hardwood and pine

E = Endangered; T = Threatened; C = Candidate; R = Rare; NL = Not Listed; SC = Species of Concern; TR = Tracked Species; TS = Target Species;U = Unusual

Figure 3-2 Known Locations of Protected Species – Road to Growth Study Area

- Kestrel
- Gopher Tortoise
- Loggerhead Shrike
- Indian Olive
- Pickering's Morning Glory
- Pink Ladyslipper
- Sandhill Rosemary
- Sweet Pitcher Plant
- RCW 200 ft Buffer
- Study Area Boundary
- Training Area Boundary
- Installation Boundary

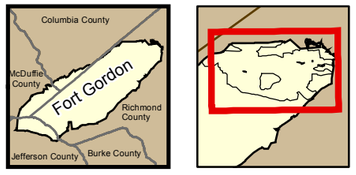
Projection:
World Geodetic System of 1984
UTM Zone 17 North
Units: Meters

1:26,000

0 0.25 0.5 0.75 Mi

0 0.25 0.5 1 Km

This map documents areas with Environmental restrictions. It was produced by the Savannah District Corps of Engineers - Planning Division in April 2014.



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3.3.2 Environmental Consequences

Threshold of Significance for Biological Resources: A significant impact would occur if the project would (a) have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies or regulations by the Georgia Department of Natural Resources (GADNR) or the USFWS; (b) have a substantial adverse effect on any sensitive or unique natural community identified in local or regional plans, policies or regulations by GADNR or USFWS; (c) interfere substantially with the movement of native resident or migratory fish or wildlife, obstruct wildlife corridors, or harm wildlife nursery sites; (d) conflict with local policies ordinances protecting biological resources, such as a tree preservation policy or ordinance; or (e) conflict with the provisions of an approved local, regional, or state habitat conservation plan. Specific significance thresholds for Fort Gordon include (a) reduction of the installation RCW population; (b) reduction of forage habitat at active RCW clusters below threshold levels; and (c) direct effect to a living RCW or active cavity tree.

3.3.3 No Action Alternative

No impacts to vegetation, fish and wildlife, or protected species would occur under the No Action Alternative. No addition in personnel, military training, demolition, renovation, or construction would occur beyond the baseline conditions established in this EA. The biological resources on the installation would continue to be managed in accordance with the installation's INRMP.

3.3.4 High Growth Alternative

It is understood that the Low Growth Alternative would have less impacts than the High Growth Alternative as discussed in Section 2.3. For simplicity, only the High Growth Alternative impacts are described.

The High Growth alternative has the possibility of affecting the GREEN, AMBER, and RED portions of the RTG study area (Figure 2-2), including portions of TAs adjacent to the cantonment area, but does not include the RCW or gopher tortoise HMUs. There are no active RCW cavity trees in the RTG study area; however, habitat for RCW does occur there. In addition, gopher tortoise and several protected plant species also occur within the study area. The RTG projects would be located to avoid impacting RCW, gopher tortoise, and protected plants. Any project that would remove pines that could be potential RCW nesting or foraging habitat or that would occur in potential gopher tortoise or protected plant habitat must be surveyed to verify these species are not present at the project site.

Construction/renovation/operations of facilities for RTG actions could disturb nesting kestrels. Mitigation to prevent impacts to kestrels would include relocating nest boxes away from RTG facilities outside the breeding season; assuring an activity (e.g., loud building equipment such as generators, etc.) located near kestrel boxes will not disturb nesting; and not disturbing nesting boxes during the breeding season with construction activities.

Any construction/renovation, construction staging, and operation of facilities associated with RTG actions would be conducted such that impacts to protected species would be avoided. RTG actions would not result in removal of habitat in the RCW HMUs or decrease the installation's RCW recovery goal. As discussed in this section and in sections 3.2 and 3.4, impacts of additional personnel working on Fort Gordon and their accompanying

infrastructure and training needs on federally protected rare species, natural habitats, and water resources are expected to be negligible to minor. RTG actions in GREEN and RED areas would have negligible impact on biological resources; actions in AMBER areas would have minor impacts through effects described above in this section.

3.4 Wetlands and Water Resources

3.4.1 Affected Environment

Wetlands

Approximately 4,395 acres of wetlands occur on Fort Gordon. These consist of both alluvial and non-alluvial wetlands. Alluvial wetlands are associated with stream channels and depend on the flooding regime of the stream system. With the exception of Brier Creek, the floodplain of most alluvial wetlands on Fort Gordon is inconspicuous due to rolling topography. These streams fit the description of "small stream swamps" where separate fluvial features and associated vegetation are too small or poorly developed to distinguish (USAG Fort Gordon 2008).

Non-alluvial wetlands are located in areas where groundwater emerges or precipitation is held close to the soil surface. Non-alluvial wetlands on Fort Gordon include seepage areas and isolated wetlands. Seepage areas occur on saturated soils where the water table remains immediately below the soil surface. Plant species associated with these types of wetlands include, but are not limited to sweetbay magnolia (*Magnolia virginiana*) in the midstory and sweetgum (*Liquidambar styraciflua*) and yellow-poplar (*Liriodendron tulipifera*) in the overstory. Isolated wetlands include small isolated ponds with grasses and herbs as dominant vegetation. If present, the overstory consists primarily of sweetgum and blackgum (*Nyssa biflora*) (USAG Fort Gordon 2008). The distribution of wetlands within the RTG study area is shown in Figure 3-3.

Floodplains

Surface waters (such as streams and creeks) that are periodically subject to flooding during intervals of overbank flow create a relatively broad and flat valley area immediately adjacent to the waterbody, known as a floodplain. Floodplain areas are divided into two types: 100-year floodplains and 500-year floodplains. The 100-year floodplain is regulated by the Federal Emergency Management Agency (FEMA) and is defined as typically dry land that has a 1 percent or greater chance of flooding each year. The 500-year floodplain is defined as land that has a 0.2 percent chance of a flooding each year. Floodplains within the RTG study area are shown in Figure 3-4.

E.O. 11988, *Floodplain Management*, requires federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves consultation of appropriate Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), which contain enough general information to determine the relationship of the project area to nearby floodplains. E.O. 11988 directs federal agencies to avoid floodplains unless the agency determines that there is no practicable alternative to undertaking the action in a floodplain. Where the only practicable alternative is to locate in a floodplain, a specific step-by-step process must be followed to comply with EO 11988. This "eight-step" process is detailed in FEMA's, *Further Advice on EO 11988 Floodplain Management*.

Figure 3-3 Wetlands – Road to Growth Study Area

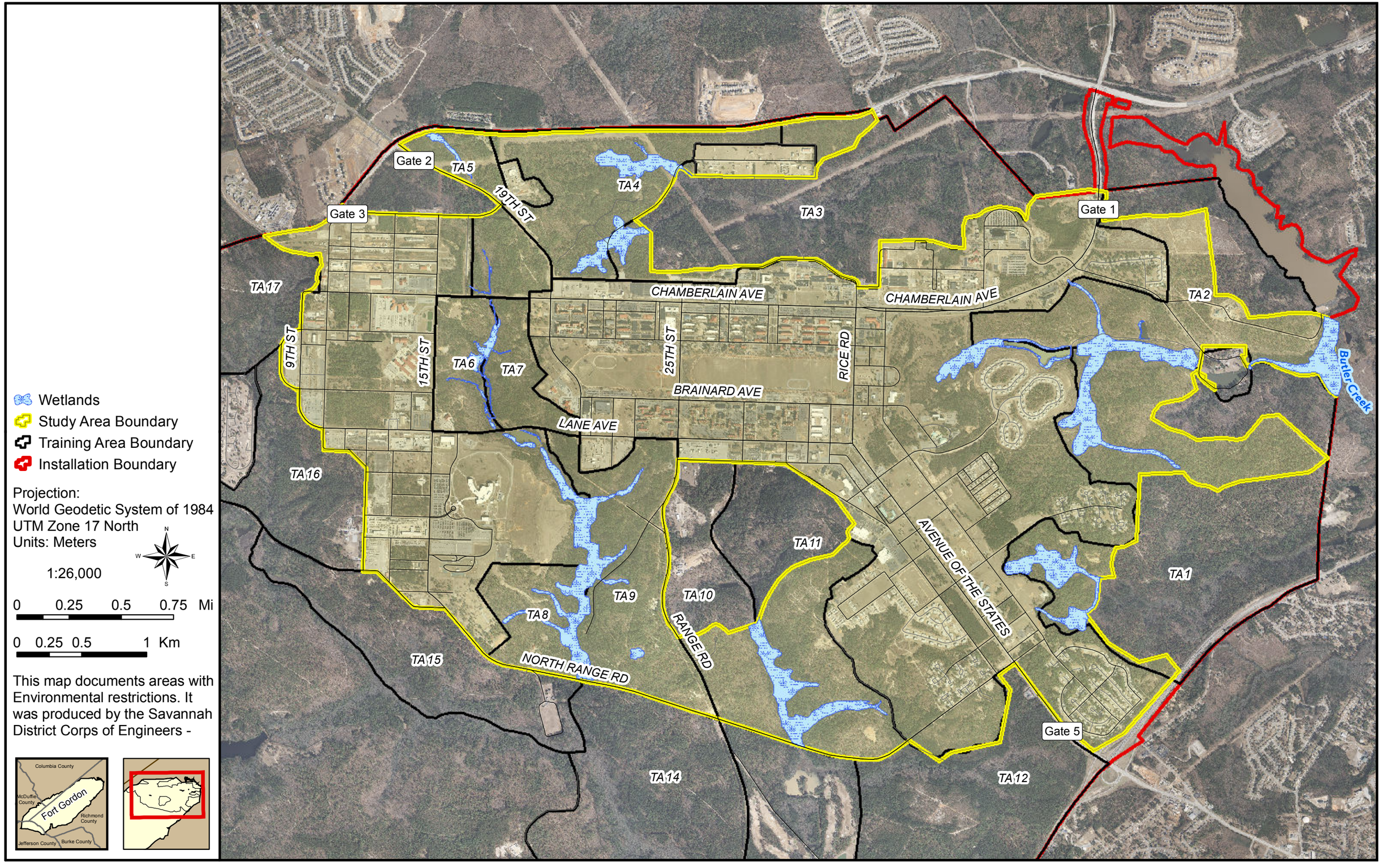

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Figure 3-4 Floodplains – Road to Growth Study Area

100 Year Flood Zone
Study Area Boundary
Training Area Boundary
Installation Boundary

Projection:
World Geodetic System of 1984
UTM Zone 17 North
Units: Meters

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0 0.25 0.5 1 Km

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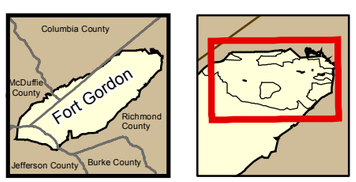

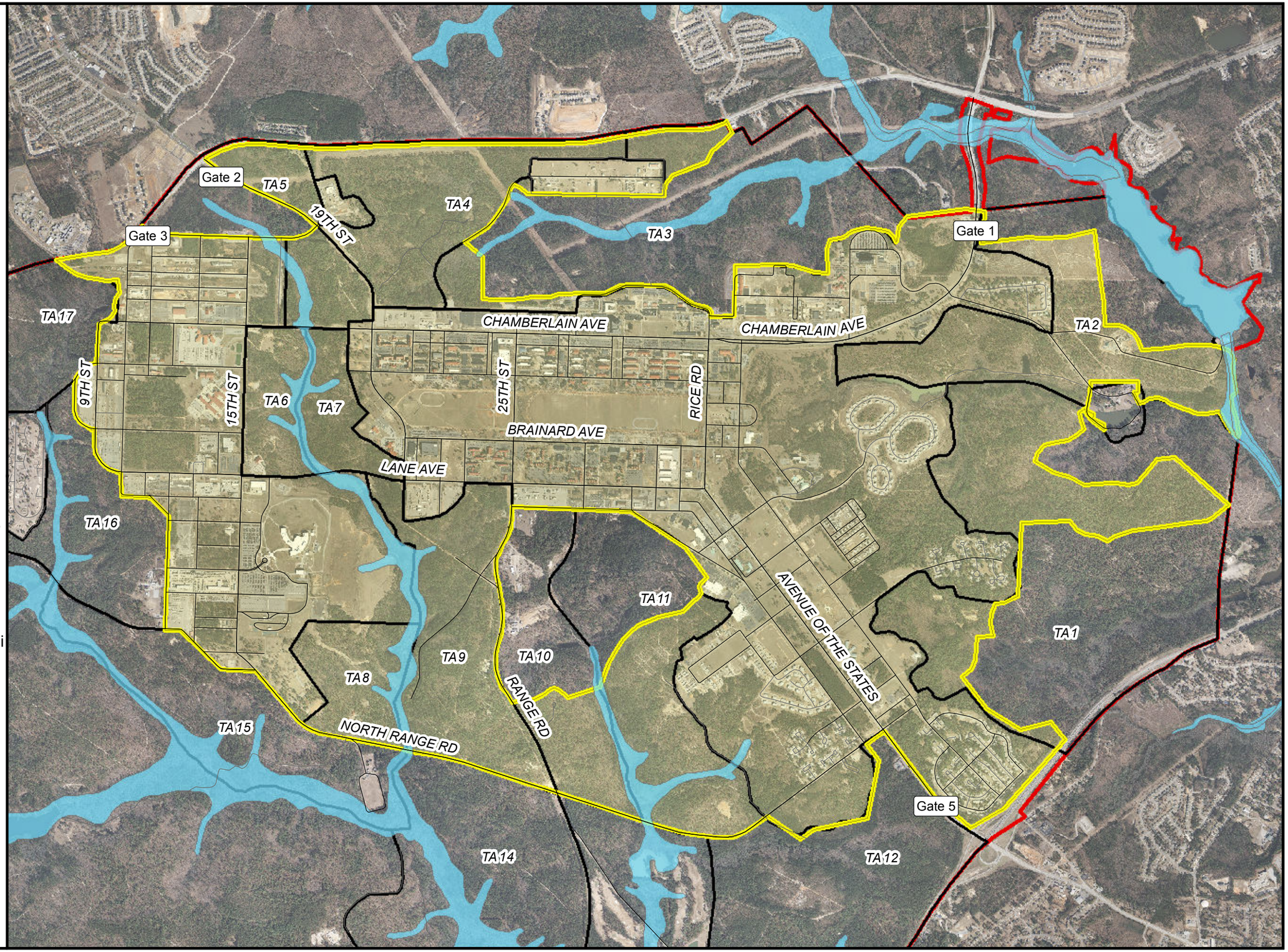

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A flood zone is an area that FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's or county's FIRM or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area. Examples of flood zones include the 1-percent-annual-chance flood hazard area (this is also known as a 100-year flood event) and the 0.2-percent-annual-chance flood hazard area (this is also known as a 500-year flood event).

Groundwater

Fort Gordon is located in the Coastal Plain hydrogeologic province of Georgia, whose principal groundwater source is the Southeastern Coastal Plain aquifer system. This aquifer is composed of interbedded sand and clay of Cretaceous age and locally includes sand and clay of early Tertiary age. The Dublin–Midville aquifer system consists of two aquifers, separated by a confining unit. The sediments of the Upper Cretaceous age correlate to the Lower Dublin and Upper and Lower Midville aquifers, undifferentiated. The top of this aquifer occurs at approximately 340 feet above mean sea level (msl). The overlying Huber Formation correlates to the Lower Dublin confining unit, with the top of the unit occurring at approximately 380 feet above msl. Depth to groundwater varies from approximately 56 feet to 0 feet below ground surface at seeps discharging to surface water along floodplains and creeks. Natural discharge from the aquifer is into the Oconee, Savannah, and Ocmulgee Rivers. Fort Gordon lies within the recharge area and the aquifer is relatively thin; therefore, there is limited storage capacity and only moderate supplies of potable water are available within the installation. Typical yields in this area range from 29,000 to 72,000 gallons per day (GPD). Wells within the aquifer supply potable water to the range, training, and recreation areas. Because of the high content of dissolved carbon dioxide, pH values can range from 3.8 to 7.4, with a mean of 5.8. Potable water to the cantonment area is provided by Augusta-Richmond County through the public water supply system (ARCYBER 2013b).

Surface Water

The RTG study area lies within two watersheds: Butler Creek (HUC 030601060503) and Spirit Creek (HUC 030601060801). Butler Creek originates north of the installation boundary and drains southeastward into the Savannah River. Spirit Creek flows just to the southwest of the study area, and several tributaries originate in the study area and flow southward into Spirit Creek (Figure 3-5). There are six reservoirs/impoundments within the study area (Table 3-4). These are considered deepwater habitat for aquatic species and all but Scout Lake and Experimental Lake are managed for recreational fishing (USAG Fort Gordon 2008).

Table 3-4: Impoundments Located in the Road to Growth Study Area

Name	Area (acres)	Volume (acre-feet)
Butler Reservoir	81.0	1,009
Boardmans Lake	6.9	34
Experimental Lake	1.4	250
Soil Erosion Lake	12.0	270
Wilkerson Lake	3.9	120
Scout Lake[1]	5.6	285

Source: USAG Fort Gordon 2008
[1]Dam failure, no water impounded at this time

Water quality standards are issued by the GAEPD, Watershed Protection Branch and by the United States Environmental Protection Agency (USEPA) under the Georgia Water Quality Control Act, the Federal Safe Drinking Water Act, and the Clean Water Act (CWA). Section 303(d) of the CWA requires states to identify and develop a list of impaired waterbodies where technology-based and other required controls have not provided attainment of water quality standards. Section 305(b) of the CWA requires states to assess and report the quality of their waterbodies. The state of Georgia has combined its 303(d) and 305(b) lists into one report referred to as the 305b/303d Integrated Report which it publishes every 2 years. This report details the quality of water in the streams, lakes, and reservoirs of all major river basins in the state and identifies those waterbodies that are impaired and do not meet designated uses and describes total maximum daily loads (TMDLs) for the pollutants of concern.

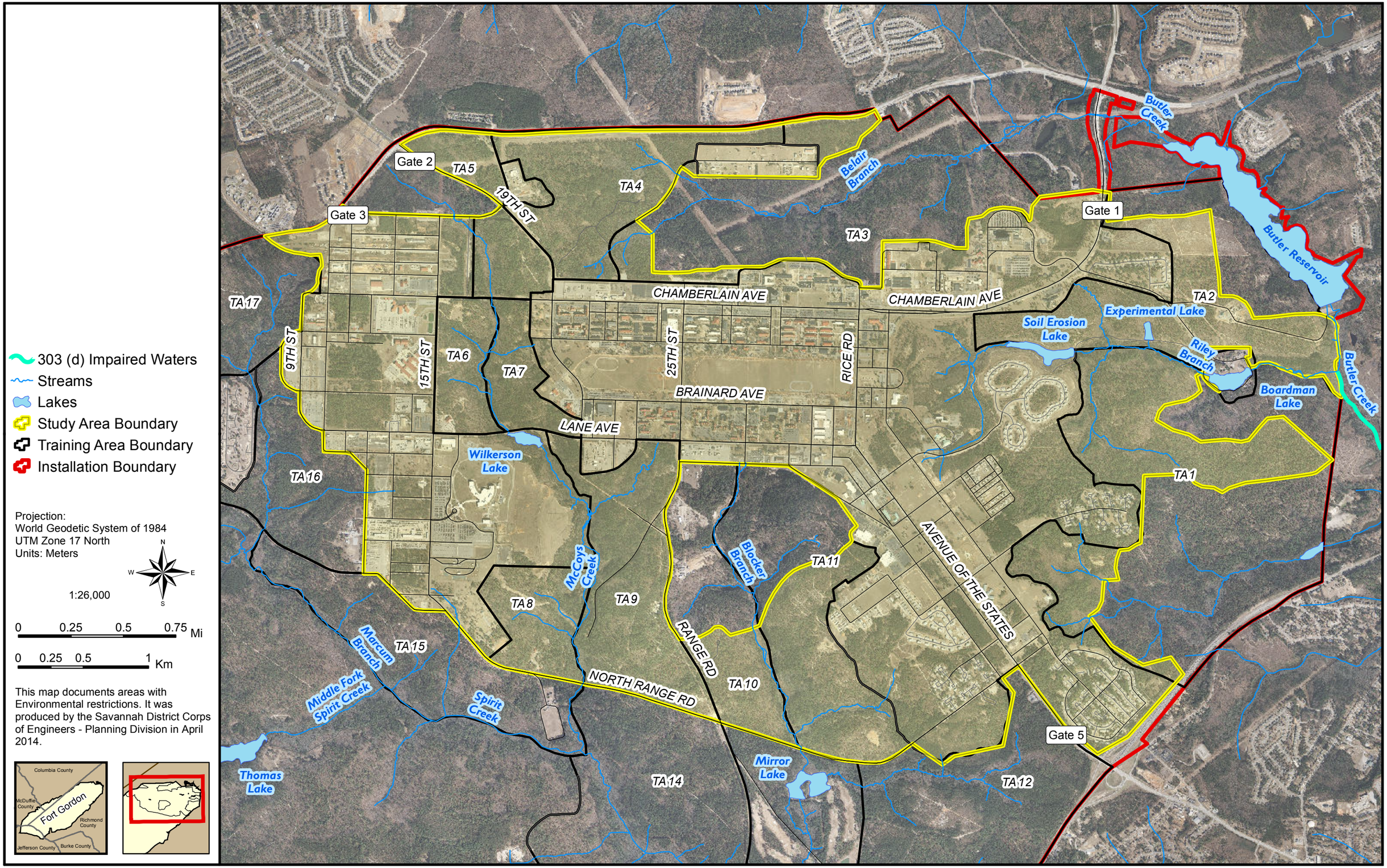
TMDL's established by GAEPD define allowable pollutant loadings or parameters for a waterbody through a watershed management approach and allows water quality controls to be developed to reduce pollution and to restore and maintain water quality. The allowable load established by a TMDL suggests stream water quality would improve over time at such a level to maintain the stream's designated use. Water quality of all lakes and streams at Fort Gordon are periodically monitored to determine if management actions are required. Water is monitored for pH, color, point and nonpoint source pollution, total hardness, and turbidity. Additionally, heavy metals or other toxic materials that bio-accumulate in fish tissues are monitored. Several sampling points have been established on the installation's streams and creeks. The 2013 305(b)/303(d) Integrated Report identified one impaired stream that flows through the RTG study area, Butler Creek (Figure 3-5). The stretch of Butler Creek located off-post downstream from Boardmans Lake toward the Savannah River is impaired due to fecal coliform. The suspected causes of impairment are urban runoff and nonpoint source pollution from an unknown source (USACE 2013).

Stormwater

The stormwater drainage system at Fort Gordon is a series of pipes and paved and channeled drainage ditches. Drainage pipes range in size from 12 to 72 inches in diameter. Most of the stormwater pipes are concrete, although other materials such as aluminum and corrugated metal are used. Within the cantonment area, the stormwater system consists mainly of open ditches, catch basins and pipes that deliver stormwater to tributaries of Spirit Creek (McCoys Creek, Marcum Branch, Blocker Branch, Long Branch), Butler Creek (Belaire Branch, Riley Branch), and an un-named water quality pond.

Fort Gordon's stormwater conveyance system is being impacted by changes in impervious surfaces and failure of the 60-year –old materials used in the conveyance system. The Municiple Separate Storm Sewer System (MS4) has not been upgraded as land use has changed. As a result, there are existing flooding problems as well as excessive erosion and sedimentation problems occurring at some of the outfalls, including outfalls in the RTG study area. Fort Gordon contracted a study in FY 2007 to evaluate the MS4 and outfalls and plan for improvements to the system. The *FY 2007 Drainage and Erosion Control Capital Improvement Plan* identified problem areas related to flooding, erosion, and water quality. It also recommended improvements and prioritized infrastructure needs, addressing existing structures and construction of new facilities. Three categories of projects were identified: 1) detention basin design projects, LID applications projects, and conveyance issues.

Figure 3-5 Surface Waters – Road to Growth Study Area



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structures and construction of new facilities. Three categories of projects were identified: 1) detention basin design projects, LID applications projects, and conveyance issues.

3.4.2 Environmental Consequences

Wetlands

Threshold of Significance for Wetlands: A significant impact would occur if the project would have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act.

Water Resources

Threshold of Significance for Water Resources: A significant impact would (a) violate any water quality standard or waste discharge requirement; (b) substantially deplete groundwater supplies or interfere substantially with groundwater recharge; (c) substantially alter the existing drainage pattern of the site in a manner which would result in substantial erosion or siltation on-site or off-site; (d) substantially increase the rate or amount of surface runoff in a manner that would result in flooding on-site or off-site; (e) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (f) otherwise substantially degrade water quality.

3.4.3 No Action Alternative

No impacts to wetlands, floodplains, groundwater, surface water, or stormwater would occur under this alternative. No addition in personnel, military training, demolition, renovation, or construction would occur beyond the baseline conditions established in this EA.

3.4.4 High Growth Alternative

It is understood that the Low Growth Alternative would have less impacts than the High Growth Alternative as discussed in Section 2.3. For simplicity, only the High Growth Alternative impacts are described.

Wetlands

Planning level survey maps (created using National Wetland Inventory maps, hydric soils maps and color infrared digital orthophotography) were used to eliminate wetland areas from consideration for development. Therefore, impacts to wetlands under the High Growth Alternative would be negligible. In the event a project is identified that potentially impacts wetlands, additional NEPA analysis will be required and appropriate Clean Water Act Section 401/404 permitting requirements will be met.

Floodplains

Planning level survey maps were used to identify and eliminate floodplains from consideration for development. Therefore, no direct impacts to floodplains would occur under the High Growth Alternative. However, indirect impacts could occur if stormwater hydrology is drastically changed by RTG development. This can be mitigated with BMPs, engineering controls, and LID principles.

Groundwater

None of the proposed RTG construction would occur in the outlying areas of the installation that use wells for potable water. Some of the RTG organizations may use training areas that are supplied by wells, but that use would not appreciably increase water use. The potential for groundwater contamination (e.g., by accidental spills of hazardous materials or hazardous waste) from RTG activities would be prevented through implementation of the installation's existing hazardous waste management procedures (e.g., spill prevention, control, and countermeasures). Groundwater recharge would be affected by RTG actions. Local streams are recharged by perched aquifer tables. As impervious surface is constructed it would reduce the amount of onsite recharge. The impacts would require mitigation through use of LID and recharge technologies.

Surface Water

The High Growth Alternative could produce moderate impacts to surface water resources, including one Section 303(d) listed stream (Butler Creek) that flows through a small portion of the study area. The streams in the RTG study area are all headwaters. Construction of impervious surface in this area would increase velocity of discharge of stormwater and could increase downstream flooding. Impacts to surface waters will be required to be mitigated through BMPs under CWA NPDES permitting.

To minimize any potential short-term impacts, an Erosion and Sediment Control Plan (ESCP) and a Stormwater Pollution Prevention Plan (SWPPP) would be designed and approved prior to each new construction, which would include measures to protect surface water resources. Fort Gordon will coordinate with local, state and federal agencies to obtain any necessary permits. Adverse impacts to waterways from the construction activities would be minimized by proper construction management and planning, and the use of appropriate site-specific BMP's for controlling runoff, erosion, and sedimentation during construction activities.

Stormwater

Stormwater and wastewater discharges are regulated by the USEPA under Sections 401 and 402 of the CWA permitting requirements through the Georgia NPDES. Some RTG actions would involve new construction resulting in over one acre of land disturbance, thereby requiring an NPDES general permit from GAEPD prior to construction. In addition, Fort Gordon must comply with Section 438 of the Energy Independence and Security Act (EISA) of 2007, which directs Federal agencies sponsoring development or redevelopment of over 5,000 square feet in size to use site planning, design, construction, and maintenance strategies to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of water flow. Implementation of LID is the preferred methodology to meet Section 438 of the EISA, and DoD policy regarding stormwater management.

Army LID guidance requires the installation to design projects to minimize the effects on stormwater drainage systems. To comply with regulatory Stormwater Phase II requirements for Municipal Separate Storm Sewer Systems (MS4), the post-construction site runoff is required to be the same as pre-construction runoff coefficients, so it does not impact the existing watershed conditions. The potential for surface water and groundwater contamination (e.g., by accidental spills of hazardous materials or hazardous waste) would be prevented through implementation of the installation's existing hazardous waste management procedures (e.g., spill prevention, control, and countermeasures).

Adherence to the ESCP and NPDES permit, along with implementation of project-specific BMPs and LID practices, would minimize impacts to water quality. Both LID practices and BMPs for erosion and sedimentation control would be implemented in accordance with the guidelines in the *Georgia Stormwater Management Manual/Coastal Stormwater Supplement* and the USEPA *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* and the *Manual for Erosion and Sediment Control in Georgia*. BMPs specified in the ESCP could include erosion control matting, silt fencing, brush barriers, construction exits, temporary and permanent seeding, the application of mulch, buffer zones, and dust control. The application of any or all of these BMPs would depend upon precise, specific ground conditions in the areas disturbed by construction.

RTG actions in GREEN, AMBER, and RED areas would have negligible impacts to wetlands and floodplains and moderate impacts to groundwater, surface water, and stormwater as a result of new construction that could occur in areas with existing problematic stormwater outfalls. The use of BMPs and LID principles would be required in order to comply with Section 438 of the EISA (post-construction runoff must not exceed pre-construction runoff). Although these steps would mitigate future increases in stormwater discharge, they would not solve existing stormwater problems.

3.5 Air Quality

3.5.1 Affected Environment

Air Quality

The U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for specific pollutants determined to be of concern with respect to the health and welfare of the general public. Ambient air quality standards are classified as either "primary" or "secondary." The major pollutants of concern, or criteria pollutants, are carbon monoxide (CO), sulfur dioxide (SO2), nitrogen dioxide (NO2), ozone (O3), particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), and lead (Pb). NAAQS represent the maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect the public health and welfare. The NAAQS are included in Table 3-5.

Table 3-5: National Ambient Air Quality Standards

Pollutant	Primary Standard	Secondary Standard
PM_{10}	150 ug/m3 (daily)	Same
$PM_{2.5}$	12 ug/m3 (annual) 35 ug/m3 (daily)	15 ug/m3 (annual) 35 ug/m3 (daily)
NO_x	53 ppb (annual) 100 ppb (1-hour)	53 ppb (annual)
SO_2	75 ppb (1-hour)	0.5 ppm (3-hour)
CO	9 ppm (8-hour) 35 ppm (1-hour)	None
Lead	0.15 ug/m3 (3-month average)	Same
Ozone	0.075 ppm (8-hour)	Same

Source: http://www.epa.gov/air/criteria.html

Areas that do not meet these NAAQS standards are called non-attainment areas; areas that meet both primary and secondary standards are known as attainment areas. The Federal Conformity Final Rule (40 CFR Parts 51 and 93) specifies criteria or requirements for conformity determinations for Federal projects. The Federal Conformity Rule was first promulgated in 1993 by the EPA, following the passage of amendments to the Clean Air Act (CAA) in 1990. The rule mandates that a conformity analysis must be performed when a Federal action generates air pollutants in a region that has been designated as a non-attainment area for one or more NAAQS. A conformity analysis is the process used to determine whether a Federal action meets the requirements of the General Conformity Rule. It requires the responsible Federal agency to evaluate the nature of a proposed action and associated air pollutant emissions and calculate emissions resulting from the Proposed Action. If the emissions exceed established limits, known as *de minimis* thresholds, the proponent is required to implement appropriate mitigation measures.

Fort Gordon is within the Augusta (Georgia) – Aiken (South Carolina) Interstate Air Quality Control Region (AQCR) (40 CFR 81.114). This AQCR is in attainment for all National Ambient Air Quality Standards (NAAQS) criteria pollutants. Since the ROI is in attainment for all criteria pollutants, a formal conformity determination under Section 176(c) of the CAA, or a Record of Non-Applicability (RONA) for CAA conformity is not required for the Proposed Action. The General Conformity Rule only applies to criteria pollutants in the ROI which are in nonattainment or maintenance for the NAAQS.

Army operations at Fort Gordon are covered under a Georgia Part 70 Operating Permit (9711-245-0021-V-01-0) for air emissions. The permit requirements include annual periodic inventory for all stationary sources of air emissions and covers monitoring, record-keeping, and reporting requirements. Fort Gordon's 2011 Installation-wide air emissions are tabulated as follows: 13.8 tons per year (tpy) of volatile organic compounds (VOCs); 26.3 tpy of nitrous oxides (NO_x); 17.6 tpy of carbon monoxide (CO); 4.9 tpy of sulfur dioxide (SO_2); and 1.8 tpy of particulates less than 10 microns (PM_{10}) (USAG Fort Gordon 2013b).

The NSA has its own Minor CAA permit for air emissions at its campus on Fort Gordon. The NSA's emissions for the 12 months ending 30 June 2014 were as follows: 2.3 tons per year (tpy) of volatile organic compounds (VOCs); 15.9 tpy of nitrous oxides (NO_x); 19.7 tpy of carbon monoxide (CO); and 0.9 tpy of particulates less than 10 microns (PM_{10}) (NSAG 2014). Table 3-6 shows annual emissions from Fort Gordon, the NSAG campus, and total emissions.

Table 3-6: Annual Emissions at Fort Gordon and NSAG Campus (tpy)

Criteria Pollutant	VOC	NO	CO	SO_2	PM_{10}
Fort Gordon[1]	13.8	26.3	17.6	4.9	1.8
NSAG Campus[2]	2.3	15.9	19.7	NR	0.9
Total	**16.1**	**42.2**	**37.3**	**N/A**	**2.7**

[1]Fort Gordon 2011 data. [2]NASG data from 1 July 2013 – 30 June 2014

Hazardous Air Pollutants (HAPs)

Based on the emission rates reported in the 2011 Fort Gordon air report, (USAG Fort Gordon 2013b), Fort Gordon is not a major source for HAPS. The highest individual HAP emission rate is 2.78 tpy for hexane, which is less than the 10 tpy individual threshold. The aggregate HAP emissions are 6.23 tpy, which is less than the 25 tpy combined HAP threshold.

Greenhouse Gases and Climate Change

Global climate change refers to a change in the average weather on the earth. Greenhouse Gases (GHG) are gases that trap heat in the atmosphere and, therefore, contribute to the greenhouse effect and climate change. They include water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), fluorinated gases including chlorofluorocarbons (CFC) and hydrochlorofluorocarbons (HFC), and halons, as well as groundlevel O3 (California Energy Commission 2007; USAG Fort Gordon 2011a).

The major GHG-producing sectors in society include transportation, utilities (e.g., coal and gas power plants), industry/manufacturing, agriculture, and residential. Primary sources of GHG emissions include transportation (40.7 percent), electricity generation (22.2 percent), industry (20.5 percent), agriculture and forestry (8.3 percent), and other (8.3 percent) (California Energy Commission 2007). The main sources of increased concentrations of GHG due to human activity include the combustion of fossil fuels and deforestation (CO2), livestock and rice farming, land use and wetland depletions, landfill emissions (CH4), refrigeration system and fire suppression system use and manufacturing (CFC), and agricultural activities, including the use of fertilizers. Most GHGs occur naturally in the atmosphere, but increases in their concentration result from human activities such as the burning of fossil fuels (USAG Fort Gordon 2011a).

3.5.2 Environmental Consequences

Air Quality

Threshold of Significance for Air Quality: A significant impact would occur if the project would (a) violate any National Ambient Air Quality Standard (NAAQS); (b) increase the number or frequency of violations; (c) contribute substantially to an existing or projected air quality violation; (d) conflict with or obstruct implementation of any air quality plans; (e) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment; (f) expose sensitive receptors to substantial pollutant concentrations; (g) create objectionable odors affecting a substantial number of people.

Greenhouse Gases and Climate Change

The CEQ provided draft guidelines for conducting meaningful GHG analyses and making decisions based on those analyses. The CEQ GHG guidance is currently undergoing public comment at this time; however, the draft guidance states that if a proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons [27,563 tons] or more of CO2-E GHG emissions on an annual basis, agencies should consider this as indicating that a quantitative and qualitative assessment may be meaningful to decision makers and the public. For long-term actions that have annual direct emissions of less than 25,000 metric tons of CO2-E, CEQ encourages Federal agencies to consider whether the action's long-term emissions should receive similar analysis. CEQ does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that may warrant consideration in the appropriate NEPA analysis for agency actions involving direct emissions of GHGs (CEQ 2010).

3.5.3 No Action Alternative

No impacts to air quality would occur under the No Action Alternative. No addition in personnel, military training, demolition, renovation, or construction would occur beyond the baseline conditions established in this EA.

3.5.4 High Growth Alternative

It is understood that the Low Growth Alternative would have less impacts than the High Growth Alternative as discussed in Section 2.3. For simplicity, only the High Growth Alternative impacts are described.

Air Quality

Potential air quality impacts from the expected construction activities would occur from: 1) emissions due to the use of fossil fuel-powered equipment and vehicles, and 2) PM_{10} emissions during earth-moving activities. Construction vehicles would consist of a mixture of graders/dozers, loaders, trucks, backhoes, water trucks, and other vehicles and equipment typically associated with road and building construction activities. Fugitive dust generated from construction activities and vehicle travel on unpaved areas would temporarily affect local air quality. However, no long-term increases in fugitive dust would occur. Fugitive dust emissions would be moderated through dust reduction measures (e.g., watering of exposed soils), thereby minimizing the total quantity of fugitive dust emitted during construction activities. In addition, project construction equipment would emit minor amounts of hazardous air pollutants (HAPs) that could potentially impact public health. The main sources of HAPs would occur from the combustion of diesel fuel. Construction would be temporary and minor and HAPs emissions could be further moderated through implementation of BMPs such as restricting excessive idling, adherence to equipment maintenance programs, use of particulate filters, and use of ultra-low sulfur diesel fuel if applicable. The additional HAP emissions from RTG, when added to existing emissions, are not expected to exceed either the individual HAP threshold of 10 tpy or the combined HAP threshold of 25 tpy.

Continuing operations within the new facilities would require the use of backup generator power in the event of a significant power loss, in addition to baseload power off the grid. The type of generators and the total number of generators needed would be dependent on a number of factors (including the design of the facilities, number of personnel in each facility, and the operations that would require backup power) that are not finalized at this time.

Operating the emergency generators would contribute air emissions [carbon monoxide (CO), volatile organic compounds (VOCs), and nitrous oxides (NOx)], however, these emissions would be temporary, localized, and would not contribute substantial emissions. Fort Gordon would comply with the requirements of 40 CFR Part 60 (Standards of Performance of New Stationary Sources) under terms of its Title V permit.

Emissions from traffic, mainly from personally operated vehicles (POV), can be estimated using the methodology previously described in the ARCYBER EA (ARCYBER 2013b). Table 3-7 shows the emissions expected from the High Growth Alternative compared to those calculated for No Action. The ARCYBER emissions were based on 1,500 personnel; High Growth emissions were scaled up to 6,000 personnel. The High Growth Alternative represents a 24.5% increase in vehicles traveling on Fort Gordon relative to current baseline levels. Emissions were calculated using the following assumptions: 1) number of POVs equals the number of additional personnel; 2) annual operation is assumed to be 12 months total (260 days after subtracting weekends); 3) for purposes of providing a conservative analysis, all POV were assumed to be gasoline-powered light duty trucks; and 4) vehicle miles traveled per day was estimated to be 30 miles.

Table 3-7: Estimated Vehicle Emissions (tpy)

Criteria Pollutant	VOC	NO_x	CO	SO_2	PM_{10}	CO_2	CH_4	N_2O	CO_2e
No Action Alternative	37.9	63.7	695.0	0.8	7.4	85,578.5	5.0	5.4	82,138.4
High Growth Alternative	9.3	15.6	170.2	0.2	1.8	20,962.0	1.5	1.4	21,427.4
Total Estimated Vehicle Emissions	**47.2**	**79.3**	**865.2**	**1.0**	**9.2**	**106540.5**	**6.5**	**6.8**	**103565.8**

[1] $CO_2e = (Co_2 * 1) + (CH_4 * 21) + (N_20 * 310)$

There would be minor impacts to existing air emissions and air reporting requirements as a result of implementing the High Growth Alternative regardless of whether the actions occur in GREEN, AMBER, or RED areas. Fort Gordon would still maintain a Title V operating permit and associated reporting requirements. Generators associated with RTG facilities would be added to the installation's Title V permit and, depending on size, may require permission to construct from GA EPD before installing. There would be a minor increase in the amount of emissions generated from an increase in mobile and stationary sources. Increase in GHG emissions are expected to be below 27,563 tpy (25,000 metric tons per year) and no additional analysis is necessary.

3.6 Noise

3.6.1 Affected Environment

The primary source of noise at Fort Gordon is military training activities. Other sources of noise include operation of civilian and military vehicles, lawn and landscape equipment, construction activities, and vehicle maintenance operations. The Army recognizes three Noise Zones (NZs) (Table 3-8) to aid in land use planning on and near Installations (U.S. Army 2007). As Figure 3-6 shows, NZs II and III are mostly contained within the boundaries of the installation. Neither noise zone extends into the cantonment area and the RTG study area

Table 3-8: Noise Levels

Noise Zone	Population Highly Annoyed	Transportation (A-weighted[1)] Day-Night Average Sound Level	Impulsive Large Caliber (C-weighted[2]) Day-Night Average Sound Level	Small Arms (Decibels A-weighted)
I	<15%	<65 dBA	<65 dBA	<62 dBA
II	15-39%	65-75 dBA	65-75 dBA	62-70 dBA
III	>39%	>75 dBA	>75 dBA	>70 dBA

[1]A weighting filters out the low frequencies and slightly emphasizes the upper middle frequencies around 2-3 kilohertz. [2]By comparison, C weighting is almost unweighted, or no filtering at all. dBA = A-weighted decibel

Noise from construction activities varies with the types of equipment used and the duration of use. Stationary sources of construction equipment include pumps, generators, and compressors; these sources are considered nonimpact-type noises. Stationary sources of construction equipment considered impact-type noises include pile drivers, jackhammers, pavement breakers, and blasting operations. Mobile sources include dozers, scrapers, graders, etc. Table 3-9 provides a representation of construction noise levels associated with new construction. Use of heavy equipment occurs sporadically throughout the daytime hours. Under the Proposed Action, noise levels that would be generated during the earth moving phase (site clearing activities involving pieces of equipment) could range from 72 to 98 dBA when measured 50 feet from the equipment.

Table 3-9: Typical Noise Levels of Construction Equipment

Construction Equipment Type	Noise Level at 50 feet (dBA)
Bulldozer	80
Backhoe	72-93
Bobcat	72-93
Jackhammer	81-98
Crane	75-77
Pickup Truck	83-94
Dump Truck	83-94

Source: USEPA 1986

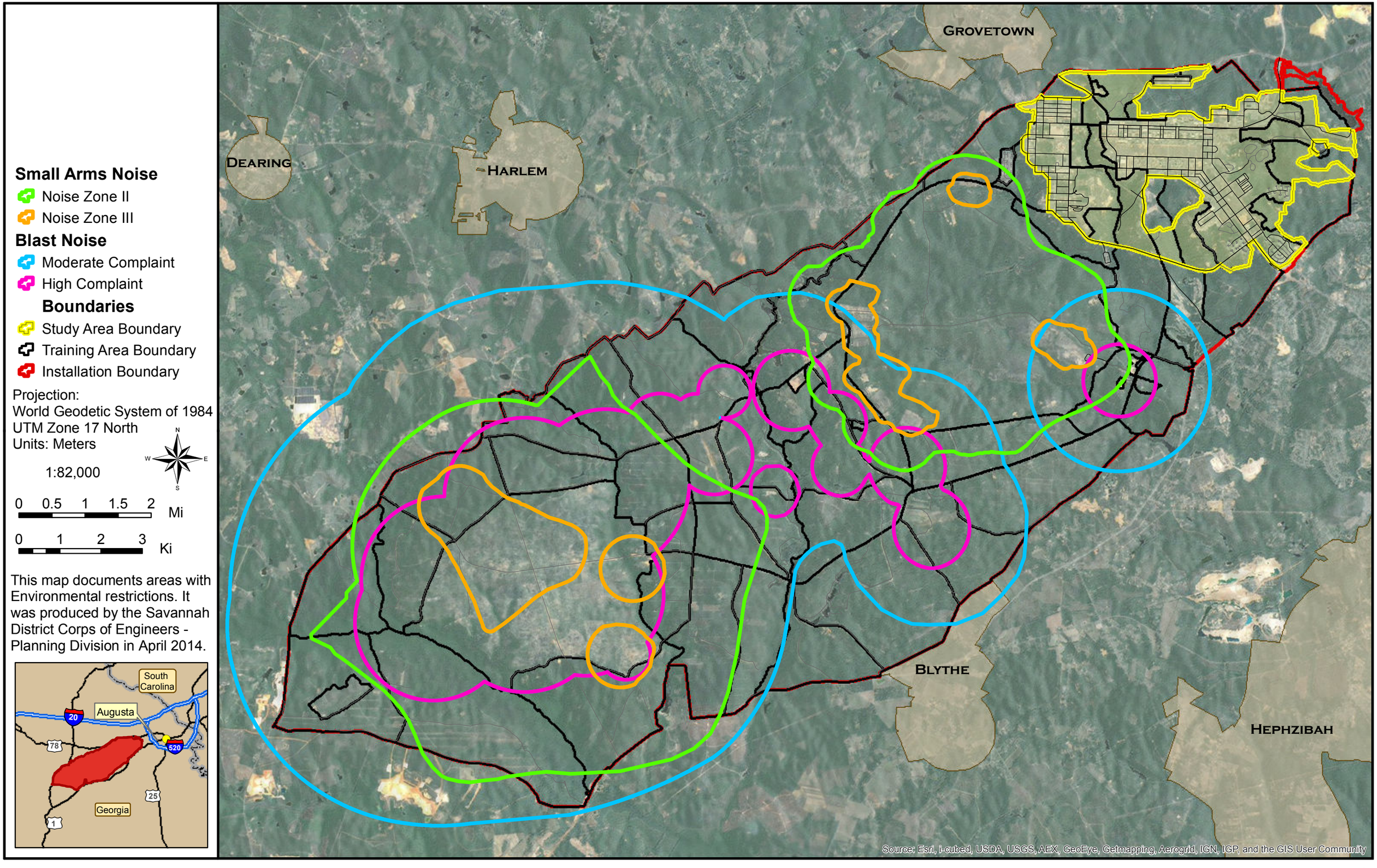
3.6.2 Environmental Consequences

Threshold of Significance for Noise: A significant impact would occur if the project would require reclassification of NZs to NZ II or III around sensitive receptors (e.g., residences, schools, hospitals, churches, or daycares).

3.6.3 No Action Alternative

The No Action Alternative would not be expected to change noise levels generated at Fort Gordon. No addition in personnel, military training, demolition, renovation, or construction would occur beyond the baseline conditions established in this EA.

Figure 3-6 Noise Contours at Fort Gordon



Small Arms Noise
- Noise Zone II
- Noise Zone III

Blast Noise
- Moderate Complaint
- High Complaint

Boundaries
- Study Area Boundary
- Training Area Boundary
- Installation Boundary

Projection:
World Geodetic System of 1984
UTM Zone 17 North
Units: Meters

N W E S

1:82,000

0 0.5 1 1.5 2 Mi

0 1 2 3 Ki

This map documents areas with Environmental restrictions. It was produced by the Savannah District Corps of Engineers - Planning Division in April 2014.

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3.6.4 High Growth Alternative

It is understood that the Low Growth Alternative would have less impacts than the High Growth Alternative as discussed in Section 2.3. For simplicity, only the High Growth Alternative impacts are described.

Temporary noise from construction equipment could impact military and civilian personnel working, using recreation areas on-post, and residents in military housing. However, this increase would be short-term and would occur during normal working hours. Because Fort Gordon is a military training facility, noise from small arms, artillery, and vehicles is heard regularly. It is not anticipated that the short-term increase in ambient noise levels from implementation of the High Growth Alternative would cause significant adverse impacts on the surrounding population. With the exception of possible occasional emergency generator usage and additional use of small arms ranges, there would not be any operational noise associated with the new facilities. Long-term noise impacts associated with an increase in traffic to the installation would be expected. However, these impacts would be considered minor as the installation already receives a large volume of traffic. Therefore, there would be minor impacts with the implementation of the High Growth Alternative regardless of whether the actions occur in GREEN, AMBER, or RED areas.

3.7 Cultural Resources

3.7.1 Affected Environment

The *Fort Gordon Integrated Cultural Resources Management Plan* (ICRMP) (USAG Fort Gordon 2011b) includes:

- detailed information on applicable cultural resources regulatory frameworks;
- regional prehistoric and historic background;
- the history of Fort Gordon;
- cultural resources investigations and recorded properties;
- and installation-specific standard operating procedures for managing and protecting important sites.

This and other ICRMP information are incorporated here by reference and, therefore, are not repeated. In addition to the ICRMP, Fort Gordon has a *Programmatic Agreement among the United States Army and the Georgia State Historic Preservation Officer* to help manage its cultural resources (USAG Fort Gordon 2006).

Fort Gordon has determined that the RTG stationing actions are a Federal undertaking with the potential to adversely affect historic properties, as defined under 36 CFR 800.16(y), and, thus, is governed by Section 106 of the National Historic Preservation Act (NHPA) and the implementing regulations at 36 CFR Part 800. As stipulated at 36 CFR 800.8, compliance with Section 106 can be coordinated with the requirements of NEPA. Fort Gordon has elected to fulfill its NEPA and Section 106 compliance documentation under the existing Programmatic Agreement (PA) with the Georgia State Historic Preservation Officer (GA SHPO) through annual reporting required by the PA.

Archaeological Resources

Fort Gordon has completed archaeological surveys on 47,619 acres, or 95 percent of the total land area of the installation. Areas that have not been surveyed include portions of the heavily disturbed cantonment area, impact areas that contain or are likely to contain unexploded ordnance (UXO), and lake bottoms. There are two areas that require Phase I survey. These two areas, left out of the previous Phase I coverage of the installation, are a total of 119 acres and are located in Training Areas 23 and 1. As of 2009, 1,150 archaeological sites had been identified on Fort Gordon. Of those, 995 are not eligible for listing on the NRHP, 114 are potentially eligible, and 41 are eligible for listing on the NRHP. Phase II testing to evaluate the NRHP eligibility of archaeological sites has been completed at 29 sites. A majority of the prehistoric sites are adjacent to water features such as drainages. Many of the historic sites are relict mill sites and homesteads that were razed after the Army purchased the land.

Within the Road to Growth study area, there are five National Register eligible archaeological sites: 9RI122, 9RI202, 9RI475, 9RI488, and 9RI489. All five were determined eligible for the information they can provide for Native American settlement in the area.

Historic Architecture

Fort Gordon completed an installation-wide architectural survey in 2005. Through the survey, no buildings or structures were determined to be eligible or potentially eligible for listing on the NRHP. However, on the basis of the recommendation of the Georgia SHPO, Building 33500, Woodworth Library, is considered eligible for the NRHP under Criteria C for the architectural significance of its New Formalism style and Criterion Consideration G for a building less than 50 years old because few buildings of this style remain intact in Georgia. Forty-three structures including the Signal School Campus have been recommended for reevaluation upon reaching 50 years of age.

Native American Resources

Fort Gordon has held on-site consultation meetings and sends out consultation requests for individual actions that could affect archaeological resources or that have widespread effects, such as cultural resource or natural resources management plans, to nine Native American tribes. The eligible Native American archaeological sites in the RTG study area will be off limits to development.

Cemeteries

There are 43 known historic cemeteries that date before Fort Gordon's establishment. Two prisoner-of-war (POW) cemeteries are on Fort Gordon near Gate 2. German and Italian POWs who died while in captivity from 1944 through the end of WWII were buried in those cemeteries. Families associated with the family cemeteries are allowed new burials if space is available within the original cemetery footprint. No new burials are allowed in the POW cemeteries. Fort Gordon provides grounds maintenance for all of the cemeteries. The NHPA specifically excludes most cemeteries for consideration for listing on the NRHP.

3.7.2 Environmental Consequences

Threshold of Significance for Cultural Resources: A significant impact would occur if the project would (a) cause a significant adverse change in the significance of a historical or archeological resource as defined in the National Historic Preservation Act; (b) directly or indirectly destroy a

unique paleontological resource or site of unique geologic feature; (c) disturb any human remains, including those buried outside of formal cemeteries.

3.7.3 No Action Alternative

No effects on cultural resources would occur under the No Action Alternative. No addition in personnel, military training, demolition, renovation, or construction would occur beyond the baseline conditions established in this EA.

3.7.4 High Growth Alternative

It is understood that the Low Growth Alternative would have less impacts than the High Growth Alternative as discussed in Section 2.3. For simplicity, only the High Growth Alternative impacts are described.

No adverse effects on archaeological sites or Native American resources would be expected to result from implementing the High Growth Alternative. Cultural resources sites would be avoided when selecting locations for RTG projects. Archaeological materials inadvertently discovered or disturbed during construction, renovation, or demolition activities would be protected in accordance with Fort Gordon policies, the ICRMP, and federal regulation, and the treatment of such resources would be coordinated through the installation Cultural Resources Manager, SHPO, and other parties (e.g., Native American or Tribal Historic Preservation Officers) as appropriate.

Adverse effects on historic architecture are possible if any RTG project involves renovation of or new construction affecting Woodworth Library or the Signal School Campus. Any actions that may impact these structures would need additional evaluation to avoid negative impacts on eligible resources or historic district eligibility. Per the NHPA, such actions would undergo Section 106 consultation if determined to be appropriate for any such proposal. Based on these factors, implementing the High Growth Alternative would have negligible impacts on cultural resources if actions occur in GREEN or AMBER areas; as described above, actions that could affect Woodworth Library or the Signal School Campus could have minor affects on cultural resources.

3.8 Hazardous Materials, Hazardous Waste, Landfills, and Environmental Restoration Sites

3.8.1 Affected Environment

A hazardous material is defined as any substance that is 1) listed in Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); 2) designated as a biologic agent and other disease causing agent which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such persons or their offspring; or 3) listed by the U.S. Department of Transportation as hazardous materials under 49 CFR 172.101 and appendices. Hazardous materials are federally regulated by the USEPA in accordance with the Federal Water Pollution Control Act; CWA; Toxic Substance Control Act (TSCA); Resource Conservation and Recovery Act (RCRA); CERCLA; and CAA.

A hazardous waste is defined as a solid waste which is either listed as being hazardous or is hazardous by characteristics it may display such as reactivity, corrosivity, ignitability, or Toxic

Characteristic Leaching Procedure (TCLP) toxicity, as defined by 40 CFR 261-270, and 40 CFR 279.

The promulgation of TSCA (40 CFR Parts 700 to 766) represented an effort by the Federal government to address those chemical substances and mixtures for which it was recognized that the manufacture, processing, distribution, use, or disposal may present unreasonable risk of personal injury or health of the environment, and to effectively regulate these substances and mixtures in interstate commerce. The TSCA chemical substances inventory lists information on more than 62,000 chemicals and substances.

Toxic chemical substances regulated by USEPA under TSCA include asbestos and lead, which for the purposes of this EA, are evaluated in the most common forms found in buildings, namely asbestos-containing materials (ACM) and lead-based paint (LBP). ACM includes materials that contain more than 1 percent asbestos and is categorized as either friable or non-friable. LBP includes paint having lead levels equal to or exceeding 0.5 percent by weight. In addition to asbestos and lead, renovation/demolition activities have the potential to disturb mercury and poly-chlorinated biphenyl (PCBs). Buildings may contain liquid mercury in thermostats and thermometers, and fluorescent lighting fixtures typically contain elemental mercury in the fluorescent light bulb; compact fluorescent lamps also contain mercury. In addition, fluorescent lighting fixtures have potential to contain ballasts containing PCBs.

RCRA defines hazardous waste as wastes or combination of wastes that, because of quantity, concentration, or physical, chemical, or infectious characteristics, may either cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. All hazardous wastes are classified as solid wastes. A solid waste is any discarded material that is not excluded under 40 CFR 261.4(a) or that is not excluded by a variance granted under 40 CFR 260.30 and 260.31 or that is not excluded by a non-waste determination under 40 CFR 260.30 and 260.34.The affected environment for the RTG actions includes the use, storage, transport, and disposal of hazardous materials and wastes at Fort Gordon. This includes hazardous materials and wastes from underground storage tanks (USTs) and aboveground storage tanks (ASTs); paint operations; adhesives; pesticides; LBP; ACM; PCBs; and unexploded ordnance (UXO). Fort Gordon operates under a Hazardous Waste Permit. The permit contains specific operating and monitoring requirements as well as corrective action requirements.

Fort Gordon has a Hazardous Materials Control Point (HMCP) that provides materials on an as-needed basis to reduce the quantities of materials that are stored throughout the installation. The mission of the HMCP is to track all hazardous materials, look for efficiencies, and promote pollution prevention and waste minimization. The materials are tracked via the Hazardous Substance Management System (HSMS). Fort Gordon maintains a Spill Prevention, Contingency and Countermeasures Plan (SPCCP) and an Installation Spill Contingency Plan (ISCP). The SPCCP identifies areas that are at risk for spills, such as USTs and ASTs, which could cause harm to human health and the environment. It also lists measures that have been taken to reduce or eliminate the risk of potential contamination in the event of a spill. The SPCCP was last updated in 2014. The Fort Gordon Environmental Division maintains a Hazardous Waste Management Plan which was last updated in 2003 (USAG Fort Gordon 2003).

The installation has a continuing program to remove PCB-containing material from electrical equipment. However, most lighting ballasts are expected to contain PCBs and are treated as

containing PCBs unless they are labeled PCB-free. Although there are no PCB transformers in the RTG study area, there are 11 pad mounted transformers that are PCB-contaminated in the Willard Training Area within TA-4. This area is coded RED in Figure 2-2.

There are several closed landfills in the RTG study area that are predominantly construction and demolition waste sites. These areas are restricted from development. Predominantly, these sites are well delineated. However, any development that occurs adjacent to these sites possess slight potential to uncover contaminates or debris. Additional surveys, engineering controls, or remediation could be required which would be a cost of the project.

Under the Installation Restoration Program (IRP), Fort Gordon conducted an Installation Assessment in 1982 that identified 36 Solid Waste Management Units (SWMUs) within the installation. Since that time, additional sites have been added bringing the total to 41 SWMUs at Fort Gordon (USAG Fort Gordon 2014b).

3.8.2 Environmental Consequences

Threshold of Significance for Hazardous Materials, Hazardous Waste, Landfills, and Environmental Restoration Sites: A significant impact would occur if the project would (a) create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials; (b) create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; (c) emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within 0.25 mile of an existing or proposed school; (d) result in a safety hazard for people residing or working in the project vicinity; or (e) impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

3.8.3 No Action Alternative

No effects on hazardous waste generation, POL sites, USTs, ASTs, landfills, or IRP sites would occur under the No Action Alternative. No addition in personnel, military training, demolition, renovation, or construction would occur beyond the baseline conditions established in this EA.

3.8.4 High Growth Alternative

It is understood that the Low Growth Alternative would have less impacts than the High Growth Alternative as discussed in Section 2.3. For simplicity, only the High Growth Alternative impacts are described.

Construction activities may require use of hazardous materials such as petroleum, oils, and lubricants (POLs). Due to the nature of military installations, unforeseen site conditions such as uncovering UXO, buried contaminated building debris, and unknown or abandoned USTs can be encountered. Contractual obligations in the construction documents would require contractors to adhere to all applicable state and Federal regulations pertaining to toxic substances and hazardous materials. Because of the amount of renovation and construction required (up to one million square feet), moderate amounts of chemicals, such as paints, cleaners, POLs, and waste products, would be used and/or generated. Prior to interior renovation activities, surveys will be performed to identify any present ACM, LBP, PCBs, as well any other potentially harmful contaminants. Identified contaminants will be removed or managed in-place by licensed contractors. If the materials are removed, they will be disposed of in accordance with applicable Federal and State laws and regulations. Over the long term, operation of the RTG facilities would have minor impacts on the use or generation of

hazardous material and wastes at the installation. The anticipated impacts would be minimized through additional care in following standard procedures, or applying precautionary measures. The anticipated increase in use or generation of hazardous material and wastes may result in a need for additional satellite accumulation points, which will require more inspections and spill control management.

A total of 46 IRP areas are located within the RTG study area (Figure 3-7). Of these, 14 are active and 32 are closed, having received a No Further Action (NFA) determination from Georgia Environmental Protection Division (GA EPD). No demolition or construction activities would take place in IRP areas without prior approval of Fort Gordon's Environmental Division.

The methane monitoring wells and groundwater monitoring wells located in and around the landfills and other IRP sites cannot be disturbed. Access must be allowed for sampling of all monitoring wells. If a RTG project must occur in an area that has monitoring wells, affected wells could be closed in accordance with GA state requirements and then be replaced. This will however require coordination with Fort Gordon Directorate of Public Works (DPW) Compliance Branch staff and concurrence from GA EPD in advance. The well closure and replacement would be a cost of the project in question and is not to be paid for by the DPW Compliance Branch operating budget.

Due to the nature of military installations, unforeseen site conditions can arise. All projects that occur in support of RTG development would be required to stop work in the event of encountering UXO, potential contaminated debris, underground storage tanks, or other related issues. After coordination with DPW Compliance Branch, required remediation actions, and regulatory agency consultation, a notice to proceed with a project would be given.

Based on these factors, minor impacts to hazardous materials and hazardous waste are expected from implementation of the High Growth Alternative regardless of whether the actions occur in GREEN, AMBER, or RED areas.

3.9 Facilities

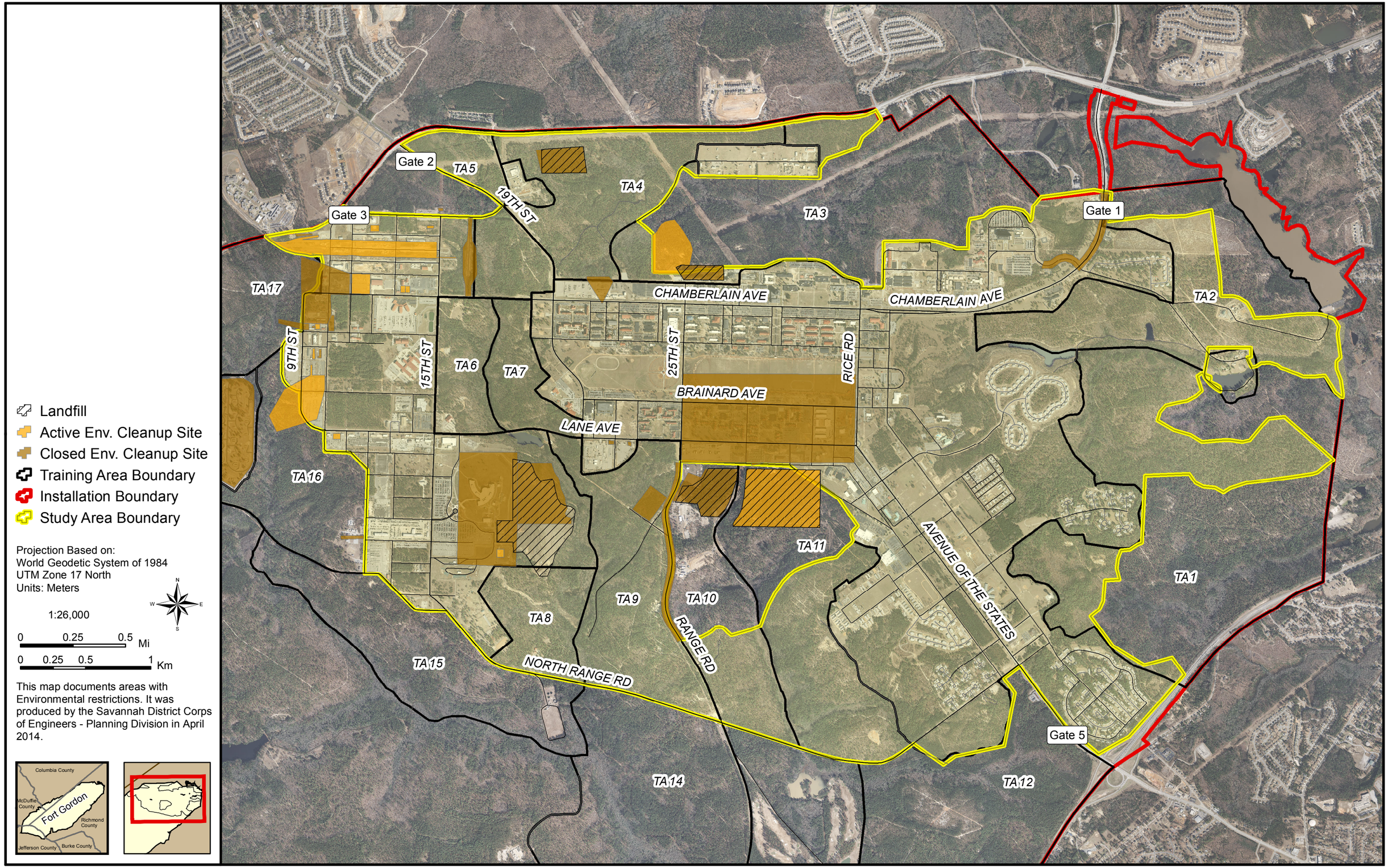
3.9.1 Affected Environment

Fort Gordon has a well-developed cantonment area with barracks, motorpools, administrative buildings, and gymnasiums, among other facility types. Housing facilities are provided through the Residential Communities Initiative (RCI) to meet Army housing requirements.

Fort Gordon operates ranges for small arms, mortars, field artillery, aerial gunnery, and demolition. The Fort Gordon range and TA complex consists of 19 active ranges and 12 artillery firing points. Construction of a new multi-purpose machine gun range and refurbished modified record fire range are in process. The ranges are supported by a 7,645-acre SAIA and a 5,217-acre AIA.

Fort Gordon currently has a shortage of some types of facilities, including dining facilities, general officer housing, transient trainee barracks, warehouses, ranges, and secure compartmentalized information facilities (SCIFs). Military construction (MILCON) projects, temporary facilities, and building renovations are planned to correct the deficiencies. The installation currently has an excess of classroom space (292,000 square feet), one excess company operations facility, and one excess battalion HQ building (DPW 2014).

Figure 3-7 Environmental Cleanup Sites – Road to Growth Study Area



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3.9.2 Environmental Consequences

Threshold of Significance for Facilities: A significant impact would occur if the project would result in the need for new or renovated facilities and the required construction/renovation would produce significant environmental impacts.

3.9.3 No Action Alternative

No significant impact to facilities would occur under the No Action Alternative. No addition in personnel, military training, demolition, renovation, or construction would occur beyond the baseline conditions established in this EA. The installation would continue to construct and renovate facilities to address current shortfalls and make use of excess facilities.

3.9.4 High Growth Alternative

It is understood that the correlation can be made that lower growth up to the High Growth Alternative would have less impacts resulting from that lower growth. For simplicity, only the High Growth Alternative impacts are described.

Impacts to facilities would be moderate under the High Growth Alternative. Increased numbers of military and civilian personnel would increase usage throughout the cantonment area. Construction and/or renovation of facilities would be needed to support the new military and civilian workers coming to Fort Gordon. These new or renovated facilities are expected to include a new library, chapel, and child development center; construction of additional SCIFs; housing, headquarters and administration buildings, and expansion of the existing Post Exchange. Additional facilities and personnel are expected to support Directorates of Emergency Services; Family, Morale, Welfare, and Recreation; Plans, Training, Mobilization, and Security; Directorate of Public Works; and Human Resources.

For new construction, the installation's Real Property Planning Board must approve the site selection. This process can insure a tiered approach is used to place any new construction in a GREEN area first; if the GREEN area is full or some other requirement prevents its use, an AMBER area should be considered second. As a last resort, a RED area can be used. The justification for using a RED area may be that the new facility must be co-located with an existing facility, causing some additional impacts or analysis.

RTG actions in GREEN areas would have negligible impacts; actions in AMBER areas would have moderate impacts from relocation of existing missions; actions in RED areas would have minor impacts if renovation and moderate impacts if new construction from relocation of existing missions.

3.10 Infrastructure and Facilities

3.10.1 Affected Environment

Potable Water

Fort Gordon's potable water system was privatized to Augusta Utilities Department (AUD) in 2006. AUD is responsible for the operation and maintenance of the city's water systems. AUD's water is supplied from two sources – the Savannah River provides water for the Surface Water Treatment Plant and the Cretaceous Aquifer provides water for the Ground Water Treatment Plant (USAG Fort Gordon 2014b). Available potable water is 12.5 million gallons per day (MGD); current peak use is 3.5 MGD.

Domestic and Industrial Wastewater

Fort Gordon's wastewater system was also privatized to AUD in 2006. AUD is responsible for the operation and maintenance of the city's wastewater systems. AUD's main wastewater treatment plant (WWTP), the James B. Messerly WWTP, located near the Augusta Airport, has a permitted average design flow of 46.1 MGD and currently treats approximately 34 MGD (USAG Fort Gordon 2014b). AUD also operates a smaller treatment plant, the Spirit Creek WWTP, located south of Tobacco Road, which is permitted to treat approximately 2.24 MGD (USAG Fort Gordon 2014b).

Fort Gordon is connected to the AUD system and gravity sewer collection system, which are in good condition and provide adequate service for all portions of the cantonment area. Septic tanks are used to treat sanitary wastewater at remote locations of the installation not served by the sanitary sewer system. The septic systems remain Army-owned and maintained (USAG Fort Gordon 2014b).

Electric and Natural Gas Supply

Fort Gordon's electrical service was privatized in February 2007, and is owned and operated by Georgia Power Company. The system receives 115 kV primary input at two jointly owned and operated substations (main and hospital), which provide electrical power to the entire Installation (USAG Fort Gordon 2014b). Natural gas is provided by Atlanta Gas and Light Company, which owns the main natural gas distribution piping on Fort Gordon and all system piping and components downstream of the regulators up to the facilities. An 8-inch main runs through Fort Gordon along a dedicated 10-foot easement for the 8.5 miles of pipe USAG Fort Gordon 2014b). Natural gas is supplied to heating and cooling plants, housing, barracks, medical facilities, academic facilities, and other facilities.

Telecommunications

The Army owns and operates the on-post business telecommunication system. The switchboard has a capacity of 14,200 lines, of which 5,300 lines are in use. BellSouth provides commercial telephone service for the family housing, guest house, and bachelor officer's quarters. All telecommunications are distributed throughout the installation by buried cable and overhead lines (USAG Fort Gordon 2014b).

Solid Waste Management

Fort Gordon operates one active landfill, the Fort Gordon Landfill on Gibson Road, which is permitted by Georgia under Permit 121-014D (SL). The landfill accepts nonhazardous demolition debris from the installation that cannot be recycled; however, use of the landfill is restricted and must be coordinated through the DPW (USAG Fort Gordon 2014b). The Fort Gordon Landfill receives approximately 1,334 cubic yards of waste per year and has 130,872 cubic yards of capacity remaining, or 98 years (USAG Fort Gordon 2013d).

Other solid waste is disposed at the Augusta-Richmond County Landfill on Deans Bridge Road under contract (USACE 2010). The landfill operates under Permit 121-018D Municipal Solid Waste Landfill (MSWL). The landfill receives approximately 406,536 cubic yards of waste per year and has approximately 65,857,376 cubic yards of remaining capacity, or 162 years (USAG Fort Gordon 2014b).

Fort Gordon actively participates in recycling/waste minimization efforts. The installation has a Qualified Recycling Program that would be use during demolition projects, and also provides

drop off services and drop off locations for Fort Gordon personnel. Metals and paper/cardboard are collected for off-post recycling. Yard wastes and woody debris from grounds maintenance are taken to the DPW Roads and Grounds department facility for processing and use as mulch.

3.10.2 Environmental Consequences

Threshold of Significance for Infrastructure and Facilities: A significant impact would occur if the project would result in a substantial increase in any utility consumption to the extent that an existing or planned capacity is exceeded, based on currently available projections, or unacceptable demands are placed on infrastructure supply and distribution system.

3.10.3 No Action Alternative

No impacts to infrastructure and utilities would occur under the No Action Alternative. No addition in personnel, military training, demolition, renovation, or construction would occur beyond the baseline conditions established in this EA.

3.10.4 High Growth Alternative

It is understood that the Low Growth Alternative would have less impacts than the High Growth Alternative as discussed in Section 2.3. For simplicity, only the High Growth Alternative impacts are described.

Potable Water

Under the High Growth Alternative, 6,000 additional personnel working on Fort Gordon would increase demand on the installation's potable water capacity. Using a conservative consumption rate of 70 gpd per person, it is estimated that the High Growth Alternative (6,000-worker increase) would create a long-term demand for 420,000 gpd or 0.42 MGD, well below the existing excess capacity of 9.0 MGD (Table 3-10). None of the proposed RTG construction would occur in the outlying areas of the installation that use wells for potable water. Impacts from increased demand on Fort Gordon potable water supply are anticipated to be minor.

Domestic and Industrial Wastewater

AUD's Messerly WWTP has a capacity to treat 46 MGD and Spirit Creek WWTP can treat 2.2 MGD. The system currently treats 34.0 MGD, leaving excess capacity of 14.2 MGD between the two treatment plants (Table 3-10). Fort Gordon's sewer force mains can evacuate 8 MGD off the installation. With the increased demand for an average wastewater load of approximately 13 gpd per person, it is estimated that the High Growth Alternative would create an increase of approximately 78,000 gpd (0.078 MGD). This figure is well below the existing excess capacity of 14.2 MGD. Therefore, impacts from increased demand on Fort Gordon wastewater are anticipated to be minor.

Table 3-10: Current and Future Capacities and Use - Potable Water and Wastewater Systems

System	System Capacity (MGD)	Current Use (MGD)	Current Excess Capacity (MGD)	High Growth Alternative Additional Use (MGD)	Future Total Use (MGD)	Future Excess Capacity (MGD)
Potable Water	12.50	3.50	9.00	0.42	3.92	8.58
Wastewater	48.20	34.00	14.20	0.08	34.08	14.12

Electric and Natural Gas Supply

Available electrical capacity is 80 megawatts (MW); current peak use is 39 MW, meaning there is an existing excess capacity of 41 MW. Available natural gas capacity is 35,000 MMBTUs; current peak use is 3,400 MMBTUs. There is over 30,000 MMBTUs of excess capacity. Both the electrical and natural gas systems have ample capacity to support potential demand increases resulting from RTG stationing actions.

Telecommunications

The on-post business telecommunication system has excess capacity of approximately 9,000 lines. This should be sufficient to accommodate the High Growth Alternative personnel increase of 6,000 personnel.

Solid Waste

Short-term and long-term impacts to solid waste generation would be expected from this action. Any construction debris generated would be disposed in accordance with relevant Federal, state, local, and installation regulations. Construction material would be recycled or reused to the greatest extent possible. Debris that cannot be recycled or reused would be taken off-post by the contractor to an approved landfill. The addition of 6,000 additional personnel would increase solid waste disposal demand. Each person produces approximately 4.38 lbs of solid waste per day, of which approximately 1.51 lbs is recycled or composted (USEPA 2012). Thus, an additional 6,000 personnel would generate an additional 26,280 lbs (13.14 tons) of solid waste per day, 9,066 lbs of which would be recycled or composted, leaving 17,214 lbs (8.6 tons) per day going to landfills on-post and off-post. This represents an increase of approximately 24.5% over current solid waste disposal demand. The on-post landfill on Gibson Road and the Augusta-Richmond County landfill off-post have approximately 98 and 162 years of remaining capacity, respectively. As a result, long-term minor impacts to solid waste generation would be expected from the increase in workforce, but the available landfills have the capacity to handle the increased demand.

Short-term disruptions to water, sewer, electrical and natural gas, and telecommunications services could be experienced within the RTG study area at Fort Gordon as these services are augmented to allow the construction of the facilities considered in this PEA.

The High Growth Alternative would produce negligible impacts to potable water, domestic and industrial wastewater, electric and natural gas supply, telecommunications and minor impacts to solid waste in GREEN, AMBER, and RED areas.

3.11 Traffic

3.11.1 Affected Environment

Transportation in and around Fort Gordon is achieved mainly via road and street networks and a rail system off-post for commodities. The transportation system serves installation traffic consisting of everyday work, living, and recreational trips. Two highways, U.S. Highway 78 (Gordon Highway) and U.S. Highway 1, border the installation on the north and south, respectively. Interstate 520 serves as a connection road between U.S. Highway 1 and I-20 at the north portion of the installation traveling east/west. Four public entrances serve the installation: Gate 1, Gate 2, and Gate 3 (delivery gate) on U.S Highway 78/Gordon Highway; and Gate 5 on U.S. Highway 1 at Tobacco Road (Figure 3-8).

For the purposes of this PEA, traffic and roadways include the highways that provide local and regional access to the cantonment area. The operations of intersections (signalized, unsignalized, and roundabouts) are measured by Level of Service (LOS), and the amounts of delay experienced per vehicle during peak commuting hours. A traffic study was performed as part of this PEA to identify the effects of the alternatives. The RTG traffic study (SDDC-TEA 2014), is included as Appendix C of this PEA. The RTG traffic study is partially based on two existing traffic studies, the *ARCYBER Command and Control Facility Traffic Study* (ARCYBER 2013a) and the *Access Control Point Transportation Engineering Assessment* (SDDC-TEA 2013). In this section, these two studies will be referred to as the ARCYBER traffic study and the ACP traffic study, respectively. The ROI for traffic and transportation encompasses the major intersections within the vicinity of the cantonment area at Fort Gordon. The ROI includes 22 intersections (Figure 3-8).

Gate Scenarios Used in the RTG Traffic Study. In addition to evaluating the effects on traffic from the RTG growth alternatives, the RTG traffic study evaluated the effects of two potential Gate scenarios. The ACP traffic study (on which the RTG traffic study is partially based) provided two scenarios for the final Gate layout. Each of the growth alternatives were evaluated according to these two scenarios described below:

- **Gate Scenario 1** – Main Gate, Gate 2, and Gate 5 are to remain open and upgraded to handle future traffic volumes. Gate 3 is to be closed to all traffic.
- **Gate Scenario 2** – The Main Gate and Gate 5 are to remain open. Gate 2 and Gate 3 are to be closed to all traffic. A new gate is to be constructed along U.S. 78/Gordon Highway west of the existing Gate 2. The precise location of this new gate has yet to be determined.

Daily and peak hour traffic generations were estimated based on trip generation rates published in *Trip Generation, 8th Edition: An Institute of Transit Engineers (ITE) Informational Report, 2008*. This traffic was then added to existing intersections in accordance with a distribution pattern developed for each action alternative, based on the location of each of the four growth areas, Installation gate locations, existing traffic volumes, and likely travel routes between the gates and each alternative site.

3.11.2 Environmental Consequences

Threshold of Significance for Traffic: A significant impact would occur if the project would (a) cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system; (b) cause 50% or more of the intersections evaluated in the ROI to decline from LOS D or better to LOS E or F; (c) substantially increase hazards due to

a design feature; (d) noticeably hinder emergency access; or (e) overwhelm existing parking capacity.

Traffic was identified in the beginning of the PEA process as a VEC that could have different levels of impact according to which alternative was selected, requiring a potential need for mitigation. Therefore, traffic will evaluate all alternatives identified.

Table 3-11 summarizes the different LOS ratings and the general traffic conditions associated with each.

Table 3-11: Level of Service Ratings and Associated Traffic Conditions

LOS Rating	Description of Traffic Conditions
A	Traffic flows freely with little or no restrictions to vehicle maneuvers within the traffic stream.
B	Reasonably free-flowing conditions, but freedom to maneuver within the traffic stream noticeably restricted.
C	Traffic speed approaches free-flowing conditions, but freedom to maneuver within the traffic stream is noticeably restricted.
D	Traffic speed begins to be reduced, and freedom to maneuver is seriously limited due to a high concentration of traffic.
E	Unpredictable traffic flow, with virtually no usable gaps in the traffic stream to accommodate vehicle maneuvers.
F	Unstable flow resulting in delays and the formation of queues in locations where traffic demand exceeds roadway capacity.

3.11.3 No Action Alternative

Refer to the *ARCYBER Command and Control Facility Traffic Study* (ARCYBER 2013a) for a detailed analysis of the effects of the ARCYBER personnel on traffic and transportation at Fort Gordon. The projected change in traffic conditions described in the ARCYBER study for Alternative E are included in the baseline condition for the RTG traffic study and PEA.

Under the No Action Alternative (which includes current and expected ARCYBER traffic conditions) a total of 11 of 22 intersections within Fort Gordon would have significant adverse traffic conditions (LOS E or F). The traffic improvements identified in the ARCYBER EA would be implemented in order to mitigate LOS to D or better. Figure 3-9 shows the No Action Alternative LOS conditions without mitigation for the 22 intersections evaluated in the RTG traffic study.

The base condition for identification of impacts to traffic from the proposed alternatives is implementation of the traffic improvements identified in the 2013 ARCYBER EA. With implementation of these improvements, LOS E or F conditions would be mitigated to LOS D or better.

3.11.4 High Growth Alternative

Under the High Growth Alternative, a total of 19 intersections would have significant adverse traffic conditions (LOS E or F) under both Gate Scenarios 1 and 2. This is an increase of eight intersections over the No Action Alternative. Figure 3-10 shows the Levels of Service that would result from implementation of the High Growth Alternative for each intersection.

3.11.5 Medium Growth Alternative

Under the Medium Growth Alternative, traffic effects would be identical to those of the High Growth Alternative. A total of 19 intersections would have significant adverse traffic

conditions (LOS E or F) under both Gate Scenarios 1 and 2. This is an increase of eight intersections over the No Action Alternative.

3.11.6 Low Growth Alternative

Under Low Growth Alternative/Gate Scenario 1, a total of 18 intersections would have significant adverse traffic conditions (LOS E or F). This is an increase of seven intersections over the No Action Alternative. Under Gate Scenario 2, 19 intersections would have significant adverse traffic conditions, an increase of eight intersections over the No Action Alternative (the same effects as the Medium and High Growth alternatives).

3.11.7 Traffic Improvements to Mitigate Significant Adverse Traffic Effects

The RTG Traffic Study identified a number of physical improvements at each of the intersections that would benefit traffic flow at those locations (Tables 3-12 and 3-13). These improvements would mitigate the significant adverse traffic effects by improving LOS of those intersections impacted by the RTG alternatives to LOS D or better. If these improvements are not implemented, significant adverse traffic effects would exist and Fort Gordon would be required to prepare an Environmental Impact Statement. Table 3-14 shows estimated costs of the traffic improvements identified under the High Growth Alternative/Gate Scenario 2.

A Signal Warrant is a set of criteria that can be used to define the relative need for, and appropriateness of, a traffic signal. The RTG Traffic Study recommends performing Signal Warrants for the all-way stop controlled intersections that show significant effects from the projected traffic.

Signalization should be analyzed to determine whether the failing approaches would see significant improvements.

One and two-way stop controlled intersections that show substantial effects from the projected traffic were analyzed for all-way stop control and signal controlled improvements. The RTG Traffic Study recommends performing Signal Warrants at 7 intersections. Using HCS 2010 with the projected traffic volumes and the current lane usage, signalization should be analyzed to determine whether the failing approaches would see significant improvements. The roundabout intersection of Lane Avenue and Rice Road was analyzed for providing additional lanes to ease the congestion the intersection sees in the eastbound and northbound directions. Refer to Appendix C for detailed analysis of the anticipated impacts to traffic and transportation that would result from the No Action Alternative and the three growth alternatives.

The traffic improvement measures identified in Tables 3-12 and 3-13 are part of the action alternatives considered in this PEA. With those traffic improvement measures in-place implementation of the High Growth, Medium Growth, and Low Growth alternatives would result in moderate impacts to traffic regardless of whether the RTG stationing actions occur in GREEN, AMBER, or RED areas.

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Figure 3-8 Intersections Evaluated – Road to Growth Traffic Study

ID	Location
1	Gordon Highway and 13th St
2	Gordon Highway and 19th St
3	Gordon Highway and 7th Ave
4	13th Ave and 19th St
5	Chamberlain Ave and 15th St
6	Chamberlain Ave and 19th St
7	Chamberlain Ave and 25th St
8	Chamberlain Ave and Rice Rd
9	Chamberlain Ave and Killbourne St
10	Barnes Ave and 19th St
11	Barnes Ave and 25th St
12	Brainard Ave and Kilbourne St
13	Lane Ave and 15th St
14	Lane Ave and 19th St
15	Lane Ave and 25th St
16	Lane Ave and Rice Rd
17	North Range Rd and 111th Ave
18	North Range Rd and Avenue of the States
19	US Highway 1 (SB) and Avenue of the States
20	US Highway 1 (NB) and Tobacco Rd
21	13th Ave and 15th St
22	Chamberlain Ave and Boardman Lake Rd

Study Area Boundary
Training Area Boundary
Installation Boundary

N
W E
S

Projection:
World Geodetic System of 1984
UTM Zone 17 North
Units: Meters 1:26,000

0 0.25 0.5 0.75 1 Mi

0 0.25 0.5 1 Km

This map documents areas with Environmental restrictions. It was produced by the Savannah District Corps of Engineers - Planning Division in April 2014.

Figure 3-9 No Action Alternative – Level of Service Without Mitigation

ID	Location
1	Gordon Highway and 13th St
2	Gordon Highway and 19th St
3	Gordon Highway and 7th Ave
4	13th Ave and 19th St
5	Chamberlain Ave and 15th St
6	Chamberlain Ave and 19th St
7	Chamberlain Ave and 25th St
8	Chamberlain Ave and Rice Rd
9	Chamberlain Ave and Killbourne St
10	Barnes Ave and 19th St
11	Barnes Ave and 25th St
12	Brainard Ave and Kilbourne St
13	Lane Ave and 15th St
14	Lane Ave and 19th St
15	Lane Ave and 25th St
16	Lane Ave and Rice Rd
17	North Range Rd and 111th Ave
18	North Range Rd and Avenue of the States
19	US Highway 1 (SB) and Avenue of the States
20	US Highway 1 (NB) and Tobacco Rd
21	13th Ave and 15th St
22	Chamberlain Ave and Boardman Lake Rd

Study Area Boundary
Training Area Boundary
Installation Boundary

N
W E
S

Projection:
World Geodetic System of 1984
UTM Zone 17 North
Units: Meters 1:26,000

0 0.25 0.5 0.75 1 Mi

0 0.25 0.5 1 Km

This map documents areas with Environmental restrictions. It was produced by the Savannah District Corps of Engineers - Planning Division in April 2014.

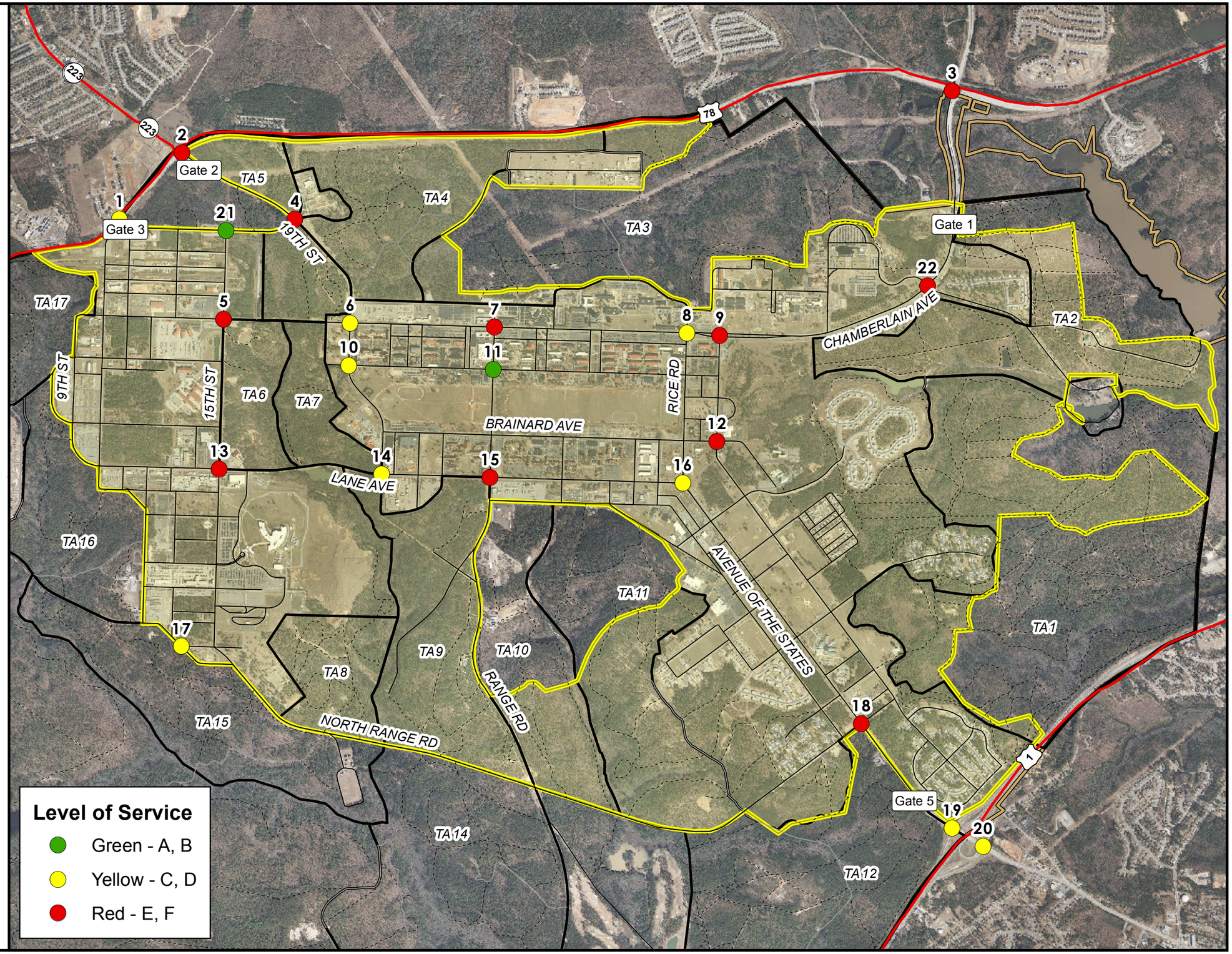

Figure 3-10 High Growth Alternative, Gate Scenarios 1 and 2 – Level of Service Without Mitigation

ID	Location
1	Gordon Highway and 13th St
2	Gordon Highway and 19th St
3	Gordon Highway and 7th Ave
4	13th Ave and 19th St
5	Chamberlain Ave and 15th St
6	Chamberlain Ave and 19th St
7	Chamberlain Ave and 25th St
8	Chamberlain Ave and Rice Rd
9	Chamberlain Ave and Killbourne St
10	Barnes Ave and 19th St
11	Barnes Ave and 25th St
12	Brainard Ave and Kilbourne St
13	Lane Ave and 15th St
14	Lane Ave and 19th St
15	Lane Ave and 25th St
16	Lane Ave and Rice Rd
17	North Range Rd and 111th Ave
18	North Range Rd and Avenue of the States
19	US Highway 1 (SB) and Avenue of the States
20	US Highway 1 (NB) and Tobacco Rd
21	13th Ave and 15th St
22	Chamberlain Ave and Boardman Lake Rd

Study Area Boundary
Training Area Boundary
Installation Boundary

N
W E
S

Projection:
World Geodetic System of 1984
UTM Zone 17 North
Units: Meters 1:26,000

0 0.25 0.5 0.75 1 Mi

0 0.25 0.5 1 Km

This map documents areas with Environmental restrictions. It was produced by the Savannah District Corps of Engineers - Planning Division in April 2014.

Intersection 1 would be LOS Yellow under Gate Scenario 1

Gate 1
Gate 2
Gate 3
Gate 5

TA 1
TA 2
TA 3
TA 4
TA 5
TA 6
TA 7
TA 8
TA 9
TA 10
TA 11
TA 12
TA 14
TA 15
TA 16
TA 17

19TH ST
9TH ST
15TH ST
CHAMBERLAIN AVE
RICE RD
BRAINARD AVE
LANE AVE
AVENUE OF THE STATES
RANGE RD
NORTH RANGE RD

Level of Service
Green - A, B
Yellow - C, D
Red - E, F

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Table 3-12: Mitigation Recommendations and Additional Investigations Required - Gate Scenario 1

Intersection		Low Growth Alternative (Growth Projection 1)	Medium Growth Alternative (Growth Projection 2)	High Growth Alternative (Growth Projection 3)
1	**Gordon Highway and 13th Street**	No Mitigation Required	No Mitigation Required	No Mitigation Required
2	**Gordon Highway and 19th Street**	Add NB Left, SB Left, and EB Right Turn Lanes	Add NB Left, SB Left, and EB Right Turn Lanes	Add NB Left, SB Left, and EB Right Turn Lanes
3	**Gordon Highway and 7th Avenue**	Add EB Thru and WB Left Turn Lanes	Add EB Thru and WB Left Turn Lanes	Add EB Thru, WB Left, and SB Thru Lanes
4	**13th Street and 19th Street**	No Mitigation Required	No Mitigation Required	No Mitigation Required
5	**Chamberlain Avenue and 15th Street**	No Mitigation Required	No Mitigation Required	No Mitigation Required
6	**Chamberlain Avenue and 19th Street**	Add NB Thru Lane	Add NB Thru and WB Thru Lanes	Add NB Thru and WB Thru Lanes
7	**Chamberlain Avenue and 25th Street**	Official Signal Warrant Advised	Official Signal Warrant Advised	Official Signal Warrant Advised
8	**Chamberlain Avenue and Rice Road**	Adjust Signal Phasing to include NB Right Turns During WB Left Turn Phase	Adjust Signal Phasing to include NB Right Turns During WB Left Turn Phase	Add NB Right, SB Right, and EB Right Turn Lanes
9	**Chamberlain Avenue and Kilbourne Street**	Official Signal Warrant Advised. Add EB Thru, WB Thru, and 2 NB Right Turn Lanes	Official Signal Warrant Advised. Add EB Thru, WB Thru, and 2 NB Right Turn Lanes	Official Signal Warrant Advised. Add EB Thru, WB Thru, and 2 NB Right Turn Lanes
10	**Barnes Avenue and 19th Street**	Change to All-Way Stop Control	Change to All-Way Stop Control	Change to All-Way Stop Control
11	**Barnes Avenue and 25th Street**	Add NB Left and EB Left Turn Lanes	Add NB Left Turn Lane	Add NB Left, SB Left, EB Left and WB Left Turn Lanes
12	**Brainard Avenue and Kilbourne Street**	No Mitigation Required	No Mitigation Required	No Mitigation Required
13	**Lane Avenue and 15th Street**	Official Signal Warrant Advised. Add SB Thru Lane	Official Signal Warrant Advised. Add SB Thru and SB Left Turn Lanes	Official Signal Warrant Advised. Add NB Left, SB Thru and Left, WB Left Turn Lanes
14	**Lane Avenue and 19th Street**	Change to All Way Stop Control. Add EB Thru and WB Thru Lanes	Change to All Way Stop Control. Add EB Thru and WB Thru Lanes	Change to All Way Stop Control. Add EB Thru and WB Thru Lanes

Intersection		Low Growth Alternative (Growth Projection 1)	Medium Growth Alternative (Growth Projection 2)	High Growth Alternative (Growth Projection 3)
15	**Lane Avenue and 25th Street**	Change to All Way Stop Control. Add WB Left Turn Lane	Official Signal Warrant Advised	Official Signal Warrant Advised; Add NB Left, SB Left, EB Right, and WB Right Turn Lanes
16	**Lane Avenue and Rice Road**	No Mitigation Required	No Mitigation Required	Add NB Left Turn Lane
17	**North Range Road and 111th Street**	No Mitigation Required	No Mitigation Required	No Mitigation Required
18	**North Range Road and Avenue of the States**	Official Signal Warrant Advised. Add NB Left Turn Lane	Official Signal Warrant Advised. Add NB Left Turn Lane	Official Signal Warrant Advised. Add NB Left Turn Lane
19	**US Highway 1 (SB) and Avenue of the States**	Official Signal Warrant Advised	Official Signal Warrant Advised	Official Signal Warrant Advised. Add SB Right Turn Lane
20	**US Highway 1 (NB) and Tobacco Road**	Official Signal Warrant Advised	Official Signal Warrant Advised	Official Signal Warrant Advised
21	**13th Avenue and 15th Street**	No Mitigation Required	No Mitigation Required	No Mitigation Required
22	**Chamberlain Avenue and Boardman Lake Rd**	No Mitigation Required	No Mitigation Required	The failing movement for this intersection contains 3 vehicles per hour. Mitigation is not required for this volume.

NB = Northbound; SB = Southbound; WB = Westbound; EB = Eastbound

Table 3-13: Mitigation Recommendations and Additional Investigations Required - Gate Scenario 2

Intersection		Low Growth Alternative (Growth Projection 1)	Medium Growth Alternative (Growth Projection 2)	High Growth Alternative (Growth Projection 3)
1	**Gordon Highway and 13th Street**	No Mitigation Required	No Mitigation Required	The failing movement for this intersection contains 3 vehicles per hour. Mitigation is not required for this small of a volume.
2	**Gordon Highway and 19th Street**	Add SB Right Turn Lane	Add SB Right and WB Thru Lanes	Add SB Right and WB Thru Lanes
3	**Gordon Highway and 7th Avenue**	Add EB Thru and WB Left Turn Lanes	Add EB Thru and WB Left Turn Lanes	Add SB Thru, EB Thru, and WB Left Turn Lanes
4	**13th Street and 19th Street**	No Mitigation Required	No Mitigation Required	No Mitigation Required

Intersection		Low Growth Alternative (Growth Projection 1)	Medium Growth Alternative (Growth Projection 2)	High Growth Alternative (Growth Projection 3)
5	**Chamberlain Avenue and 15th Street**	Official Signal Warrant Advised. This signal will see significant increases to the vehicle volumes. Multiple lane additions will be required in all directions	Official Signal Warrant Advised. This signal will see significant increases to the vehicle volumes. Multiple lane additions will be required in all directions	Official Signal Warrant Advised. This signal will see significant increases to the vehicle volumes. Multiple lane additions will be required in all directions
6	**Chamberlain Avenue and 19th Street**	Add WB Thru and EB Thru Lanes	Add WB Right, WB Thru, and EB Thru Lanes	Add NB Thru, SB Thru, EB Thru and WB Thru Lanes
7	**Chamberlain Avenue and 25th Street**	Official Signal Warrant Advised	Official Signal Warrant Advised	Official Signal Warrant Advised. Add NB Left, NB Right, and WB Left Turn Lanes
8	**Chamberlain Avenue and Rice Road**	Add WB Thru and EB Thru Lanes	Add WB Right, WB Thru, and EB Thru Lanes	Add NB Thru, SB Thru, EB Thru and WB Thru Lanes
9	**Chamberlain Avenue and Kilbourne Street**	Official Signal Warrant Advised. Add EB Thru, WB Thru, and 2 NB Right Turn Lanes	Official Signal Warrant Advised. Add EB Thru, WB Thru, and 2 NB Right Turn Lanes	Official Signal Warrant Advised. Add EB Thru, WB Thru, and 2 NB Right Turn Lanes
10	**Barnes Avenue and 19th Street**	Change to All Way Stop Control	Change to All Way Stop Control	Change to All Way Stop Control
11	**Barnes Avenue and 25th Street**	Add NB Left and EB Left Turn Lanes	Add NB Left Turn Lane	Add NB Left, SB Left, EB Left and WB Left Turn Lanes
12	**Brainard Avenue and Kilbourne Street**	No Mitigation Required	No Mitigation Required	No Mitigation Required
13	**Lane Avenue and 15th Street**	Add SB Thru Lane	Add SB Thru and Left Turn Lanes	Add NB Left, SB Thru, SB Left, and WB Left Turn Lanes
14	**Lane Avenue and 19th Street**	Change to All Way Stop Control. Add EB Thru and WB Thru Lanes	Change to All Way Stop Control. Add EB Thru and WB Thru Lanes	Change to All Way Stop Control. Add EB Thru and WB Thru Lanes
15	**Lane Avenue and 25th Street**	Change to All Way Stop Control. Add WB Thru Lane	Official Signal Warrant Advised	Official Signal Warrant Advised. Add NB Left, SB Left, EB Right, and WB Right Turn Lanes
16	**Lane Avenue and Rice Road**	No Mitigation Required	No Mitigation Required	Add NB Left Turn Lane
17	**North Range Road and 111th Street**	No Mitigation Required	No Mitigation Required	No Mitigation Required

Intersection		Low Growth Alternative (Growth Projection 1)	Medium Growth Alternative (Growth Projection 2)	High Growth Alternative (Growth Projection 3)
18	**North Range Road and Avenue of the States**	Official Signal Warrant Advised. Add NB Left Turn Lane	Official Signal Warrant Advised. Add NB Left Turn Lane	Official Signal Warrant Advised. Add NB Left Turn Lane
19	**US Highway 1 (SB) and Avenue of the States**	Official Signal Warrant Advised	Official Signal Warrant Advised	Official Signal Warrant Advised. Add SB Right Turn Lane
20	**US Highway 1 (NB) and Tobacco Road**	Official Signal Warrant Advised	Official Signal Warrant Advised	Official Signal Warrant Advised
21	**13th Avenue and 15th Street**	No Mitigation Required	No Mitigation Required	No Mitigation Required
22	**Chamberlain Avenue and Boardman Lake Road**	No Mitigation Required	No Mitigation Required	The failing movement for this intersection contains 3 vehicles per hour. Mitigation is not required for this small of a volume.

Table 3-14: Proposed Traffic Improvement Projects

Intersection		Proposed Traffic Improvement	Costs (USD)
2	**Gordon Highway and 19th Street**	Add SB Right and WB Thru Lanes	200,000
3	**Gordon Highway and 7th Avenue**	Add SB Thru, EB Thru, and WB Left Turn Lanes	300,000
5	**Chamberlain Avenue and 15th Street**	Signal Warrant. Multiple Lane Additions in All Directions	950,000
6	**Chamberlain Avenue and 19th Street**	Add NB Thru, EB Thru, and WB Thru Lanes	400,000
7	**Chamberlain Avenue and 25th Street**	Signal Warrant. Add NB Left, NB Right, and WB Left Turn Lanes	450,000
8	**Chamberlain Avenue and Rice Road**	Add NB Right, SB Right, and EB Right Turn Lanes	300,000
9	**Chamberlain Avenue and Kilbourne Street**	Signal Warrant. Add EB Thru, WB Thru, and 2 NB Right Turn Lanes	550,000
10	**Barnes Avenue and 19th Street**	Change to All Way Stop	2,000
11	**Barnes Avenue and 25th Street**	Add NB Left, SB Left and WB Left Turn Lanes	400,000
13	**Lane Avenue and 15th Street**	Add NB Left, SB Thru, SB Left, and WB Turn Lanes	400,000
14	**Lane Avenue and 19th Street**	Change to All Way Stop. Add EB Thru and WB thru Lanes	202,000
15	**Lane Avenue and 25th Street**	Signal Warrant. Add NB Left, SB Left, EB Right, and WB Right Turn Lanes	550,000
16	**Lane Avenue and Rice Road**	Add NB Left Turn Lane	100,000
18	**North Range Road and Avenue of the States**	Signal Warrant. Add NB Left Turn Lane	250,000
19	**U.S. Highway 1 (SB) and Avenue of the States**	Signal Warrant. Add SB Right Turn Lane	250,000
20	**U.S. Highway 1 (NB) and Tobacco Road**	Signal Warrant	150,000
		Total	**$5,454,000**

3.12 Socioeconomics

3.12.1 Affected Environment

The majority of the installation and the entire cantonment area are located in Richmond County. A small portion of the training areas are in Jefferson, McDuffie, and Columbia counties. The ROI for socioeconomic effects is Richmond, Columbia, Jefferson, and McDuffie counties. Fort Gordon's economic impact, including pay, contracts, purchases and federal school aid, totals more than $1 billion annually within the ROI.

Although exact figures are not available, the majority of the current Fort Gordon workforce lives in Richmond and Columbia counties, and it is expected that the personnel coming to the installation as a result of RTG actions will do the same. The RTG personnel increases are expected to affect Richmond and Columbia counties more than Jefferson and McDuffie counties. For example, Federal Impact Aid to schools requires a school district to educate at least 400 Federally-related children (or at least 3 percent of the district's average daily enrollment) to qualify for aid payments. Within the ROI, only Richmond and Columbia counties qualify for Impact Aid. Accordingly, the PEA's analysis assumes that RTG impacts to housing and schools will primarily occur in Richmond and Columbia counties, and that impacts to Jefferson and McDuffie counties would be negligible. Therefore, socioeconomic analysis was performed primarily for Richmond County and Columbia County. Data from other counties will also be used, but only when readily available.

Population and Demographics

Total Installation population in FY 2013 was approximately 23,000, with a military population (active and reserve) of 15,000 and a civilian workforce of 8,000 (USAG Fort Gordon 2013a).

An estimate of the total number of dependents was generated using the latest data from the Defense Manpower Data Center (DMDC). For example, in 2011, 55.8 percent of full-time Army Soldiers were married. All Soldiers had, on average, 0.96 children ages 0-18 (DMDC 2012). These percentages were used in estimating the total population of dependents within the ROI. To calculate the number of dependents associated with an Installation in the ROI population, the Army multiplied the number of full-time Army Soldiers and civil service employees by 55.8 percent to determine the projected number of spouses. The Army took the same full-time population of military employees and multiplied this number by 0.96 to calculate the number of dependent children associated with the installation population. These two numbers were then added together to obtain the total estimate of dependents likely to be associated with the installation's population in the ROI. Student trainees that are not on permanent change of station (PCS) status were not included in the estimate of dependents, as students and trainees are not usually accompanied by family members (USAEC 2013).

The projected dependents for the military population include 8,370 spouses and 14,400 children. The projected dependents for the civilian population include 3,520 spouses and 6,000 children. The ROI population is over 373,000. Table 3-15 shows population of the ROI in 2010 and 2012 and changes since 2000.

The ethnic composition of the ROI does vary in each county. The percentage of African Americans in the population is higher in Richmond, Jefferson, and McDuffie counties than that of the overall state of Georgia by a range of 9-23 percent. Columbia County is disproportionately Caucasian by 17 percent over the state average. All other ethnicities are

closer to the overall state average. Table 3-16 shows racial and ethnic composition within the ROI compared with that of the state as a whole.

Table 3-15: Population and Population Change

Region of Influence Counties	Population 2010	Population 2012 Estimate[1]	Population Change 2010 – 2012 (Percent)	Population Change 2000 – 2010 (Percent)
Richmond	200,000	203,000	+1	+0.4
Jefferson	17,000	16,500	-2.9	-1.9
McDuffie	20,000	22,000	-1.0	+3.0
Columbia	125,000	132,000	+6.1	+38.9

[1]2012 population data based on Census projections

Table 3-16: Racial and Ethnic Composition 2012 (Percent)

State and Region of Influence Counties	Caucasian	African American	Native American	Hispanic	Asian	Multiracial	Other
Georgia	55.1	31.2	0.5	9.2	3.5	1.8	0.1
Richmond	37.3	54.9	0.4	4.5	1.7	2.4	0.0
Jefferson	41.6	53.9	0.2	3.4	0.5	0.9	0.1
McDuffie	55.3	40.6	0.4	2.5	0.4	1.4	0.1
Columbia	72.2	16	0.4	5.6	4.1	2.7	0.2

Employment & Income

Compared to 2010, the 2011 employment (private nonfarm) increased 0.4 percent in the State of Georgia and 1.1 to 3.0 percent in Richmond, Jefferson, McDuffie and Columbia counties. Employment, median home value and household income, and poverty levels are presented in Table 3-17. The ROI is experiencing more growth than the state average. In general, the ROI has lower incomes and more people in poverty than the state as a whole. In 2011, the ROI received a total of $3,140,000 in federal spending and a total of approximately $750,000,000 in state spending. Spending includes expenditures or obligation for the following categories: grants, salaries and wages, procurement contracts, direct payments for individuals, and other direct payments, plus coverage/commitments in the form of direct loans, guaranteed or insured loans, and insurance (USCB 2010).

Table 3-17: Employment, Housing, and Income

State and Region of Influence Counties	Employment 2010-2011 (Percent)	Median Home Value 2008-2012 (Dollars)	Median Household Income 2008-2012 (Dollars)	Population Below Poverty Level 2009 (Percent)
Georgia	+0.4	156,400	49,604	17.4
Richmond	+2.9	102,500	38,952	24.4
Jefferson	+3.0	69,700	27,612	30.3
McDuffie	+1.1	105,000	38,855	20.5
Columbia	+1.4	171,400	67,295	8.0

Housing

Richmond County. The detached single-family, site-built home is the dominant type of housing unit in the market, representing an estimated 66.7% of the total units in Richmond County in 2006. Attached, single-family units represent a small but growing share of the housing stock. Apartment complexes (18%) and manufactured homes (7.7%) are the next largest segments of the housing market. The growth in other parts of the metropolitan area is having an impact on the number of new housing units built in Augusta-Richmond County. Between 1990 and 2000, total housing units in Richmond County increased 6.5% to 82,312 units. This is lower than the 19% increase in units between 1980 and 1990. Between 2000 and 2006, an estimated 3,963 units (4.8%) were added to the county's housing stock. Five census tracts with the higher than average percent increase in housing units are located in south Richmond County. Other tracts in the south and west also registered smaller housing unit gains. This continues a trend evident for several decades. In contrast, most census tracts in or near the Augusta city center either recorded a decline in housing units or remained essentially unchanged from 1990. An additional 13,000 housing units are projected to be constructed in Augusta-Richmond County between 2010 and 2030. Detached, single-family units will continue to be the dominant housing type, but smaller patio homes, townhouses and condominiums will comprise a larger share of the housing market. South Augusta is expected to capture the majority of the new housing units (Augusta-Richmond County Planning Commission 2008).

Columbia County. The dominant housing type is single-family housing, which comprised 77 percent of the housing stock in the county in 2010. The second largest type of housing is manufactured homes, which comprised 10 percent of the housing stock in the county in 2010. Townhomes and duplexes made up 6 percent of the housing stock and multi-family types of 3 units or greater made up 6.7 percent of the housing stock in 2010. During the decade from 2000 to 2010, about 10,000 single-family homes, 1,500 attached single-family homes, 150 multi-family units, and 90 manufactured homes were added to Columbia County's housing stock It is estimated that to accommodate a year 2030 population of 194,000 people, Columbia County will require 76,000 housing units meaning 31,200 housing units are needed to meet this demand. Although the primary housing type within Columbia County will continue to be a single-family dwelling, it is expected that future housing units will provide a diversity of types to accommodate Columbia County's projected smaller household size and aging population (CSRA RC 2011). Available and occupied housing statistics for the ROI are shown in Table 3-18.

Table 3-18: Housing Status by County

Housing Status	Columbia	Jefferson	McDuffie	Richmond
Total Housing	48,626	7,298	9,319	86,331
Occupied Housing	44,898	6,241	8,289	76,924
Owner-Occupied	35,475	4,274	5,651	41,682
Owner-Occupied Housing Population	97,975	11,130	14,637	103,848
Renter-Occupied	9,423	1,967	2,638	35,242
Renter-Occupied Housing Population	25,438	5,273	6,920	86,193
Housing with Minors	16,999	1,782	2,530	21,561
Vacant Housing	3,728	1,057	1,030	9,407
For Rent	949	211	314	3,537
For Sale	1,126	86	107	1,432
Occasional Use Housing	533	188	146	389

Source: USCB 2010

Schools

Children of personnel assigned to Fort Gordon typically attend public schools in either Richmond or Columbia County. Elementary and middle school students living on the installation attend Freedom Park Elementary School, a Richmond County Board of Education (BOE) school located on Fort Gordon. High school students living on the installation attend Richmond Academy High School. Transportation is provided by Richmond County.

The Georgia Department of Education collects enrollment counts from all school districts several times during each school year. These are referred to as Full Time Equivalency (FTE) counts. State and Federal funding for local schools is based on FTE counts. The figures in Table 3-19 are extrapolated from FTE counts taken in the fall and spring. The data indicate consistent growth in the number of school age children.

Table 3-19: Fall and Spring Enrollment for Four Academic Years (K-12 Totals)

County School System	2010-2011		2011-2012		2012-2013		2013-2014
	Fall FTEs	Spring FTEs	Fall FTEs	Spring FTEs	Fall FTEs	Spring FTEs	Fall FTEs
Richmond	31,089	30,779	31,829	31,615	32,052	31,738	31,997
Columbia	23,231	23,094	23,792	23,898	24,431	24,328	24,907

Source: Georgia Department of Education 2014
FTE = Full Time Equivalent

Richmond County. Over the past 10 years, the Richmond County BOE has been involved in a very aggressive building program. This was needed to relieve overcrowding at the schools and provide major renovations, expansions, and facility upgrades. Currently Richmond County has thirty-three elementary schools, nine middle schools, one kindergarten through eighth grade school, eight high schools, six magnet schools, and four specialty schools. The Richmond

County School System presently has excess facility capacity in comparison to its student population. There are several factors which have contributed to this situation. There was a small, but steady, decline in enrollment over the last 15 years; the population has shifted from the urban areas to the more rural areas of the county; and construction has increased the capacity at many schools. These factors have led to a surplus of student capacity. The Richmond County BOE recently began an effort (Rightsizing 2013-14) to consolidate students into fewer schools and identify surplus facilities that can be closed (Richmond County BOE 2014). Richmond County also has several private schools.

Columbia County. The Columbia County BOE and several private schools provide educational facilities in the county. There are seventeen elementary schools, eight middle schools, five high schools, and one alternative school within the Columbia County School System. Columbia County's educational facilities are planned and maintained by the Columbia County BOE. As a result of the county's pace of growth in recent years, enrollment at several schools in the system significantly exceeds capacity. The BOE identified three elementary schools, a middle school, and two high schools that are rapidly exceeding their capability to receive additional students. At present, this problem is alleviated by the use of portable classrooms, but new school facilities and/or expansions are necessary to alleviate current and future overcrowding. In the past, the district has successfully used funds generated from an Educational Special Purpose Local Option Sales Tax (ESPLOST) to build additions to existing schools and construct new schools. The district would propose to renew the ESPLOST to alleviate current overcrowding and would likely do the same to accommodate increased numbers of students from Fort Gordon due to RTG actions (Columbia County BOE 2014).

Schools in Richmond County and Columbia County received $1.2 million and $480,000, respectively, in Federal Impact Aid from the Department of Education in 2011. Federal Impact Aid is designed to assist local school districts that have lost property tax revenue due to the presence of tax-exempt Federal property, or that have experienced increased expenditures due to the enrollment of Federally-connected children. The Impact Aid law (now Title VIII of the Elementary and Secondary Education Act of 1965) provides assistance to local school districts with concentrations of children residing on Indian lands, military bases, low-rent housing properties, or other Federal properties and, to a lesser extent, concentrations of children who have parents in the uniformed services or employed on eligible Federal properties who do not live on Federal property.

Public Health and Safety

Fort Gordon has its own 911 call center, fire, and emergency services. The installation maintains mutual aid agreements regarding emergency services with Richmond and Columbia counties.

Police. The Fort Gordon Police Department, part of the Directorate of Emergency Services, provides law enforcement and property protection at Fort Gordon. Police functions include protecting life and property, enforcing criminal law, conducting investigations, regulating traffic, providing crowd control, and performing other public safety duties. City, county, and state police departments provide law enforcement in the ROI.

Fire. The Fort Gordon Fire Department, part of the Directorate of Emergency Services, provides emergency firefighting and rescue services at Fort Gordon. Fire prevention is another service provided by the Fort Gordon Fire Department. Fire prevention activities include providing fire safety advice and ensuring that structures are equipped with adequate

fire precautions to ensure that in the event of a fire, people can safely evacuate the premises unharmed.

Medical. For Gordon supports a range of medical services. DDEAMC provides healthcare services for military personnel, military dependents, and military retirees and their dependents. DDEAMC services include audiology/speech pathology, dermatology, dietetics, emergency services, family medicine, internal medicine, OB/GYN, occupational therapy, ophthalmology, optometry, orthopedics, otolaryngology, pediatrics, physical therapy, psychiatry, surgery, podiatry, psychology, social work, and substance abuse. DDEAMC currently has a contract for birthing services for Army families with Trinity Hospital in Augusta. Fort Gordon also provides dental services and supports a Warrior Transition Battalion. This is an organization that provides primary care and management to injured Soldiers in order to restore them to fighting strength or assist them in transitioning to civilian life. In addition to the services at DDEAMC, there are plans for a Blood Donor Center and a Consolidated Troop Medical Clinic. Army and Air Force Exchange Services (AAFES) is also building an addition to the Post Exchange that will include a pharmacy. Table 3-20 illustrates the DoD purchased care in the Augusta area FY 2011-FY 2013.

Table 3-20: DoD Purchased Care, Augusta Area

Care Type	FY2011		FY2012		FY2013	
	Outpatient	Inpatient	Outpatient	Inpatient	Outpatient	Inpatient
TRICARE Eligible (0-64 years)	$45,273,187	$45,273,187	$43,583,189	$19,351,290	$48,224,905	$21,804,456
Supplemental Health Care Program	$2,240,978	$2,240,978	$1,965,057	$10,580,967	$2,433,887	$8,185,167
TRICARE for Life (65+ years)	$48,798,394	$48,798,394	$49,197,585	$27,163,304	$49,701,507	$31,344,392
Trinity OB/GYN Contract		$3,944,320		$3,865,733		$3,965,502
Grand Total		**$156,884,196**		**$155,707,126**		**$165,659,816**

Source: DDEAMC 2013

Family Support Services

The Fort Gordon Directorate of Family, Morale, Welfare, and Recreation (DFMWR) and Army Community Services (ACS) provide programs, activities, facilities, services, and information to support Soldiers and families. Services provided at Fort Gordon include child care, youth programs, and deployment readiness for families, employment readiness, financial readiness, relocation readiness, exceptional family member support, Warrior in Transition support, and survivor outreach.

Recreational Facilities

Fort Gordon facilities or programs for recreation include fitness centers, swimming pools, athletic fields, a golf course, a bowling center, a bingo center, and sports teams. Fort Gordon's existing outdoor recreation program and facilities include:

- Tactical Advantage Sportsman's Complex
- Freedom Park and Freedom Park Trail System
- Hilltop Riding Stables
- Leitner Lake
- Wilkinson Lake
- Sandy Run Nature Trail and Wildlife Viewing Area
- Pointes West Army Recreation Area

Environmental Justice and Protection of Children

Within the Fort Gordon ROI, 52 percent of the population is considered minority and 18 percent are living at or below the poverty level. Both categories exceed the national averages of 20 percent and 13 percent, respectively. Of the 55 public schools in Richmond County, 54 (98 percent) of them are considered Title I schools which receive extra Federal money because they have high concentrations of low income families and students who qualify for free or reduced price lunches. Freedom Park Elementary School located on Fort Gordon is one of the Title I schools. At Freedom Park, 55 percent of the students qualify for free or reduced price lunch due to low income. Many service industry and construction trade jobs supported by military contracts are filled by minority owned companies.

3.12.2 Environmental Consequences

Threshold of Significance for Socioeconomics: A significant impact would occur if the project would (a) induce a substantial population growth or decline in an area, either directly or indirectly; (b) displace substantial numbers of existing housing units or people, necessitating the construction of replacement housing elsewhere; (c) produce a regional job decline or regional income decline that exceeds 5 percent according to the RECONS economic model; (d) produce an impact to the regional economy that would exceed the historical precedent for past economic fluctuation for employment and regional income; (e) produce substantial disproportionate adverse environmental, economic, social, or health impacts on minority or low-income populations; (f) produce disproportionate environmental health or safety risk to children; (g) produce a substantial increased public safety hazard from military operations; or (h) produce a long-term substantial loss of recreational opportunities and resources relative to baseline.

An Installation principally affects local communities through salaries paid to Soldier and civilian employees, and subsequently spent in the local economy; and through procurements in the local economy, which can include purchases and contracts. Installation personnel increases would be expected to result in beneficial economic impacts due to the increase in jobs, income, and sales in an affected region. In addition, beneficial impacts to regional community services and schools could occur because they receive funding, support, time, donations, and tax revenue directly related to the installation military authorizations and their dependents. The housing market, public health and safety services, family support services, and recreational facilities could also be affected. Fort Gordon, like most Army Installations, has a considerable percentage of its Soldier and civilian population that rents or owns homes off-post. Increases or decreases in the number of Army personnel assigned to a given Installation can, therefore, have direct impacts on housing demand and the local housing

market. In addition, the need for public services and recreational facilities in the surrounding communities can also fluctuate with Army stationing decisions.

Environmental Justice (E.O. 12898) analysis requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of federal agency programs, policies, and activities on minority and low-income populations. Minority populations are identified as Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and other Pacific Islander, Hispanic, of two or more races, and other. A proposed action may have disproportionate or adverse health impacts on low-income or minority populations in that it may involve adverse economic impacts to communities with higher minority populations than the state as a whole. Within the ROI, however, the economic effect is expected to be distributed among community members regardless of race, ethnic origin, or economic status, and therefore is not disproportionate.

In addition, E.O. 13045 requires federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children. Such risks to health and safety are attributable to products or substances that a child would be likely to come in contact with or ingest. The impacts of the alternatives are not projected to have disproportionate adverse impacts on children, because no aspects of the action would be anticipated to increase the risks described in the E.O.

Four growth alternatives were evaluated using the Economic Impact Forecast System (EIFS) and the Regional Economic Systems model (RECONS), including the No Action Alternative. These models have been used by the Army to estimate the economic impacts of base closures and realignments and are useful in estimating RTG economic impacts.

The models were run for the No Action Alternative in order to generate a baseline against which the impacts of the RTG growth alternatives could be compared (the ARCYBER EA did not use the EIFS and RECON models). The Low Growth Alternative included an increase of 3,000 personnel above No Action; the Medium Growth Alternative included an increase of 4,000 personnel over No Action; and the High Growth Alternative included an increase of 6,000 personnel over No Action. For each alternative, the model assumes that 65% of the personnel increases are military, 35% are civilian, and that 100 percent of these new personnel will live off-post. The average salary for military and civilian personnel was estimated at $41,830.

Details of the models and how the results were interpreted can be found in Appendix B.

3.12.3 No Action Alternative

Table 3-21 summarizes the EIFS model outputs for the No Action alternative.

Table 3-21: Summary of Projected Economic Impacts of the No Action Alternative

Rational Threshold Value	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Increase	9.85	6.53	3.95	2.23
Decrease	-10.61	-5.85	-9.52	-1.42
Forecast Value	**1.29**	**1.17**	**1.23**	**0.75**

Based on the EIFS analysis, the No Action Alternative would result minor increases to sales volume, income, employment, and population.

The RECONS model generated total expenditures for the No Action plan of $62,745,000. Of this total, $40,539,601 will be captured within the regional impact area. The rest will occur outside the ROI in the state or the nation.

Under the No Action Alternative, no addition in personnel, military training, demolition, renovation, or construction would occur beyond the baseline conditions established in this EA. There would be no impact on housing, schools, public health and safety, family support services, and recreational facilities. The No Action Alternative would not produce disproportionate effects on minority or low-income populations or children.

3.12.4 High Growth Alternative

It is understood that the Low Growth Alternative would have less impacts than the High Growth Alternative as discussed in Section 2.3. For simplicity, only the High Growth Alternative impacts are described.

Table 3-22 summarizes the EIFS model outputs for the High Growth Alternative. Minor long-term economic impacts would be anticipated as part of the High Growth Alternative. This alternative would result in less than significant increases to sales volume and income and significant increases in employment and population. The anticipated change in expenditures for the High Growth Alternative is estimated at $230,065,000. Of this total project expenditure, $148,645,203 will be captured within the regional impact area. The rest will occur outside the ROI in the state or the nation.

Table 3-22: Summary of Projected Economic Impacts of the High Growth Alternative

Rational Threshold Value	Sales Volume (Percent)	Income (Percent)	Employment (Percent)	Population (Percent)
Increase	9.85	6.53	3.95	2.23
Decrease	-10.61	-5.85	-9.52	-1.42
Forecast Value	**6.47**	**5.83**	**6.13**[1]	**3.76**[1]

[1]Forecast value exceeds RTV for increase; impact is significant

Based on the EIFS analysis, the High Growth Alternative would result in minor increases to sales volume and income, and significant increases in employment and population.

Housing

The High Growth Alternative would have a moderate impact on housing. This alternative is expected to produce a substantial increase in the demand for rentals and purchases of housing off-post, since none of the RTG personnel would live on-post. However, the housing market in the ROI should be able to handle the increased demand generated by an additional 6,000 new workers at Fort Gordon. As shown in Table 3-17, in 2010 there were 7,044 housing units for sale or rent in Richmond and Columbia counties. A total of 13,135 housing units were vacant. With the recent increase in new housing construction, the number of housing units available for rent or purchase today is likely to be higher. There could be temporary adverse impacts to off-post housing if large numbers of new personnel arrive over a short period of time and look for housing close to Fort Gordon, though many of the organizations coming to the installation as part of the RTG actions are expected to arrive in a staggered fashion over several years. This should give the local housing market time to adjust to the

increased demand for housing. Over the long term, the High Growth Alternative would produce beneficial economic effects to the housing and rental markets in the ROI.

Schools

Installation population gains would represent beneficial economic impact within the ROI. Gains also can have variable impacts to school districts with regard to student population. It would be anticipated that most Soldiers would be accompanied by their families and that there would be an increase in school student population growth. This increase could also result in more impact aid for the schools. However, a substantial increase in schoolchildren over a very short time could adversely impact a school system. It could lead to overcrowded classes, a shortfall in facilities or classrooms to house the students, and a lack of enough teachers.

In the short term, the High Growth Alternative has the potential to produce moderate adverse impacts to schools, especially in Columbia County. Columbia County currently uses portable classrooms to accommodate students in three elementary schools and one middle school. There is also a new rezoning plan pending approval to try to alleviate some of the existing overcrowding issues. Increases in student population resulting from the High Growth Alternative would require a combination of rezoning, additional portable classrooms, and ultimately would require construction of a new elementary, middle, and high school (Caraway 2014). The effects on Columbia county could also be mitigated by the county renewing the ESPOST, which will be voted on 15 March 2015. Effects on Richmond County may be mitigated somewhat by the county's current surplus of student capacity.

Over the long term, the High Growth Alternative has the potential for beneficial effects on the local school systems. Schools in Richmond County and Columbia County received $1.2 million and $480,000, respectively, in Federal Impact Aid from the Department of Education in 2011. These funds would increase if the number of Federally- related schoolchildren in these systems increases. An estimated 5,760 children would accompany the additional personnel under this alternative and most would be attending schools in the ROI, producing an increase in state and Federal funding for local school systems. The anticipated increase in schoolchildren under this alternative represents an increase of 10.1 percent over current enrollment (56,904 students in Fall 2013, see Table 3-19) and would require these school districts to take steps to accommodate the additional students, either by adding classes, expanding existing schools, or constructing additional schools. Additional teachers and support staff would also be required, further increasing employment and funding in the local school systems.

Public Health and Safety

Under the High Growth Alternative, an increase in population at Fort Gordon would increase demand for law enforcement services, fire and emergency services, and medical care services on- and off-post. The Directorate of Emergency Services (DES) has identified a need to increase staffing and consolidate operations in a single building, which will require construction of an addition (USACE 2013). An increase in military personnel assigned to Fort Gordon would increase the amount Fort Gordon pays to local hospitals and health care providers for care of active duty Soldiers and to Trinity Hospital for OB/GYN care. These contracts provided a total of $14.9 million to local health care facilities in FY 2010. This figure would be expected to increase due to the additional military personnel associated with the

High Growth Alternative. Fort Gordon does not anticipate significant impacts to safety and emergency services under this alternative.

Family Support Services

Under the High Growth Alternative, Fort Gordon anticipates an increase in demand for DFMWR and ACS programs on post. These organizations have identified a need to increase staffing and move to larger, renovated facilities. In addition, DFWMR identified a requirement to replace the existing undersized library with a new, larger facility (USACE 2013). The demand for off-post family support services would also likely increase. Fort Gordon anticipates minor impacts to family services under the High Growth Alternative.

Recreational Facilities

Use of recreational facilities would increase under this alternative. Fort Gordon anticipates that utilization increases would be moderate but may require hiring additional personnel to staff the facilities, expanding existing facilities, and/or constructing new facilities. The installation's Outdoor Recreation Plan would require updating to include any new programs or facilities.

Environmental Justice and Protection of Children

Any increase in military contracts would produce beneficial impacts to minority and low income families. Employees that would work on these military contracts would reside off-post. Other Federal government aid programs, like reduced cost lunches, would likely decrease as ROI unemployment decreases due to a gain in military jobs and associated service, construction, and support contracts. Richmond, Jefferson, and McDuffie counties have higher percentages of African-Americans than the State of Georgia as a whole. In this respect, any beneficial impact to the people of these counties represents a disproportionate beneficial impact.

Based on these factors, the High Growth Alternative would result in short-term, moderate adverse socioeconomic impacts to schools and housing in the ROI. Negligible impacts to sales volume and income, and minor increases in employment and population are expected. Long-term beneficial impacts to schools in the form of increased Federal Impact Aid and other funding is expected. Long-term beneficial impacts to housing are expected in the form of higher occupancy rates of existing rental and purchased housing and increased demand for construction of new housing in the ROI.

3.13 Cumulative Impacts

The requirement to assess cumulative impacts as part of the EA process is set by NEPA (40 CFR 1508.7) and further discussed within the Army context by 32 CFR Part 651.16, *Environmental Analysis of Army Actions*. Further guidance on this process is provided by the CEQ in its document, *Considering Cumulative Impacts under the National Environmental Policy Act* (CEQ 1997).

Cumulative impacts result from the incremental effect of separate past, present, and reasonably foreseeable future actions on the environment, regardless of what agency or person undertakes those actions. They can accrue from individually minor but collectively significant actions taking place over an extended period of time. Taken individually, environmental damage is incremental, occurring one action at a time. However, determining the significance of the collective actions requires an understanding of their effect on the larger environment.

3.13.1 Region of Influence

The ROI for cumulative effects analysis of the RTG actions at Fort Gordon encompasses four counties in Georgia: Richmond, Columbia, McDuffie, and Jefferson.

3.13.2 Fort Gordon Projects – Past, Present, and Reasonably Foreseeable

There are several planned actions within the ROI that have the potential to cumulatively add impacts to RTG alternatives. These actions are either in progress or reasonably could be initiated within the next five years, as indicated in the installation's Real Property Master Planning process. Table 3-23 presents some of the projects that may add to the cumulative impacts of the implementation of the RTG alternatives.

3.13.3 Other Agency (DoD and non-DoD) and other Public/Private Actions – Past, Present, and Reasonably Foreseeable

Overall development and activity surrounding Fort Gordon has been centered around private-sector development. Open lands surrounding Fort Gordon which were historically farmed and grazed by domestic livestock continue to be developed into off-post residential, commercial, and industrial development. Off-Post development can be expected to include the following actions:

- Additional agricultural and open land use areas near the installation would be converted to urban areas (primarily residential);
- Road, bridge, and ROW maintenance and construction by county and local government units would continue;
- The continued construction of new off-post residential, commercial, and industrial development, primarily near the boundary of the installation;
- The continuation of forest management of properties in the proximate community, and continued grazing by domestic livestock and tillage for planting of row crops; and
- The continued construction of ponds and other erosion control features by farmers, developers, and other private and public organizations.

Specific projects that relate to the RTG stationing actions are the Army Cyber Command stationing at Fort Gordon and the potential actions of the Army 2020 Force Structure and Realignment reduction of civilian and military personnel. The potential growth and reductions are:

- Road to Growth Stationing actions – increase up to a maximum of 6000;
- Army Cyber Command – increase up to a maximum of 1500;
- Army 2020 Force Structure and Realignment – reduction by a maximum of 4600 personnel.

At this time, the Army does not know how many or if any reductions will take place at Fort Gordon. Any reductions in force that are implemented in the future could decrease beneficial impacts from the Army Cyber Command and Road to Growth Stationing actions. In turn, reductions in force could offset any negative impacts anticipated by growth on the installations.

3.13.4 Potential Cumulative Impacts by VEC

The No Action Alternative is not likely to produce any significant adverse cumulative impacts to VECs. There would be continued growth in Columbia and Richmond counties, continued growth at Fort Gordon, but this would not produce significant impacts.

Table 3-23: Cumulative DoD Actions at Fort Gordon

Action	Project Description	NEPA Documentation
Past Actions		
National Security Agency (NSA) – Georgia Cryptologic Center (CSS)	A NSA/CSS Georgia facility was constructed in FY10 at Fort Gordon between 15th Street and the western border of the 17th Street Landfill, and Lane and 111th Avenues. The facility is 525,000 SF and staffing increased up to 3,500 military and civilian personnel.	EA
AIT Barracks Replacement Phase I	Construct Phase 1 of a 3 - phased standard design AIT Complex. Phase 3 provides two Barracks with Company Operations Facilities for 600 Soldiers (total), and a Battalion Headquarters.	REC
Present Actions		
New Hotel - Privatized Army Lodging Program	Construct a 320 room Candlewood Suites Hotel with 324 space parking lot.	EA
Multipurpose Machine Gun Range, Hand Grenade Familiarization Range, and Modified Record Fire Range	Construct or improve, operate, and maintain three ranges to train Soldiers in basic machine gun live-fire tasks, rifle training and marksmanship, and in employment of live fragmentation hand grenades.	EA
U.S. Army Cyber (ARCYBER) Command and Control Facility	Establish a Command and Control Facility at Fort Gordon to support U.S. Army Cyber Command. This facility would be located in the Whitelaw complex and would ultimately increase Fort Gordon's military and civilian workforce by up to 1,500 personnel	EA
Student Barracks Replacement Phase II	Construct Phase 2 of a 3 - phased standard design Complex. Phase 2 includes two Barracks/Company Operations Facilities for 600 Soldiers (300 each), a 1,300 personnel dining Facility, a Lawn Equipment Building, and Physical Fitness Areas to include Physical Training pits and a quarter-mile running track.	REC
Post Exchange Expansion	The existing 92,000 SF Post Exchange (PX) building will be expanded on the existing site to a total of 177,000 SF under roof. Not only will the existing activities in the building be expanded, but activities currently located at the PXtra Complex (buildings 35200 thru 35206) will also be housed in the new consolidated facility.	REC
Future Actions		
General Instruction Facility	Construct a 95,770 SF General Instruction Facility to include classrooms, instructors' offices, computer resource rooms and administrative offices.	REC

Action	Project Description	NEPA Documentation
Youth Activities Center	Construct a 19,873 SF Youth Activities Center with capacity for 150 children to include Gymnasium, basketball courts, multipurpose room, class rooms, patio area, and associated sidewalks.	REC
80th Training Command TASS Training Center	Construct a 38,000 SF High-Tech Regional Training Site Maintenance (HT RTS-Maint) Military Occupational Specialty (MOS) training building for a year round/full-time HT RTS-Maint schoolhouse unit of the 80th Training Command, to replace the units' current training facility in Tobyhanna, PA and augment USAR training space on Ft Gordon.	Pending
480th ISR Group HQ	Construct 18,000 sq ft facility to consolidate 6 AF ISR orgs into 1 command/ admin/support facility with unclassified and SECRET collateral level security.	Pending
AIT Barracks Replacement Phase III	Construct Phase 3 of a 3 - phased standard design AIT Complex. Phase 3 provides two Barracks with Company Operations Facilities for 600 Soldiers (total), and a Battalion Headquarters.	REC
Training Barracks Upgrade Program	Renovation of 18 barracks, one brigade headquarters, four battalion headquarters, four dining facilities, and eight company administration buildings. Each barracks would accommodate 190 Soldiers and consist of two-person suites. Project began in January 2008 and will be completed Spring 2016.	REC
Cyber Center of Excellence (CoE)	Establish a Cyber CoE at Fort Gordon, leveraging existing institutional and staff structure of the Signal CoE. This transition would create an estimated 1500 new personnel required at Fort Gordon and require modification to existing facilities in order to support specialized training in a Secure Compartmentalized Information Facility (SCIF) classroom environment.	EA
Army 2020 Force Structure Realignment	Realign Fort Gordon to reduce military and civilian population on the installation to up to a maximum of 4,600 personnel.	EA
Energy Initiatives Task Force Solar Voltaic Project	Construct a 30 MW Solar Photovoltaic Generating Array System and transmission line on 200+ acres in Training Area 12.	EA

Notes: EA = Environmental Assessment; REC = Record of Environmental Consideration

The following discussion evaluates the potential for cumulative impacts from implementing the High Growth Alternative.

3.13.5 Geology and Soils

Impacts to soil are localized and typically site-specific. The proposed construction-related projects, as well as other construction projects at Fort Gordon and construction projects off-post are required to adhere to a site specific ESCP to ensure that soil erosion during construction is minimal. In addition, the ESCP and SWPPP would require the implementation of BMPs including using silt fencing, soil stabilization blankets, and matting around areas of land disturbance during construction. Bare soils would be vegetated after construction to reduce erosion and stormwater runoff velocities. Therefore, implementation of the High Growth Alternative would not have any significant cumulative impacts on soils.

3.13.6 Land Use

In terms of cumulative impacts, the High Growth Alternative and the projects listed in Table 3-23 would have minor to moderate impacts to land use, depending on where the projects are sited. One of these projects, the Energy Initiatives Task Force Solar Voltaic Project, would remove approximately 200 acres from training uses. The High Growth Alternative could also remove acreage from training use. However, the total combined impacts on training land would remain less than significant (see Table 2-1). Richmond, Columbia, McDuffie, and Jefferson counties each have land use development plans, and have worked with Fort Gordon regarding a JLUS. As a result of this study the four counties have agreed to direct development in ways that should allow Fort Gordon's mission to continue without conflicts with land use outside the installation (USAG Fort Gordon 2005). The JLUS and ACUB programs can mitigate the potential impacts to Fort Gordon's training missions from encroachment along the installation's borders. As such, when incrementally considering impacts of past, present, and future actions, there would be no significant cumulative impacts to land use from the implementation of the High Growth Alternative.

3.13.7 Biological Resources

Implementation of the High Growth Alternative would require the removal of vegetation if new construction occurs. Construction occurring in previously disturbed areas would produce negligible impacts to vegetation. Construction occurring in previously undisturbed areas could produce minor adverse impacts to vegetation. Other construction projects listed in Table 3-23 would also require the removal of vegetation at Fort Gordon's cantonment area and training areas.

Removing natural vegetation would have corresponding impacts to resident wildlife since developing forested land permanently removes habitat and displaces resident wildlife. Impacts to vegetation would result in a cumulative impact, but land use planning in accordance with the installation's INRMP would ensure the preservation of natural land and control growth. Projects occurring on Fort Gordon would be required to follow BMPs. If these BMPs are properly implemented and maintained for each project, there would be only minor cumulative impacts. When necessary, appropriate state and Federal agencies would be consulted, and impacts on the respective VECs would be avoided by following the agency recommendations. As such, when incrementally considering impacts of past, present, and future actions, it was determined there would be no significant cumulative impacts to vegetation from the implementation of the High Growth Alternative.

No impacts to federal- or state-listed threatened or endangered species would occur and there would be no potential for cumulative impacts. The impact of the proposed action on resident non-listed wildlife would be additive to other stressors for these species, which include increasing urbanization and development in the area. Certain species, particularly bird species, could flee to nearby habitat during the construction phase of projects when habitat is disrupted and/or altered. However, given the temporary nature of construction-related impacts to wildlife and migratory birds and the likely separations in implementation timeframes, there is little potential for cumulative impact to resident wildlife from construction activities associated with the proposed alternatives. Therefore, there would be no significant cumulative impacts to wildlife from the High Growth Alternative.

3.13.8 Wetlands and Water Resources

Short-term cumulative impacts to surface water quality from soil erosion during construction activities could occur if the projects are located in close proximity and time to each other. However, these impacts would be temporary and confined to the respective project areas as all projects are required to follow state and federal guidelines to ensure water quality is protected from possible erosion and sedimentation. This includes implementing project specific BMPs as part of the proposed construction projects to minimize impacts to water quality and using stormwater engineering controls (e.g., culvert/channels directing stormwater to retention basins) to decrease future impacts to water quality following construction. The use of ESCPs and SWPPPs during construction would also minimize impacts to water quality. Long-term cumulative impacts to water resources are possible due to the increase in impervious surfaces for the new construction. E.O. 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* requires a 2-percent annual reduction in potable, industrial, landscaping, and agricultural water intensity by FY20. In addition, the E.O. requires that all new construction comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. This includes employing design and construction strategies that reduce stormwater runoff. Furthermore, Section 438 of the EISA require that any development or redevelopment project involving a Federal facility with a footprint exceeding 5,000 square feet shall use site planning, design, construction, and maintenance strategies to maintain or restore the predevelopment hydrology of the property with regard to temperature, rate, volume, and duration of flow.

Planning level survey maps (created using National Wetland Inventory maps, hydric soils maps and color infrared digital orthophotography) were used to eliminate wetland areas from consideration for development. Therefore, impacts to wetlands under the High Growth Alternative would be negligible.

Overall, implementation of the High Growth Alternative at Fort Gordon would not result in significant cumulative impacts on wetlands and water resources.

3.13.9 Air Quality

Implementing the High Growth Alternative and other construction projects listed in Table 3-23 could produce a short-term additive amount of emissions (primarily fugitive dust and HAPs) if they are concurrent. However, fugitive dust emissions would be moderated through dust reduction measures and HAP emissions, when added to existing emissions, would not exceed either individual or combined HAP thresholds. The proposed construction is expected to produce a minor impact on regional emissions; therefore, it is not anticipated that air

emissions from other past, present, and future construction projects, when considered incrementally with the High Growth Alternative, would exceed any regulatory standards.

Long-term, the proposed increase in personnel associated with the High Growth Alternative would correlate to an increase in the number of vehicles driven. However, with exception of the operations of the NSA/CSS Georgia facility and Cyber CoE, none of the other past, present, or reasonably foreseeable actions would substantially increase the number of persons employed at Fort Gordon. If the force reductions evaluated in the Army 2020 PEA and supplemental EA occur, Fort Gordon could see a reduction of up to 4,600 military and civilian personnel. Any such reductions would lessen vehicle emissions. While an incremental cumulative impact would result from implementing the High Growth Alternative, the emissions would not exceed any regulatory standards.

Overall, there is the possibility of minor short- and long-term adverse cumulative impacts resulting from the implementation of the High Growth Alternative at Fort Gordon. However, since regulatory standards would not be exceeded and the AQCR would continue to be attainment of all NAAQS standards, no significant cumulative impacts to air quality are anticipated.

In terms of GHG emissions, emissions from implementation of the High Growth Alternative would be below the 25,000 metric tons [27,563 tons] of CO_2e level proposed in the draft NEPA guidance by the CEQ (CEQ, 2010). Annual emissions would be minor and less than significant, and would disperse quickly within the project area. In addition, these cumulative sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, cumulative impacts to global climate change from implementation of the High Growth Alternative would not be significant.

3.13.10 Noise

Other construction projects have the potential to contribute to short-term cumulative impacts when added to the construction noise associated with the implementation of the High Growth Alternative. However, it is assumed that any construction-related noise generated from other projects at Fort Gordon would be temporary, lasting only the duration of the respective project(s) and would be confined to the installation boundaries. For example, construction noise would attenuate to background levels (conservatively, approximately 55 dB) in approximately 245 m (800 ft). In addition, noise from construction-related activities would be confined to general working hours (8:00 AM to 5:00 PM). Therefore, no significant cumulative impacts associated with the implementation of the High Growth Alternative are anticipated.

3.13.11 Cultural Resources

The High Growth Alternative could affect the Woodworth Library, an eligible structure, and the Signal School Campus, potentially eligible as a historic district. Any actions that may impact these structures would need additional evaluation to avoid negative impacts on eligible resources or historic district eligibility. Such actions would undergo Section 106 consultation if determined to be appropriate for any such proposal. The same procedures apply to construction projects listed in Table 3-23. Therefore, implementing the High Growth Alternative would not result in cumulative impacts to cultural resources.

3.13.12 Hazardous Materials and Hazardous Waste

Cumulative impacts associated with the amounts of hazardous materials used, toxic substances generated, or hazardous waste disposed would be short-term and managed in

accordance with existing Installation procedures, as well as federal and state standard operating procedures and regulatory requirements. Therefore, there would be no significant cumulative impacts to hazardous materials, toxic substances, or hazardous waste with the implementation of the High Growth Alternative.

3.13.13 Facilities

Impacts to facilities from the High Growth Alternative range from negligible to moderate depending where the actions occur. Increased military and civilian strength would be reflected through increased usage throughout the cantonment area. Some additional construction and/or renovation of facilities would be needed to support new military and civilian workers coming to Fort Gordon. These facilities would include, but would not be limited to, a new Access Control Point (ACP); a new library; a new chapel, a new Child Development Center; additional facilities to support Directorates of Emergency Services, Family, Morale, Welfare, and Recreation; Plan, Training, Mobilization, and Security; and Human Resources.

Many of the projects listed in Table 3-23 are designed to address facility shortfalls that exist at the installation. In terms of cumulative impacts, implementation of these projects would have moderate impacts to facilities. As such, when incrementally considering impacts of past, present, and future actions, there would be no significant cumulative impacts to facilities from the implementation of the three action alternatives.

Potential reduction of up to 4,600 military and civilian personnel could occur through Army 2020 force restructuring actions. It is uncertain at present how many personnel would be leaving Fort Gordon, if any, under this initiative. Any reduction in workforce resulting from the Army 2020 initiative would reduce the effects of RTG actions under the High Growth Alternative and would thus reduce potential cumulative impacts.

3.13.14 Infrastructure and Utilities

Implementation of the High Growth Alternative would have negligible to minor impacts on infrastructure and utilities. Possible localized short-term disruptions to water service could result from construction activities as existing buried water lines are accessed for connecting new water service lines to the proposed alternatives. There would be no long-term impacts to sanitary sewer/wastewater facilities or electrical system. Cumulatively, the projects described in Table 3-23 would have less than significant impacts to infrastructure and utilities. Cumulative projects along with the RTG actions would not create excess burden on systems. Consequently, cumulative impacts to infrastructure and utilities would not be significant.

3.13.15 Traffic

Construction traffic associated with implementation of the Proposed Action and other projects on Fort Gordon could create additional, but temporary, impacts to traffic. The timing of these projects is not well-known, but if the projects are staggered, impacts would be negligible to minor. However, even if the projects are not separated in time, the temporary increases in construction-related traffic would not likely result in a long-term disruption to current transportation patterns, nor would it change existing traffic safety as construction trucks would be required to enter and exit Fort Gordon through Gate 3.

Implementation of any of the three growth alternatives would have long-term adverse cumulative impacts on traffic and roadways when combined with other actions at Fort Gordon that would also increase personnel, including the operations of the NSA/CSS Georgia facility,

Cyber CoE, and ARCYBER command and control facility. Combined, these projects would substantially increase the number of vehicles driving onto or off Fort Gordon during peak hours. This would result in long-term moderate to significant impacts to already degraded intersections at Fort Gordon. Therefore, long-term significant cumulative impacts are possible. However, implementation of roadway improvements identified in the RTG traffic study is required or Fort Gordon would need to prepare an Environmental Impact Statement. Implementing the traffic improvements identified in the RTG traffic study would mitigate the adverse effects to less than significant levels.

Fort Gordon is also considering a new gate on the western side of the installation. Although a decision has not yet been made on that action, a new gate would provide better access onto and off the installation.

Columbia County has a long-range transportation plan that includes projects that would improve traffic conditions off-post. These projects include arterial widening, new roadways, transportation system management improvements, intersection improvements, and bridge improvements. Most of the projects proposed are road widening, usually increasing the number of lanes from two to four. Ramp improvements and the widening of Interstate 20 are proposed as well. Richmond County has a comprehensive plan that includes similar transportation improvement projects that would affect Fort Gordon. Several widening projects, such as widening Gordon Highway, Jimmy Dyess Parkway, and Wrightsboro Road could directly affect traffic entering and leaving Fort Gordon. Implementation of traffic improvements on- and off-post would reduce cumulative impacts to traffic.

3.13.16 Socioeconomics

Implementation of the High Growth Alternative would result in short-term cumulative impacts to housing and schools as a result of additional personnel associated with RTG stationings. The projects listed in Table 3-23 would add additional personnel to Fort Gordon; however, no long-term cumulative impacts are expected. Implementation of the High Growth Alternative would result in long-term beneficial impacts; no long-term adverse cumulative impacts are anticipated. There would be no disproportionate adverse environmental health or safety risks to minority or low-income populations or children. Therefore, there are no expected significant adverse cumulative impacts.

3.13.17 Irreversible and Irretrievable Commitments of Resources

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be reversed or recovered, even after an activity has ended and facilities have been decommissioned. A commitment of resources is related to use or destruction of non-renewable resources, and the impacts that loss would have on future generations. Construction and operation of the RTG facilities and associated stationing actions would involve the irreversible and irretrievable commitment of materials, energy, biological resources, and human resources. These impacts would be permanent.

No Action Alternative

The No Action alternative would not result in any commitment of resources other than those currently committed to construction and operation of the ARCYBER Command and Control Facility.

High Growth Alternative

Materials. Material resources irretrievably used would include steel, aluminum, concrete, and other building materials. These materials are not in short supply and would not be expected to limit other unrelated construction activities. The preferential use of recycled building materials would reduce the overall amount of materials required.

Energy. The use of fossil fuels (gasoline, natural gas, and diesel fuel) and electricity would be irretrievably lost during construction and operation of the facilities. Overall, consumption of energy resources would not place a significant demand on their availability in the region.

Biological Resources. Some irretrievable loss of vegetation and wildlife habitat would occur. The loss of vegetation and conversion of open space would be a permanent impact to biological resources.

Human Resources. The use of human resources for construction and operation of the RTG facilities is considered an irretrievable loss only in that it would prevent such personnel from engaging in other work activities. However, the use of human resources for the construction and operation actions represents employment opportunities and is considered beneficial.

3.14 Compliance with Federal Environmental Statutes and Executive Orders

Table 3-24 includes a list of Federal environmental statutes and executive orders that are applicable to the proposed project, as well as the Fort Gordon compliance status of each.

Table 3-24: Compliance with Federal Environmental Statutes and Executive Orders

Federal Laws, Regulations, and Executive Orders	Compliance
Archaeological and Historic Preservation Act	Full
Clean Air Act of 1970, as amended[1]	Conditional
Clean Water Act of 1987, as amended[2,3]	Conditional
Comprehensive Environmental Response, Compensation and Liability Act of 1986[3]	Full
Endangered Species Act of 1973, as amended	Full
Magnuson-Stevens Fisheries Conservation and Management Act	Full
Migratory Bird Treaty Act of 1972	Full
National Environmental Policy Act of 1969, as amended[3]	Conditional
National Historic Preservation Act of 1966, as amended	Full
Native American Graves Protection and Repatriation Act of 1990	Full
Resource Conservation and Recovery Act of 1976[3]	Conditional
Safe Drinking Water Act of 1974	Full
Watershed Protection and Flood Prevention Act of 1954	Full
10 U.S.C. 2665 (Provides for reimbursable forestry funds)	Full
10 U.S.C. 2687 Base Closures and Realignments	Full
Army Regulatory Guidance Memorandum for Reimbursable Agriculture/Grazing and Forestry Programs dated 17 August 1999	Full
40 CFR Part 1500-1508 Regulations for Implementing the Procedural Provisions of the	Full

Federal Laws, Regulations, and Executive Orders	Compliance
National Environmental Policy Act, 2005	
Environmental Effects of Army Actions (32 CFR 651) Environmental Protection and Enhancement (AR 200-1) Exotic & Non Native Species (E.O. 13112)	Full
Protection of Migratory Birds and Game Mammals (E.O. 11629)	Full
Army's 2007 Management Guidelines for the RCW on Army Installations	Full
Army's 2008 Management Guidelines for the Gopher Tortoise on Army Installations	Full
Flood Plain Management (E.O. 11988) Protection of Wetlands (E.O. 11990)	Full
Federal Actions to Address Environmental Justice in Minority Populations And Low-Income Populations (E.O. 12898)	Full
Protection of Children from Environmental Health Risks (E.O. 13045)	Full

[1]Fort Gordon is addressing a Notice of Violation (NOV) for stormwater compliance because of problems with a stormwater infrastructure project located in the RTG study area.
[2]There is a pending consent order for peakshaving generators.
[3]Budget cuts and staff reductions in DPW Environmental Division will impact compliance as a result of increased requirements, particularly in hazardous waste generation/management, NEPA, and stormwater, as a result of RTG actions.

3.15 Summary of Environmental Consequences of the Alternatives

Figure 3-11 shows the VECs within the RTG study area. Table 3-25 provides a summary of the potential environmental and cumulative environmental impacts associated with the implementation of the No Action and High Growth Alternative across the three development categories. As detailed in Section 3.0 of this PEA, implementation of the High Growth Alternative would result in:

- negligible to minor impacts to biological resources, cultural resources and infrastructure and utilities;
- negligible to moderate impacts to wetlands and water resources and facilities;
- minor adverse impacts to geology and soils, air quality, and noise, and hazardous materials and hazardous waste;
- moderate impacts to land use;
- short-term minor to moderate impacts and long-term beneficial impacts to socioeconomics;
- significant but mitigable impacts to traffic; and
- no significant cumulative impacts to any VEC.

While implementation of each alternative has the potential to result in adverse traffic effects to select intersections, implementation of the mitigation measures described in Tables 3-12 and 3-13 and detailed further in Appendix C would lessen the projected traffic impacts to acceptable levels, resulting in less than significant impacts.

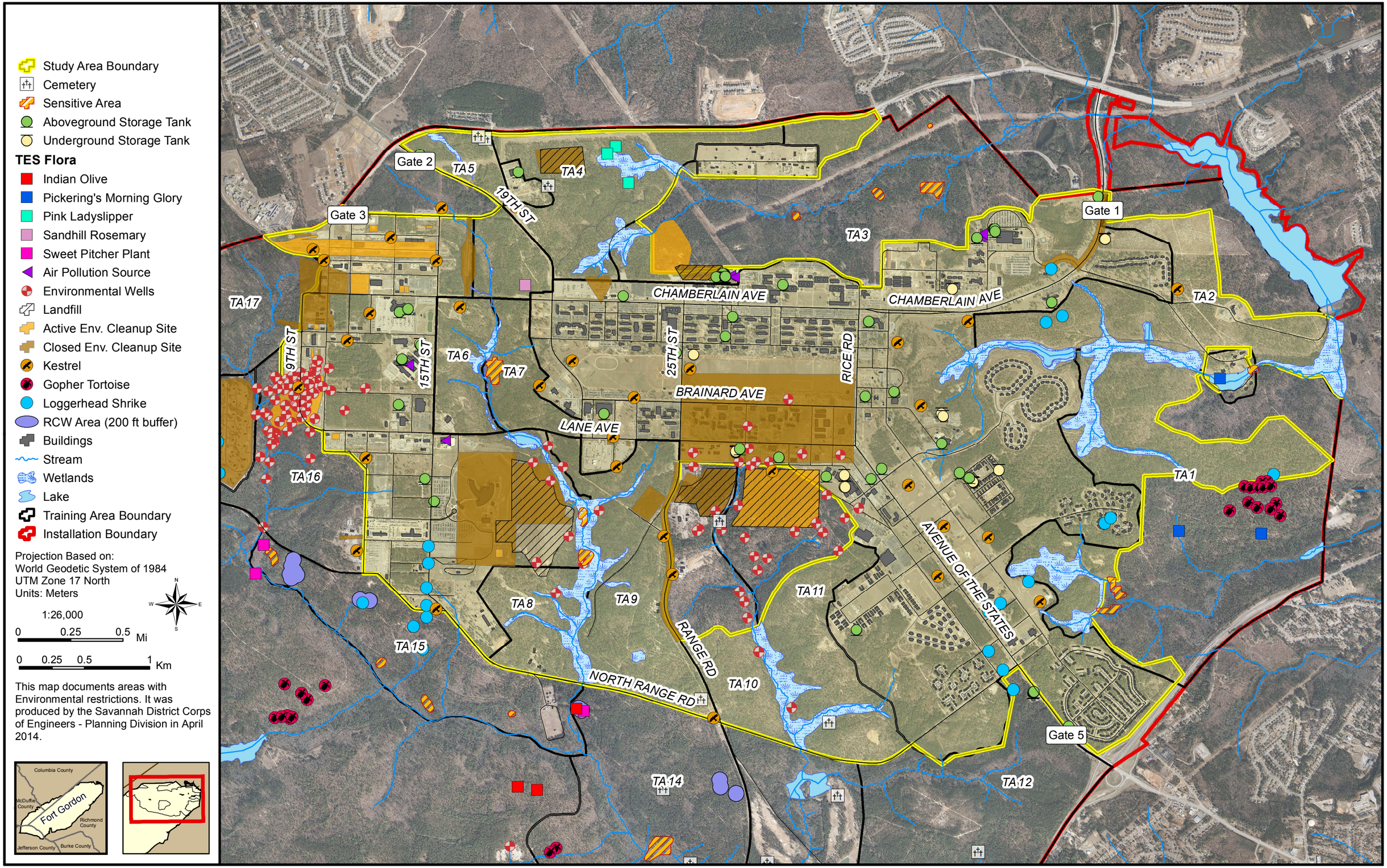
Table 3-25: Fort Gordon Valued Environmental Component Impact Ratings

Valued Environmental Component	No Action Alternative	High Growth Alternative (+ 6,000 Personnel)		
		GREEN Development Category	AMBER Development Category	RED Development Category
Geology and Soils	No Impact	Minor Impacts	Minor Impacts	Minor Impacts
Land Use	No Impact	Moderate Impacts	Moderate Impacts	Moderate Impacts
Biological Resources	No Impact	Negligible Impacts	Minor Impacts	Negligible Impacts
Wetlands and Water Resources	No Impact	Negligible Impacts to wetlands, floodplains; Moderate Impacts to groundwater, surface water, and stormwater	Negligible Impacts to wetlands, floodplains; Moderate Impacts to groundwater, surface water, and stormwater	Negligible Impacts to wetlands, floodplains; Moderate Impacts to groundwater, surface water, and stormwater
Air Quality	No Impact	Minor Impacts	Minor Impacts	Minor Impacts
Noise	No Impact	Minor Impacts	Minor Impacts	Minor Impacts
Cultural Resources	No Impact	Negligible Impacts	Negligible Impacts	Minor Impacts
Hazardous Materials and Hazardous Waste	No Impact	Minor Impacts	Minor Impacts	Minor Impacts
Facilities	No Impact	Negligible	Moderate Impacts	Minor Impacts for renovation; Moderate Impacts for new construction
Infrastructure and Utilities	No Impact	Negligible Impacts to potable water, domestic and industrial wastewater, electricity and natural gas; Minor Impacts to solid waste	Negligible Impacts to potable water, domestic and industrial wastewater, electricity and natural gas; Minor Impacts to solid waste	Negligible Impacts to potable water, domestic and industrial wastewater, electricity and natural gas; Minor Impacts to solid waste
Traffic[1]	No Impact	Significant but Mitigable	Significant but Mitigable	Significant but Mitigable

Valued Environmental Component	No Action Alternative	High Growth Alternative (+ 6,000 Personnel)		
		GREEN Development Category	**AMBER Development Category**	**RED Development Category**
Socioeconomics	No Impact	Short-term Moderate Impacts to housing and schools; Minor Impacts to public health/safety, family support, and recreation; Long-term Beneficial Impacts to all sub-categories	Short-term Moderate Impacts to housing and schools; Minor Impacts to public health/safety, family support, and recreation; Long-term Beneficial Impacts to all sub-categories	Short-term Moderate Impacts to housing and schools; Minor Impacts to public health/safety, family support, and recreation; Long-term Beneficial Impacts to all sub-categories
Cumulative Impacts	No Impact	No Significant Impacts	No Significant Impacts	No Significant Impacts

[1]While implementation of the High Growth Alternative would result in adverse traffic effects to a substantial number of intersections, the application of the proposed mitigation measures described in the PEA would lessen the projected adverse effects and is expected to result in Moderate impacts. These mitigation measures must be implemented, otherwise an Environmental Impact Statement would be required.

Figure 3-11: Valued Environmental Components in the Road to Growth Study Area



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4.0 Conclusion

This PEA was prepared in accordance with the provisions of the National Environmental Policy Act (NEPA) of 1969 as amended (42 U.S. Code [U.S.C.] 4321 *et seq*.), the Council on Environmental Quality's (CEQ) NEPA implementing regulations at 40 Code of Federal Regulations (CFR) Part 1500, and 32 CFR Part 651. The No Action Alternative and three action alternatives are presented and discussed in this PEA.

Based on the evaluation of the environmental consequences accomplished by this PEA, the preparation of an EIS is not needed. Moderate to severe traffic impacts will be minimized through the implementation of measures that are included as part of each alternative. The preparation of a Finding of No Significant Impact (FNSI) shall be appropriate.

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5.0 Acronyms

Acronym	Definition
AAFES	Army and Air Force Exchange Services
ACM	Asbestos containing materials
ACP	Access Control Point
ACS	Army Community Services
AIA	Artillery Impact Area
AQCR	Air Quality Control Region
ARCYBER	U.S. Army Cyber Command
AST	above-ground storage tank
BMP	Best Management Practice
BO	Biological Opinion
BOE	Board of Education
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CoE	Center of Excellence
CPT	Cyber Protection Team
CSRA RC	Central Savannah River Area Regional Commission
CSRA RDC	Central Savannah River Area Regional Development Center
CWA	Clean Water Act
dBA	a weighted decibel
DDEAMC	Dwight D. Eisenhower Army Medical Center
DENCOM	U.S. Army Dental Command
DFMWR	Directorate of Family, Morale, Welfare, and Recreation
DMDC	Defense Manpower Data Center
DoD	U.S. Department of Defense
E.O.	Executive Order
EA	Environmental Assessment
EB	eastbound

Acronym	Definition
EIFS	Economic Impact Forecast System
EISA	Energy Independence and Security Act
ESCP	Erosion and Sedimentation Control Plan
ESPLOST	Educational Special Purpose Local Option Sales Tax
FEMA	Federal Emergency Management Agency
FIRMS	Flood Insurance Rate Maps
FNSI	Finding of No Significant Impact
FORSCOM	U.S. Army Forces Command
FPPA	Farmland Protection Policy Act
FTE	Full Time Equivalency
GADNR	Georgia Department of Natural Resources
GAEPD	Georgia Environmental Protection Division
GC	Garrison Commander
GHG	Greenhouse Gases
gpd	gallons per day
GRSOC	Gordon Regional Security Operations Center
HAP	hazardous air pollutant
HMCP	Hazardous Material Control Point
HMU	Habitat Management Unit
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
INSCOM	U.S. Army Intelligence and Security Command
IRP	Installation Restoration Program
ISCP	Installation Spill Contingency Plan
ITAM	Integrated Training Area Management
JLUS	Joint Land Use Study
kV	kilovolts
LBP	lead-based paint
LID	Low Impact Development
LOS	Level of Service
MGD	million gallons per day

Acronym	Definition
MILCON	Military Construction Program
MOUT	military operations on urban terrain
MS4	Municipal Separate Storm Sewer System
msl	mean sea level
MSWL	Municipal Solid Waste Landfill
NAAQS	National Ambient Air Quality Standard
NB	northbound
NBC	nuclear, biological, and chemical
NCO	Non-commissioned Officer
NEPA	National Environmental Policy Act
NETCOM	U.S. Army Network Enterprise Technology Command
NFA	no further action
NHPA	National Historic Preservation Act
NRFL	non-reimbursable forest land
NRHP	National Register of Historic Places
NSA	National Security Agency
NSGA	Naval Security Group Activity
NZ	noise zone
OCGA	Official Code of Georgia
ODRP	Outdoor Recreation Plan
OEA	Office of Economic Adjustment
PCB	polychlorinated biphenyl
PCS	permanent change of station
PEA	Programmatic Environmental Assessment
POL	petroleum, oils, and lubricants
POW	Prisoner of war
RCI	Residential Communities Initiative
RCRA	Resource Conservation and Recovery Act
RCW	Red-cockaded woodpecker
REC	Record of Environmental Consideration
RECON	Regional Economic Systems Model
RFL	Reimbursable forest land
ROI	Region of Influence
RONA	Record of Non-applicability
RPPB	Real Property Planning Board
RTG	Road to Growth
RTV	Rational Threshold Value

Acronym	Definition
SAIA	Small Arms Impact Area
SB	southbound
SCIF	Sensitive Compartmentalized Information Facility
SEA	Supplemental Environmental Assessment
SHPO	State Historic Preservation Officer
SPCCP	Spill Prevention, Contingencies and Countermeasures Plan
SWMU	Solid Waste Management Unit
SWPPP	Storm Water Pollution Prevention Plan
TA	Training area
TCLP	Toxic Characteristic Leaching Procedure
TMDL	Total Maximum Daily Loads
tpy	Tons per year
TRADOC	U.S. Army Training and Doctrine Command
TSCA	Toxic Substance Control Act
USACE	U.S. Army Corps of Engineers
USAG	U.S. Army Garrison
USEPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	Underground storage tank
UXO	Unexploded ordnance
VEC	Valuable environmental component
VOC	Volatile organic compound
WWTP	Waste water treatment plant

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7.0 List of Preparers

USACE, Savannah District
Charles W. (Win) Seyle – Principal Author, NEPA
B.S. Biology
M.S. Zoology
Years Experience: 34 NEPA, Natural Resource studies

David A. Walker – NEPA, Threatened/Endangered Species, Air Quality, Noise
B.S. Natural Resource Management
Years Experience: 22 NEPA, CERCLA

Piper A. Bazemore – GIS
B.A. Geography
Years Experience: 5 GIS

USACE, Mobile District
Todd A. Nettles – RTG Socioeconomics Study
B.S. Economics
Years Experience: 13+

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Appendix A
Valued Environmental Components Maps

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Figure A-1: Valued Environmental Components in the Road to Growth Study Area – Overview Map

- Study Area Boundary
- Cemetery
- Sensitive Area
- Aboveground Storage Tank
- Underground Storage Tank

TES Flora

- Indian Olive
- Pickering's Morning Glory
- Pink Ladyslipper
- Sandhill Rosemary
- Sweet Pitcher Plant
- Air Pollution Source
- Environmental Wells
- Landfill
- Active Env. Cleanup Site
- Closed Env. Cleanup Site
- Kestrel
- Gopher Tortoise
- Loggerhead Shrike
- RCW Area (200 ft buffer)
- Buildings
- Stream
- Wetlands
- Lake
- Training Area Boundary
- Installation Boundary

Projection Based on:
World Geodetic System of 1984
UTM Zone 17 North
Units: Meters

1:26,000

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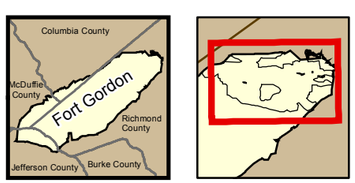
0 0.25 0.5 1 Km

This map documents areas with Environmental restrictions. It was produced by the Savannah District Corps of Engineers - Planning Division in April 2014.



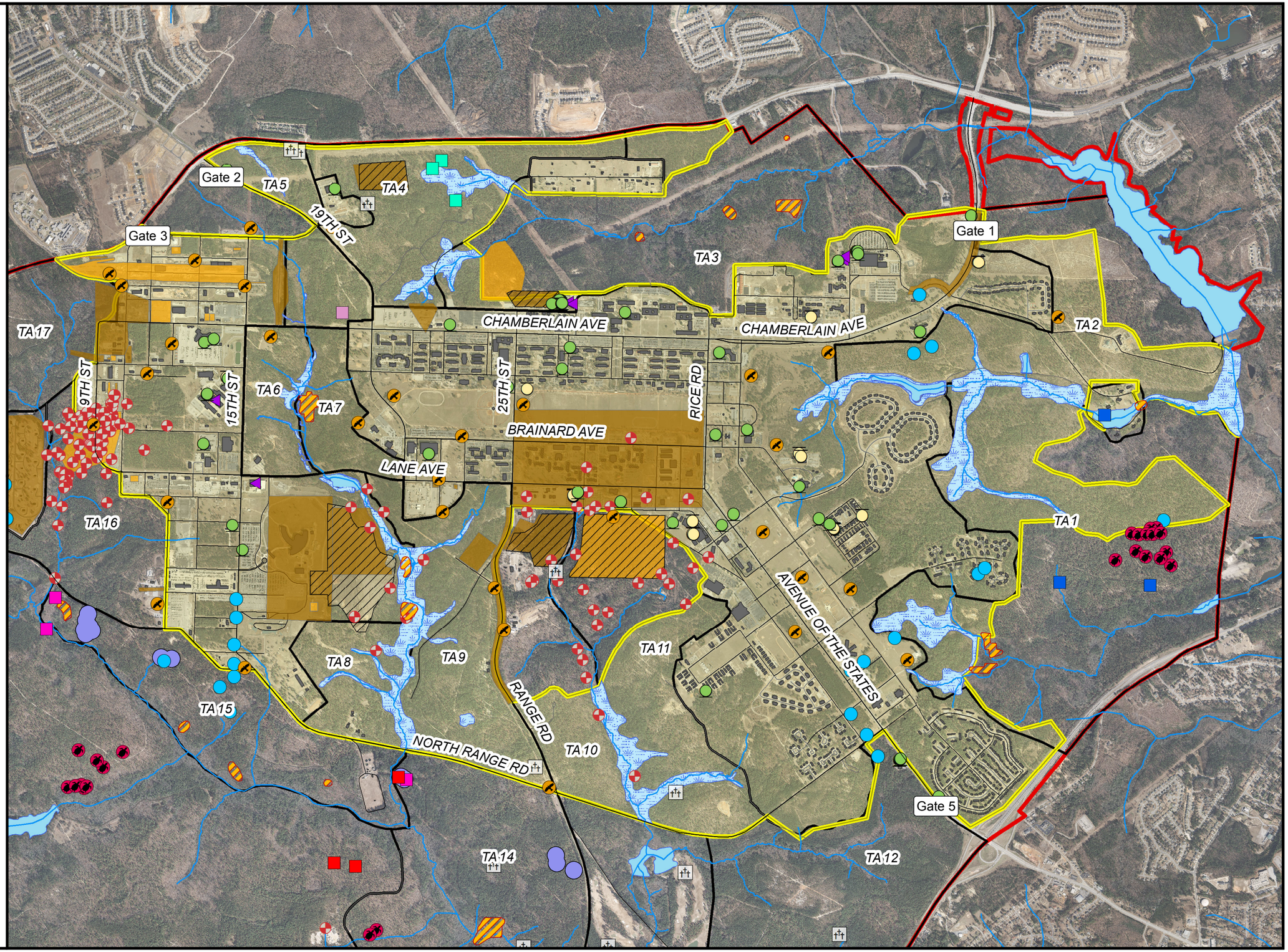


Figure A-2: Valued Environmental Components in the Road to Growth Study Area – Sectional Map 1 of 4

- Study Area Boundary
- Cemetery
- Sensitive Area
- Aboveground Storage Tank
- Underground Storage Tank
- Air Pollution Source
- Environmental Wells

TES Flora

- Indian Olive
- Pickering's Morning Glory
- Pink Ladyslipper
- Sandhill Rosemary
- Sweet Pitcher Plant
- Landfill
- Active Env. Cleanup Site
- Closed Env. Cleanup Site
- Kestrel
- Gopher Tortoise
- Other TES Fauna
- RCW Area
- Buildings
- Stream
- Wetlands
- Lake
- Training Area Boundary
- Installation Boundary

Projection:
World Geodetic System of 1984
UTM Zone 17 North
Units: Meters

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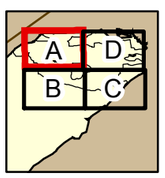
0 0.25 0.5 Km

This map documents areas with Environmental restrictions. It was produced by the Savannah District Corps of Engineers - Planning Division in April 2014.



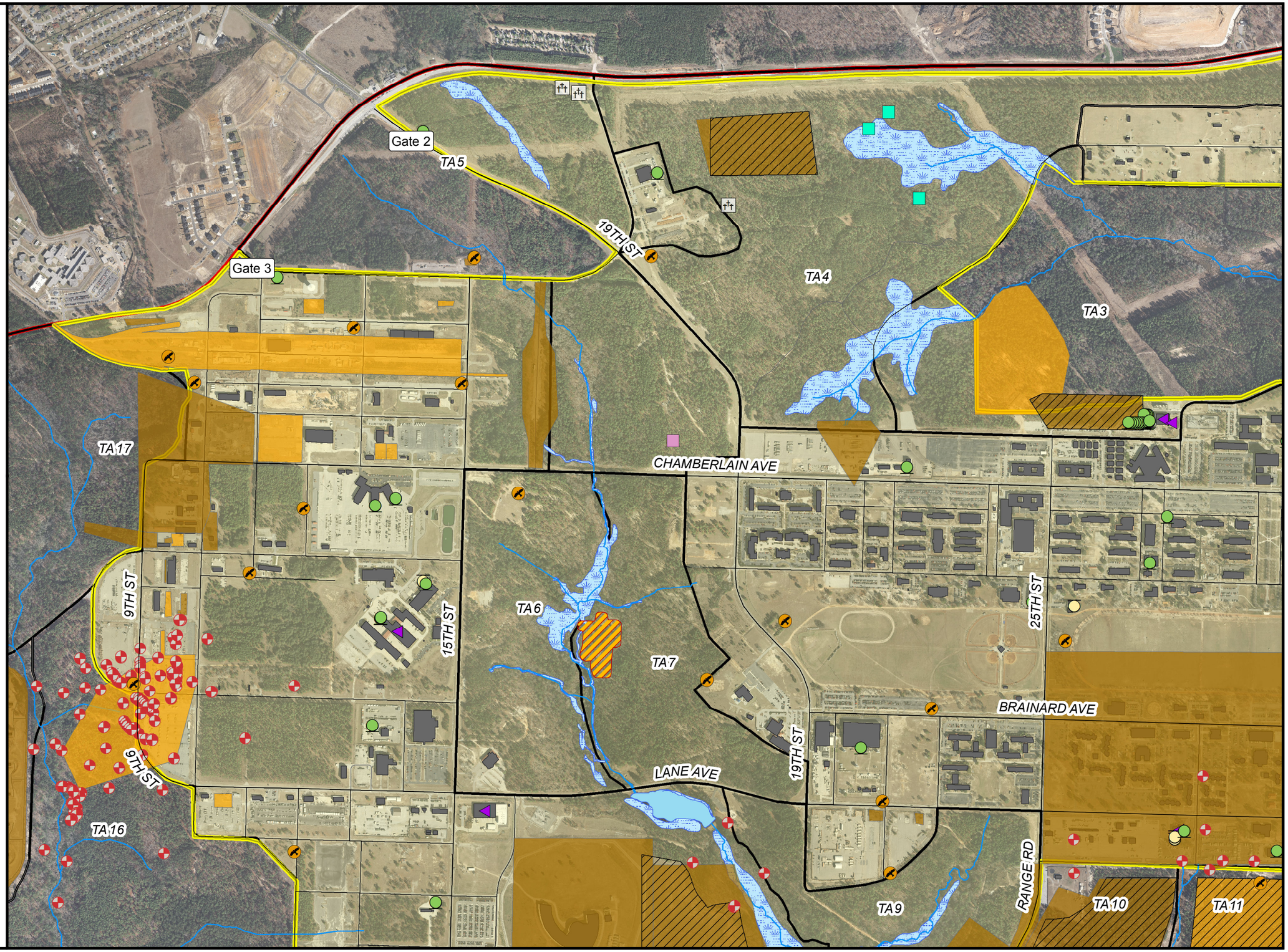


Figure A-3: Valued Environmental Components in the Road to Growth Study Area Sectional Map 2 of 4

- Study Area Boundary
- Aboveground Storage Tank
- Underground Storage Tank
- Air Pollution Source
- Sensitive Area
- Cemetery
- Environmental Wells
- Landfill
- Active Env. Cleanup Site
- Closed Env. Cleanup Site

TES Flora

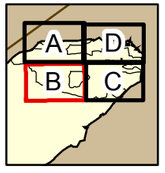
- Indian Olive
- Pickering's Morning Glory
- Pink Ladyslipper
- Sandhill Rosemary
- Sweet Pitcher Plant
- Gopher Tortoise
- Loggerhead Shrike
- Kestrel
- RCW Area
- Buildings
- Stream
- Wetlands
- Lake
- Training Area Boundary
- Installation Boundary

Projection:
World Geodetic System of 1984
UTM Zone 17 North
Units: Meters
1:12,000

0 0.25 Mi

0 0.25 0.5 Km

This map documents areas with Environmental restrictions. It was produced by the Savannah District Corps of Engineers - Planning Division in April 2014.



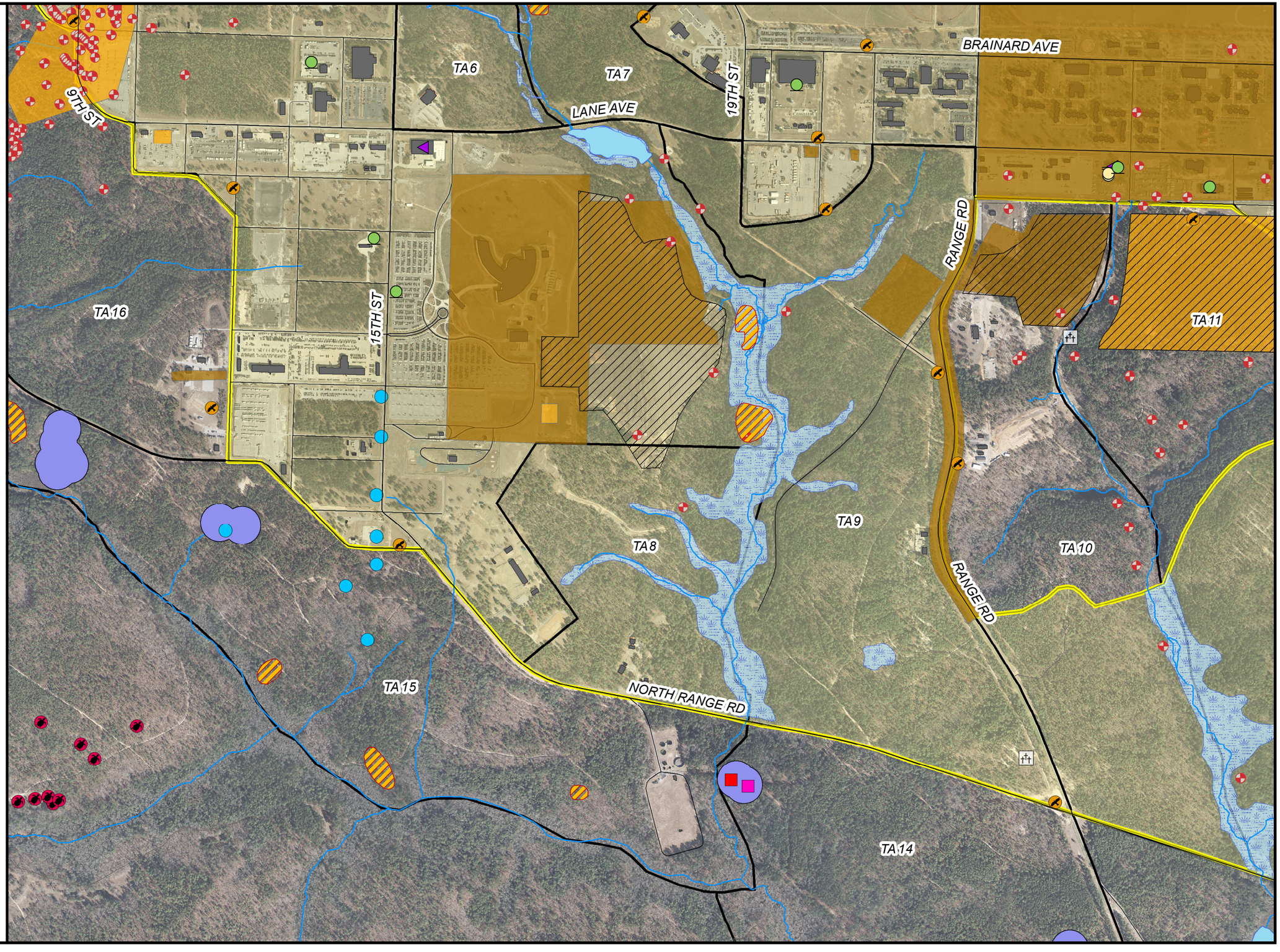


Figure A-4: Valued Environmental Components in the Road to Growth Study Area – Map 3 of 4

- Study Area Boundary
- Aboveground Storage Tank
- Underground Storage Tank
- Air Pollution Source
- Sensitive Area
- Cemetery
- Environmental Wells
- Landfill
- Active Env. Cleanup Site
- Closed Env. Cleanup Site

TES Flora

- Indian Olive
- Pickering's Morning Glory
- Pink Ladyslipper
- Sandhill Rosemary
- Sweet Pitcher Plant
- Gopher Tortoise
- Loggerhead Shrike
- Kestrel
- RCW Area
- Buildings
- Stream
- Wetlands
- Lake
- Training Area Boundary
- Installation Boundary

Projection:
World Geodetic System of 1984
UTM Zone 17 North
Units: Meters

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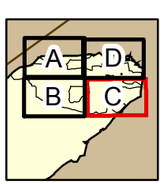
This map documents areas with Environmental restrictions. It was produced by the Savannah District Corps of Engineers - Planning Division in April 2014.



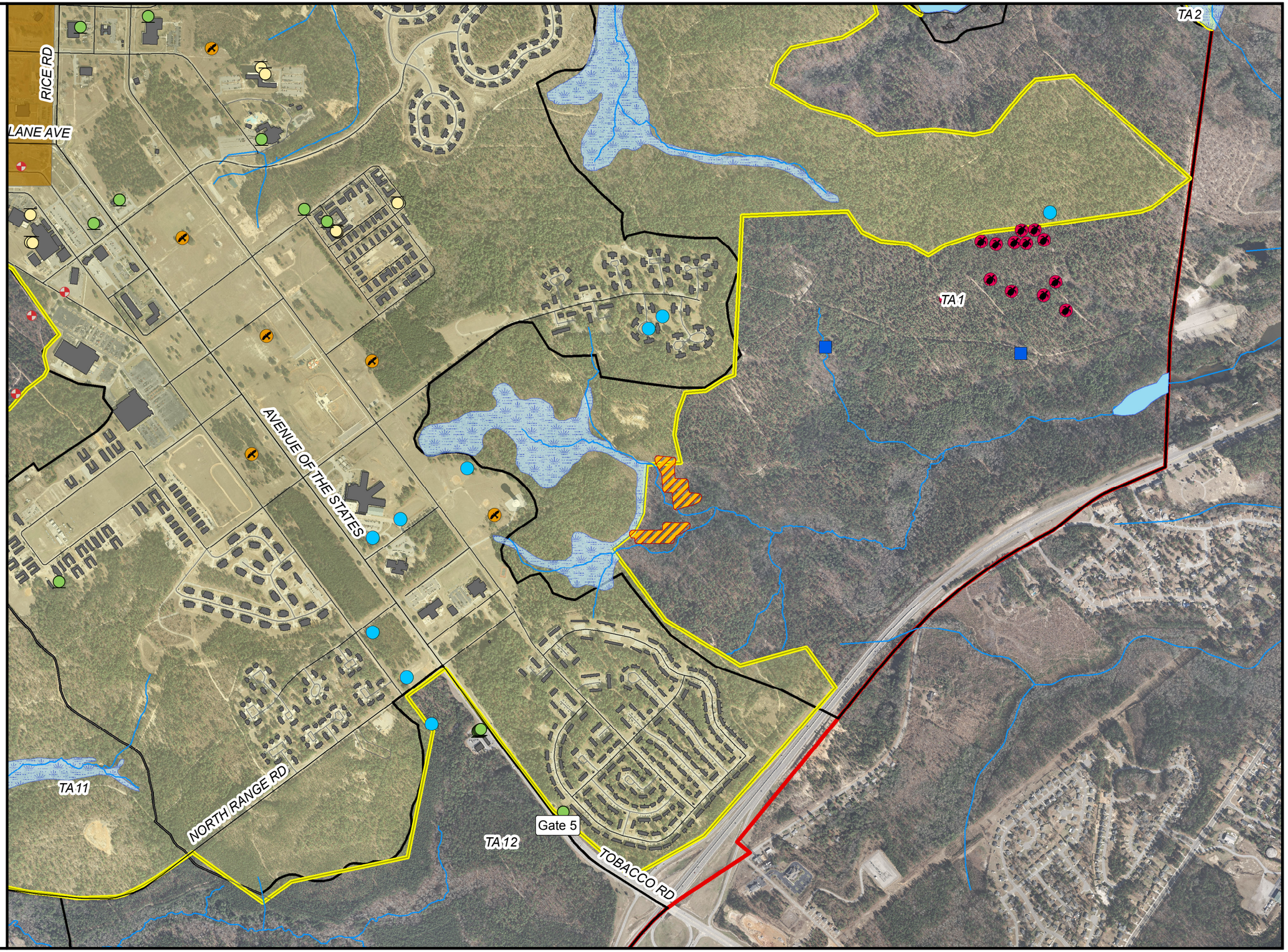


Figure A-5: Valued Environmental Components in the Road to Growth Study Area Sectional Map 4 of 4

- Study Area Boundary
- Cemetery
- Sensitive Area
- Aboveground Storage Tank
- Underground Storage Tank
- Air Pollution Source
- Environmental Wells
- Landfill
- Active Env. Cleanup Site
- Closed Env. Cleanup Site
- Kestrel
- Gopher Tortoise
- Other TES Fauna

TES Flora

- Indian Olive
- Pickering's Morning Glory
- Pink Ladyslipper
- Sandhill Rosemary
- Sweet Pitcher Plant
- RCW Area
- Buildings
- Stream
- Wetlands
- Lake
- Training Area Boundary
- Installation Boundary

Projection:
World Geodetic System of 1984
UTM Zone 17 North
Units: Meters

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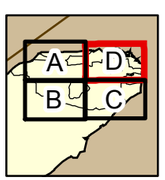
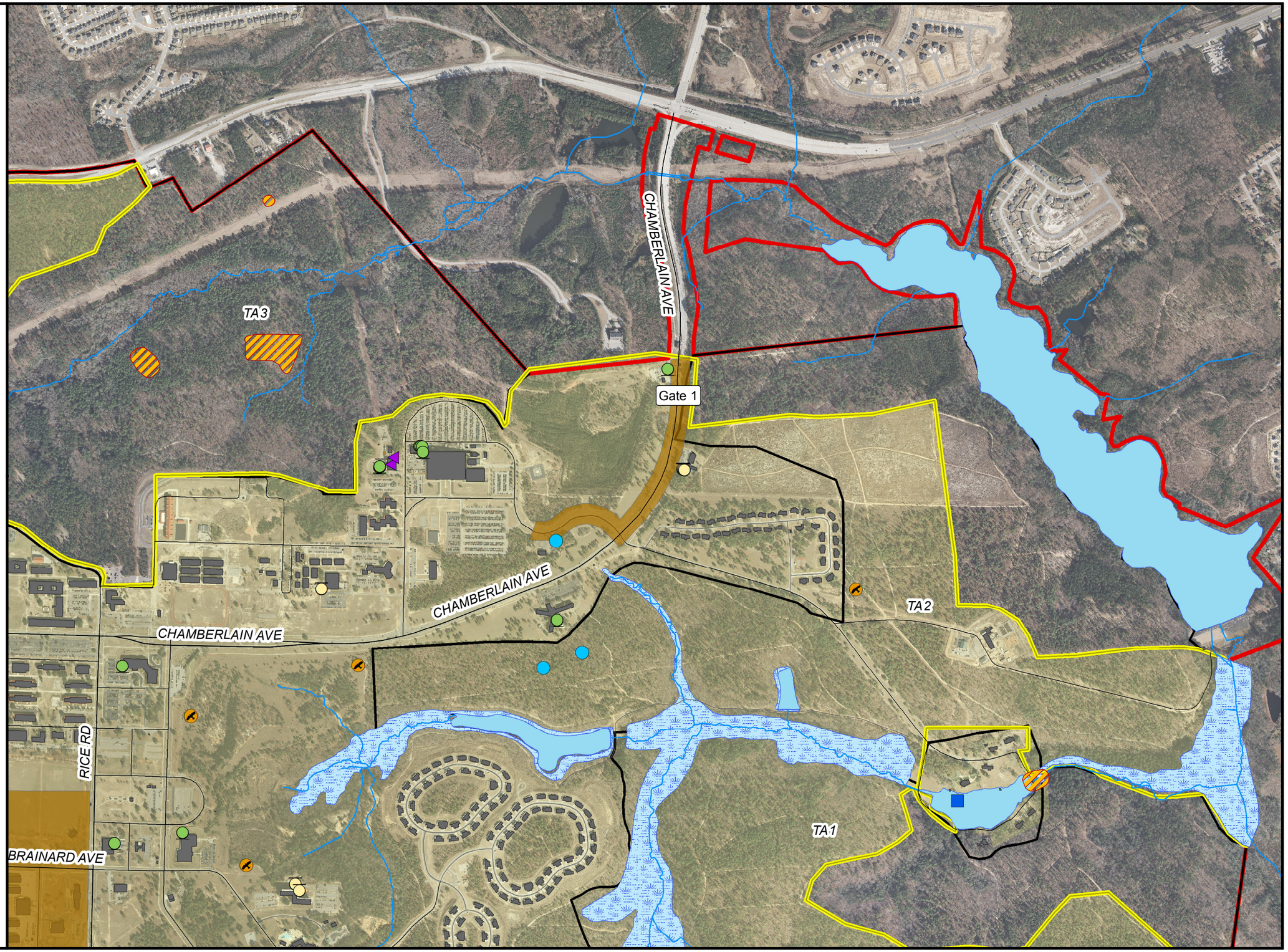
This map documents areas with Environmental restrictions. It was produced by the Savannah District Corps of Engineers - Planning Division in April 2014.





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Appendix B

Agency Coordination

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B.1 Sample Scoping Letter

The following letter is a sample scoping letter sent to the recipients listed in B.2. All letters sent contained identical wording.

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DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT GORDON
307 CHAMBERLAIN AVENUE
FORT GORDON, GEORGIA 30905-5730

REPLY TO
ATTENTION OF:

IMGO-PWE

March 21, 2014

U.S. Fish and Wildlife Service
Ecological Services Office
ATTN: Ms. Debbie Harris
105 Westpark Drive, Suite D
Athens, Georgia 30606

Reference: Programmatic Environmental Assessment for Proposed Road to Growth Stationing Actions at Fort Gordon, Georgia.

Dear Sir/Madame:

The U.S. Army Garrison, Fort Gordon, Georgia, is preparing a Programmatic Environmental Assessment (PEA) to evaluate environmental and socioeconomic effects associated with the potential stationing actions collectively termed "Road to Growth" (RTG) at Fort Gordon, Georgia. The Army's Proposed Action is to conduct restationings and realignments resulting in force increases at Fort Gordon. The proposed action would allow the Army and the Department of Defense (DoD) to maximize operational efficiency of military and civilian units with similar missions. These missions include those related to cyber security, military intelligence, National Security Agency (NSA), the Signal Center of Excellence, and the proposed Army Cyber Center of Excellence.

The purpose of the Proposed Action is to identify the best locations to accommodate the growth that is expected to occur at Fort Gordon. This potential increase in mission and personnel would require renovation of existing facilities and\or construction of up to 1 million square feet on up to 2,000 acres of the installation. This is the maximum level of increase in personnel, renovation/construction, and development acreage to be analyzed in this PEA and is the Army's Preferred Alternative. In accordance with the National Environmental Policy Act and 32 CFR Part 651 *Environmental Analysis of Army Actions; Final Rule* an evaluation of the potential effects (both beneficial and adverse) associated with implementing the proposed action is required. We are requesting your input regarding any concerns that your agency might have about this proposed action.

The alternatives to be evaluated in the PEA include:

a. **High Growth Alternative**: an increase of up to 6,000 personnel and renovation/construction of up to 1 million square feet of facilities on up to 2,000 acres of the installation;

b. **Medium Growth Alternative**: an increase of up to 4,000 personnel and renovation/construction of up to 660,000 square feet of facilities on up to 1,500 acres of the installation; and

c. **Low Growth Alternative:** an increase of up to 3,000 personnel and renovation/construction of up to 500,000 square feet of facilities on up to 1,200 acres of the installation.

The majority of these facilities would be located within the cantonment area, but some may be located in adjacent training areas (Enclosure 1). This PEA will evaluate and identify areas deemed suitable for development within the cantonment area and several adjacent training areas. Development sites will be categorized in the PEA as being in one of three categories based on environmental and/or other constraints, including cultural resources:

a. **RED**: having major constraints that would require relocation of existing facilities, change in land use, or are likely to exceed a significant impact threshold which could require extensive mitigation.

b. **AMBER**: having moderate to minor constraints that could be overcome by design or engineering solutions or that could be mitigated.

c. **GREEN**: having minimal to no constraints.

The goal is to identify developable areas on the installation where the proposed activities can be performed with little to no mitigation required. It is too early in the identification process to determine what resources will be adversely affected by these stationing actions.

This purpose of this letter is to inform you of this study effort, and request:

a. Any information your agency may have on file that might be pertinent to the analysis,
b. Areas of interest that you feel should be considered in the PEA process, and
c. Identification of additional interested parties that should be contacted.

Fort Gordon looks forward to receiving any information and input you may have. We respectfully requests that information be submitted no later April 25, 2014 to be considered in the Draft PEA. Your response should be sent to:

Mr. Robert Drumm
U.S. Army Garrison, Fort Gordon
Directorate of Public Works
IMGO-PWE, Bldg. 14500
Fort Gordon, GA 30905-5209

If you have any questions or require additional information, please do not hesitate to contact Mr. Robert Drumm of Fort Gordon's Natural Resources Branch at (706) 791-6374.

Sincerely,

John L. Ramey
Director of Public Works

Enclosure

B.2 Distribution List for Scoping Letters

Enclosure 2
Scoping Mailing List
Environmental Assessment
Road to Growth, Fort Gordon, Georgia

State and Federal Agencies

U.S. Fish and Wildlife Service
Ecological Services Office
ATTN: Ms. Debbie Harris
105 Westpark Drive, Suite D
Athens, GA 30606

Dr. David Crass, Director
Historic Preservation Office
254 Washington Street, SW
Ground Level
Atlanta, Georgia 30334-9007

Georgia Department of Natural Resources
ATTN: Katrina Morris
Environmental Review Coordinator
2065 U.S. Highway 278 SE
Social Circle, GA 30025-4743

U.S. Environmental Protection Agency
Heinz J. Mueller, Chief
Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960

Georgia Department of Natural Resources
Wildlife Resources Division
ATTN: Lee Taylor
142 Bob Kirk Road, NW
Thomson, GA 30824

U.S. Army Corps of Engineers
ATTN: CESAS-OP-F
100 W. Oglethorpe Avenue
Savannah, GA 31401-3640

Georgia Department of Community Affairs
60 Executive Park South, NE
Atlanta, GA 30329

Georgia Department of Transportation
One Georgia Center
600 West Peachtree NW
Atlanta, GA 30308

Regional and Local Offices

Brier Creek Soil and Water Conservation District
2531 Perkins Green Fork Road
Perkins, GA 30822-5337

Columbia County Soil and Water Conservation District
501 Greene Street, Suite 309
Augusta, GA 30901-4427

McDuffie County Soil and Water Conservation District
P.O. Box 8024
Athens, GA 30603-8024

George Patty, Director
Augusta-Richmond County Planning and Development Department
525 Telfair Street
Augusta, GA 30901

Lillian Easterlin, Executive Director
Jefferson County Chamber of Commerce
P.O. Box 630
302 East Broad Street
Louisville, GA 30434

Department of Planning
Columbia County Government Center
630 Ronald Reagan Drive
Building A, West Wing
P.O. Box 498
Evans, GA 30809

McDuffie County Planning Commission
City/County Government Complex
210 Railroad Street
Thomson, GA 30824

B.3 Scoping Letter Responses

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United States Department of the Interior

Fish and Wildlife Service
105 West Park Drive, Suite D
Athens, Georgia 30606
Phone: (706) 613-9493
Fax: (706) 613-6059

West Georgia Sub-Office
Post Office Box 52560
Fort Benning, Georgia 31995-2560
Phone: (706) 544-6428
Fax: (706) 544-6419

Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

Mr. John L. Ramey
Director of Public Works
307 Chamberlain Avenue
Fort Gordon, Georgia 30905-5730

Re: NG-14-199-Rich

Dear Mr. Ramey:

Thank you for your letter dated March 21, 2014, providing us the opportunity to comment on the preparation of the Programmatic Environmental Assessment (PEA) for the "Road to Growth" (RTG) project at Fort Gordon, Georgia. The PEA will evaluate environmental and socioeconomic effects associated with the RTG potential stationing action theme. The Army is proposing to conduct restationings and realignments resulting in force increases at Fort Gordon. Your letter that states the majority of new facilities would be located within the cantonment area, but some may be located in adjacent training areas. We are providing these comments as technical assistance in accordance with section 7(a) (2) of the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531 *et seq.*) and the Fish and Wildlife Coordination Act (FWCA) (48 Stat 401, as amended, 16 U.S.C. 661 *et seq.*).

Fort Gordon provides habitat for hundreds of species of fish, wildlife, and plants including the federally-endangered Red-cockaded woodpecker (RCW), and species of special concern such as migratory birds, gopher tortoise, and possibly the northern long-eared bat (which was proposed as endangered in 2013). In addition, the installation supports streams, riparian and wetland habitats, sandhills, and longleaf pine ecosystems valuable to a diverse array of wildlife.

Fort Gordon has been proactive in their conservation and recovery of endangered and threatened species in accordance with section 7(a) (1) of the ESA. We support these actions and recommend that the RTG project be designed to continue Fort Gordon's important environmental efforts. Specifically, we recommend:

- The new structures be contained within the cantonment areas to avoid decreasing or degrading RCW, gopher tortoise, northern long-eared bat, and other rare species' habitat.

- The PEA fully evaluate the impacts of alternatives on the RCW including its nesting, foraging, and future recruitment areas and the connectivity between all these habitats.

Analysis of impacts to the RCW should be done in accordance with the Fort Gordon Integrated Natural Resources Management Plan and in compliance with the Fish and Wildlife Service RCW Recovery Plan. Any new development should avoid removal of habitat in the Habitat Management Units (HMU) for RCW or cause a decrease in the Installation Regional Recovery goal of 122 active RCW clusters.

- The PEA address the impacts of additional personnel working throughout the installation and their accompanying infrastructure and training needs on Fort Gordon's federally-protected and rare species, natural habitats, and water resources.

In summary, we strongly recommend that sustainability of the diverse ecosystem at Fort Gordon, particularly natural resource conservation, be integrated in the "Road to Growth" planning and development and that measures be included to comply with the Endangered Species Act.

Thank you again for including the Service in your early planning. Please contact Deborah Harris in our Athens office (706-613-9493 ext. 224) if you have any questions.

Sincerely,

John Doresky
Field Supervisor

cc:
Rob Drumm, Natural Resources Branch, Fort Gordon
Steve Camp, Natural Resources Branch, Fort Gordon

DEPARTMENT OF THE ARMY
SAVANNAH DISTRICT, CORPS OF ENGINEERS
100 W. OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3640

REPLY TO
ATTENTION OF:

JUNE 03 2014

Regulatory Division
SAS-2014-00373

Mr. Robert Drumm
U.S. Army Garrison, Fort Gordon
Directorate of Public Works
IMGO-PWE, Building 14500
Fort Gordon, Georgia 30905-5209

Dear Mr. Drumm:

I refer to your letter dated March 21, 2014, requesting comments from the U.S. Army Corps of Engineers regarding the "Road to Growth Stationing Actions" Programmatic Environmental Assessment for Fort Gordon. This project has been assigned number SAS-2014-00373. Please refer to this number in any future correspondence.

Based on our review of the information received, you are cautioned that your project may involve work in waters of the United States that are considered to be within the jurisdiction of Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act. The placement of dredged or fill material into any waterways and/or their adjacent wetlands, including material re-deposited during mechanized land clearing or excavation of those wetlands, would likely require prior Department of the Army authorization.

To avoid any potential violations at the site, we recommend hiring an experienced environmental consultant to evaluate the property for the presence of jurisdictional waters and wetlands, prior to performing any work at the site. The internet and local phone books are a good place to locate environmental consultants that can assist you with such issues.

To learn more about our program, you may want to access our website located at http://www.sas.usace.army.mil/Missions/Regulatory.aspx.

Thank you in advance for completing our on-line Customer Survey Form located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey. We value your comments and appreciate your taking the time to complete a survey each time you have interaction with our office.

If you have any questions, please call Mr. Donald Hendrix, Regulatory Specialist, Coastal Branch, at 912-652-6210.

Sincerely,

Kimberly L. Garvey
Chief, Permits Section, Coastal Branch

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

April 14, 2014

Mr. Robert Drumm
U.S. Army Garrison, Fort Gordon
Directorate of Public Works
IMGO-PWE, Bldg 14500
Fort Gordon, Georgia 30905-5209

RE: Programmatic EA for Road to Growth Stationing Actions, Fort Gordon
Richmond County
HP-140327-001

Dear Mr. Drumm:

The Historic Preservation Division (HPD) has received initial information concerning the above referenced project. Our comments are offered to assist the Department of the Army & Fort Gordon in complying with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Thank you for notifying us of this proposed project and of the army's goal of identifying developable areas on the installation where road to growth activities can be carried out with little or no impact to natural and cultural resources. In addition, in response to your question about additional interested parties, we suggest that you also contact the Central Savannah Area Regional Commission. We look forward to receiving Section 106 compliance documentation from you when it becomes available.

Please refer to project number **HP-140327-001** in future correspondence regarding this undertaking. If we may be of further assistance, please do not hesitate to contact me at (404) 651-6461 or karen.anderson-cordova@dnr.state.ga.us .

Sincerely,

Karen Anderson-Cordova
Program Manager
Environmental Review & Preservation Planning

KAC

cc. Anne Floyd, Central Savannah Area Regional Commission

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Appendix C
Socioeconomics Study

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Fort Gordon

Socioeconomic

Affected Environment

Fort Gordon is located near Augusta, Georgia. The ROI includes Richmond, Jefferson, McDuffie, and Columbia counties in Georgia.

Population and Demographics. Total installation population as of FY 2013 is approximately 23,000, with the military population (active and reserve) being 15,000. The projected dependents for the military population include 8,370 spouses and 14,400 children. The ROI population is over 373,000.

Table 1 - Population and Demographics

Region of Influence Counties	Population 2012 Estimate	Population Change 2010-2012 (Percent)	Population 2010	Population Change 2000 – 2010 (Percent)
Richmond	203,000	+1	200,000	+0.4
Jefferson	16,500	-2.9	17,000	-1.9
McDuffie	22,000	-1.0	20,000	+3.0
Columbia	132,000	+6.1	125,000	+38.9

*2012 population data base on Census projections

Table 2 - Racial and Ethnic Composition 2012

State and Region of Influence Counties	Caucasian (Percent)	African American (Percent)	Native American (Percent)	Hispanic (Percent)	Asian (Percent)	Multiracial (Percent)	Other (Percent)
Georgia	55.1	31.2	0.5	9.2	3.5	1.8	0.1
Richmond	37.3	54.9	0.4	4.5	1.7	2.4	0
Jefferson	41.6	53.9	0.2	3.4	0.5	0.9	0.1
McDuffie	55.3	40.6	0.4	2.5	0.4	1.4	0.1
Columbia	72.2	16	0.4	5.6	4.1	2.7	0.2

Employment and Housing. Compared to 2010, the 2011 employment (private nonfarm) increased in the State of Georgia, Richmond, Jefferson, McDuffie and Columbia counties. (Table 3).

Income. Of particular importance is a snapshot of the ROI income and related statistics. Employment, median home value and household income, and poverty levels are presented in Table 3. The 2008 federal spending totaled $3,140,000 for the ROI, and state spending was almost $750,000,000.

Table 3 - Employment, Housing, and Income

State and Region of Influence Counties	Employment 2010-2011 (Percent)	Median Home Value 2008-2012 (Dollars)	Median Household Income 2008-2012 (Dollars)	Population Below Poverty Level 2009 (Percent)
Georgia	+0.4	156,400	49,604	17.4
Richmond	+2.9	102,500	38,952	24.4
Jefferson	+3.0	69,700	27,612	30.3
McDuffie	+1.1	105,000	38,855	20.5
Columbia	+1.4	171,400	67,295	8.0

Environmental Consequences

The purpose of this analysis is to determine whether the projected growth at Fort Gordon is considered to have a significant impact on business (sale volumes), income, employment, and population of the local area. The proposed project would affect the local area of Columbia, Jefferson, McDuffie, and Richmond, Georgia. Four alternatives were evaluated using the Economic Impact Forecast System (EIFS) and the Regional Economic Systems model (RECONS), including the no action alternative. Alternative 1 included an increase of 3,000 personnel, alternative 2 includes an increase of 4,000 personnel, and alternative 3 includes an increase of 6,000 personnel. For each alternative, the model assumes that 65% of the increases are military and 35% are civilian and that 100% will live off-post. The average salary for military and civilian personnel was estimated at $41,830.

THE EIFS MODEL

The basis of the EIFS analytical capabilities is the calculation of multipliers that are used to estimate the impacts resulting from Army-related changes in local expenditures or employment. In calculating the multipliers, EIFS uses the economic base model approach, which relies on the ratio of total economic activity to basic economic activity. Basic, in this context, is defined as the production or employment engaged to supply goods and services outside the Region of

Influence (ROI) or by federal activities (such as military installations and their employees). According to economic base theory, the ratio of total income to basic income is measurable (as the multiplier) and sufficiently stable so that future changes in economic activity can be forecast.

The multiplier is interpreted as the total impact on the economy of the region resulting from a unit change in its base sector; for example, a dollar increase in local expenditures due to an expansion of its military installation. EIFS estimates its multipliers using a location quotient approach based on the concentration of industries within the region relative to the industrial concentrations for the nation.

The user inputs into the EIFS model the data elements which describe the Army action: the change in expenditures for local supplies and services; change in civilian or military employment; average annual income of affected civilian or military employees; the percent of civilians expected to relocate due to the Army's action; and the percent of military living on-post.

Once the input variables are entered into the EIFS model, the model is run and projects changes to the local economy's business sales volume, income, employment, and population. These four indicator variables are used to measure and evaluate socioeconomic impacts. Sales volume is the direct and indirect change in local business activity and sales (total retail and wholesale trade sales, total selected service receipts, and value-added by manufacturing). Employment is the total change in local employment due to the proposed action, including not only the direct and secondary changes in local employment, but also those personnel who are initially affected by the military action. Income is the total change in local wages and salaries due to the proposed action, which includes the sum of the direct and indirect wages and salaries, plus the income of the civilian and military personnel affected by the proposed action. Population is the increase or decrease in the local population as a result of the proposed action.

THE SIGNIFICANCE OF SOCIOECONOMIC IMPACTS

Socioeconomic impacts would be considered significant if the action would (a) induce a substantial population growth or decline in an area, either directly or indirectly; or (b) displace substantial numbers of existing housing units or people, necessitating the construction of replacement housing elsewhere.

Once model projections are obtained, the Rational Threshold Value (RTV) profile allows the user to evaluate the significance of the impacts. This analytical tool reviews the historical trends

for the defined region and develops measures of local historical fluctuations in sales volume, income, employment, and population. These evaluations identify the positive and negative changes within which a project can affect the local economy without creating a significant impact. The greatest historical changes define the boundaries that provide a basis for comparing an action's impact on the historical fluctuation in a particular area. Specifically, EIFS sets the boundaries by multiplying the maximum historical deviation of the following variables:

		Increase	**Decrease**
Sales Volume	X	100%	75%
Income	X	100%	67%
Employment	X	100%	67%
Population	X	100%	50%

These boundaries determine the amount of change that will affect an area. The percentage allowances are arbitrary, but sensible. The maximum positive historical fluctuation is allowed with expansion because economic growth is usually considered to be beneficial. While cases of damaging economic growth have been cited, and although the zero-growth concept is being accepted by many local planning groups, military base reductions and closures generally are more injurious to local economics than are expansion.

The major strengths of the RTV are its specificity to the region under analysis and its basis on actual historical data for the region. The EIFS impact model, in combination with the RTV, has proven successful in addressing perceived socioeconomic impacts. The EIFS model and the RTV technique for measuring the intensity of impacts have been reviewed by economic experts and have been deemed theoretically sound.

RECONS MODEL

The U.S Army Corps of Engineers (USACE) Institute for Water Resources, the Louis Berger Group and Michigan State University developed a regional economic impact modeling tool called RECONS (Regional Economic System) to provide estimates of regional and national job creation, and retention and other economic measures such as income, value added, and sales. This modeling tool automates calculations and generates estimates of jobs and other economic measures, such as income and sales associated with military spending, annual Civil Work program spending and stem-from effects for Ports, Inland Water Way, FUSRAP and Recreation. This is done by extracting multipliers and other economic measures from more than 1,500 regional economic models that were built specifically for USACE's project locations. These multipliers were then imported to a database and the tool matches various spending profiles to the matching industry sectors by location to produce economic impact estimates. The tool will be used as a means to document the performance of direct investment spending. The Tool will also allow the USACE to evaluate project and program expenditures associated with annual expenditures.

No Action Alternative (Includes 1,500 personnel increase due to ARCYBER HQ)

Negligible impacts on socioeconomics would be anticipated as part of the No Action Alternative. As part of the No Action Alternative, an increase in military and civilian personnel of 1,500 is anticipated due to the ARCYBER HQ, and therefore, goods and services purchased or changes in military operations at Fort Gordon would be anticipated.

EIFS Model Inputs for Fort Gordon No Action (1,500 person increase)

Indicator Variable	Fort Gordon
Region of Influence (ROI)	
Change in Local Expenditures	$0
Change in Civilian Employment	+525
Average Income of Affected Civilian	$41,830
Percent Expected to Relocate	0%
Change in Military Employment	+975
Average Income of Affected Military	$41,830
Percent of Military Living On-post	0%

Based on the given inputs the outputs are as followed:

EIFS Model Outputs for Fort Gordon No Action

Indicator Variable	Projected Change	Percentage Change	RTV Range
Direct Sales Volume	$37,599,940		
Induced Sales Volume	$78,959,870		
Total Sales Volume	$116,559,800	1.29%	-10.61% to 9.85%
Direct Income	$62,745,000		
Induced Income	$16,813,580		
Total Income	$79,558,580	1.17%	-5.85% to 6.53%
Direct Employment	1,723		
Induced Employment	467		
Total Employment	2,190	1.23%	-9.52% to 3.95%
Local Population	2,428		
Local Off-base Pop.	2,428	0.75%	-1.42% to 2.23%

Sales Volume

Implementing Alternative 1 would result in a less than significant impact on sales volume for the affected Region of Influence. Changes in local business activity include direct sales volume and induced volume. Direct sales volume is the change in the dollar value of sales in the retail and wholesale trade sector and receipts in the service sector resulting from local purchases by

civilian and military personnel. Induced sales volume is the additional sales activity generated as a result of the direct change is sales. Sales volume related to implementing Alternative 1 would be $116,559,800, a 1.29% change.

Income

Implementing Alternative 1 would result in a less than significant impact on income. Changes in income represent the wage and salary payments made to personnel and to the resident workforce. This alternative would increase total income of the Region of Influence by $79,558,580, a change of about 1.17%.

Employment

Implementing Alternative 1 would not result in a significant employment impact. Employment changes include both direct and indirect changes, as well as short and long term changes. The direct long-term change in local employment is the increase in personnel based within the local area, and indirect employment associated with the personnel increase would result in an increase in total employment. Subsequent indirect increases in employment are produced by the multiplier effect resulting from increased spending by the additional staff. Increased military and civilian employment is within the historic RTV range for the Region of Influence (representing a change of 1.23%).

Population

Implementing Alternative 1 would not result in a significant impact on population. This alternative would increase the Region of Influence's local population by 2,428 and local off-base population by 2,428, a change of 0.75%.

Summary Explanation of RECONS model Output No Action:

The total expenditures for the No Action plan are estimated to be $62,745,000. Of this total project expenditure $40,539,601 will be captured within the regional impact area. The rest will be leaked out to the state or the nation. The expenditures made for various services and products are expected to generate additional economic activity in that can be measured in jobs, income, sales and gross regional product as summarized in the following table and includes impacts to the region, the State impact area, and the Nation. Table 1 is the overall economic impacts for this analysis (No Action).

Table 1: Overall Summary Economic Impacts

Impacts	Impact Areas	Regional	State	National
Total Spending		$62,745,000	$62,745,000	$62,745,000
Direct Impact				
	Output	$40,539,601	$60,757,787	$62,738,459
	Job	573.26	929.09	973.40
	Labor Income	$32,041,263	$47,791,930	$49,139,338
	GRP	$35,811,967	$52,425,405	$53,785,164
Total Impact				
	Output	$60,904,678	$122,066,104	$164,703,036
	Job	765.91	1,413.94	1,647.97
	Labor Income	$38,239,227	$69,258,004	$82,791,409
	GRP	$48,030,683	$91,060,645	$112,943,889

Table 2: Economic Impact at Regional Level

IMPLAN No.	Industry Sector	Sales	Jobs	Labor Income	GRP
	Direct Effects				
386	Business support services	$9,010,238	216.86	$4,357,865	$4,282,605
439	* Employment and payroll only (federal govt, non-military)	$31,529,363	356.40	$27,683,398	$31,529,362
	Total Direct Effects	$40,539,601	573.26	$32,041,263	$35,811,967
	Secondary Effects	$20,365,077	192.65	$6,197,964	$12,218,716
	Total Effects	**$60,904,678**	**765.91**	**$38,239,227**	**$48,030,683**

1
2

Table 3: Economic Impact at State Level

IMPLAN No.	Industry Sector	Sales	Jobs	Labor Income	GRP
	Direct Effects				
386	Business support services	$18,981,735	456.86	$10,791,483	$10,649,353
439	* Employment and payroll only (federal govt, non-military)	$41,776,052	472.22	$37,000,447	$41,776,052
	Total Direct Effects	$60,757,787	929.09	$47,791,930	$52,425,405
	Secondary Effects	$61,308,318	484.85	$21,466,074	$38,635,240
	Total Effects	**$122,066,104**	**1,413.94**	**$69,258,004**	**$91,060,645**

Table 4: Economic Impact at National Level

IMPLAN No.	Industry Sector	Sales	Jobs	Labor Income	GRP

	Direct Effects				
386	Business support services	$20,699,313	498.20	$11,899,665	$11,746,018
439	* Employment and payroll only (federal govt, non-military)	$42,039,146	475.20	$37,239,673	$42,039,146
	Total Direct Effects	$62,738,459	973.40	$49,139,338	$53,785,164
	Secondary Effects	$101,964,577	674.57	$33,652,071	$59,158,725
	Total Effects	**$164,703,036**	**1,647.97**	**$82,791,409**	**$112,943,889**

The following table shows the top ten industries that typically benefit from the types of expenditures made for this project. This analysis was conducted at the national level and thus it cannot be guaranteed that these industries would be present in the regional impact area as analyzed.

Table 5: Top 10 Industries

Rank	Industry (millions)	IMPLAN No.	% of Total Employment
1	* Employment and payroll only (federal govt, non-military)	439	22 %
2	Business support services	386	17 %
3	Food services and drinking places	413	5 %
4	Real estate establishments	360	3 %
5	Employment services	382	2 %
6	Offices of physicians, dentists, and other health practitioners	394	2 %
7	Private hospitals	397	2 %
8	Wholesale trade businesses	319	2 %
9	Retail Stores - General merchandise	329	2 %
10	Nursing and residential care facilities	398	2 %
			60 %

Alternatives with additional Personnel Increases:

The following are the EIFS/RECONS inputs and output data and the RTV values for the ROI:

Summary Explanation of the EIFS Model Output

The outputs shown in this section are based on the following input data provided:

EIFS Model Inputs for Fort Gordon Low Growth Alternative (4,500 person increase)

Indicator Variable	Fort Gordon
Region of Influence (ROI)	
Change in Local Expenditures	$0
Change in Civilian Employment	+1,575
Average Income of Affected Civilian	$41,830
Percent Expected to Relocate	0%
Change in Military Employment	+2,925
Average Income of Affected Military	$41,830
Percent of Military Living On-post	0%

Based on the given inputs the outputs are as followed:

EIFS Model Outputs for Fort Gordon Low Growth Alternative

Indicator Variable	Projected Change	Percentage Change	RTV Range
Direct Sales Volume	$112,799,800		
Induced Sales Volume	$236,879,600		
Total Sales Volume	$349,679,500	3.88%	-10.61% to 9.85%
Direct Income	$188,235,000		
Induced Income	$50,440,750		
Total Income	$238,675,800	3.50%	-5.85% to 6.53%
Direct Employment	5,137		
Induced Employment	1,402		
Total Employment	6,569	3.68%	-9.52% to 3.95%
Local Population	7,283		
Local Off-base Pop.	7,283	2.26%	-1.42% to 2.23%

Sales Volume

Implementing the Low Growth Alternative would result in a less than significant impact on sales volume for the affected Region of Influence. Changes in local business activity include direct sales volume and induced volume. Direct sales volume is the change in the dollar value of sales in the retail and wholesale trade sector and receipts in the service sector resulting from

local purchases by civilian and military personnel. Induced sales volume is the additional sales activity generated as a result of the direct change is sales. Sales volume related to implementing Alternative 1 would be $349,679,500, a 3.88% change.

Income

Implementing the Low Growth Alternative would result in a less than significant impact on income. Changes in income represent the wage and salary payments made to personnel and to the resident workforce. This alternative would increase total income of the Region of Influence by $238,675,800, a change of about 3.50%.

Employment

Implementing the Low Growth Alternative would not result in a significant employment impact. Employment changes include both direct and indirect changes, as well as short and long term changes. The direct long-term change in local employment is the increase in personnel based within the local area, and indirect employment associated with the personnel increase would result in an increase in total employment. Subsequent indirect increases in employment are produced by the multiplier effect resulting from increased spending by the additional staff. Increased military and civilian employment is within the historic RTV range for the Region of Influence (representing a change of 3.68%).

Population

Implementing the Low Growth Alternative would result in a change just above the RTV for population. This alternative would increase the Region of Influence's local population by 7,283 and local off-base population by 7,283, a change of 2.26% (RTV equal to 2.23%).

Summary Explanation of RECONS model Output – Low Growth Alternative:

The anticipated change in expenditures for the Low Growth Alternative is estimated at $188,235,000. Of this total project expenditure $121,618,802 will be captured within the regional impact area. The remaining will be leaked out to the state or the nation. The expenditures made for various services and products are expected to generate additional economic activity in that can be measured in jobs, income, sales and gross regional product as summarized in the following table and includes impacts to the region, the State impact area, and the Nation. Table 6 is the overall economic impacts for this analysis.

Table 6: Overall Summary Economic Impacts

Impacts	Impact Areas	Regional	State	National
Total Spending		$188,235,000	$188,235,000	$188,235,000
Direct Impact				
	Output	$121,618,802	$182,273,360	$188,215,377
	Job	1,719.78	2,787.26	2,920.20
	Labor Income	$96,123,790	$143,375,789	$147,418,015
	GRP	$107,435,902	$157,276,214	$161,355,491
Total Impact				
	Output	$182,714,033	$366,198,313	$494,109,109
	Job	2,297.73	4,241.81	4,943.91
	Labor Income	$114,717,682	$207,774,011	$248,374,228
	GRP	$144,092,050	$273,181,934	$338,831,666

Table 7: Economic Impact at Regional Level

IMPLAN No.	Industry Sector	Sales	Jobs	Labor Income	GRP
	Direct Effects				
386	Business support services	$27,030,715	650.59	$13,073,595	$12,847,815
439	* Employment and payroll only (federal govt, non-military)	$94,588,088	1,069.19	$83,050,195	$94,588,087
	Total Direct Effects	$121,618,802	1,719.78	$96,123,790	$107,435,902
	Secondary Effects	$61,095,231	577.95	$18,593,892	$36,656,148
	Total Effects	**$182,714,033**	**2,297.73**	**$114,717,682**	**$144,092,050**

Table 8: Economic Impact at State Level

IMPLAN No.	Industry Sector	Sales	Jobs	Labor Income	GRP
	Direct Effects				
386	Business support services	$56,945,205	1,370.59	$32,374,448	$31,948,059
439	* Employment and payroll only (federal govt, non-military)	$125,328,155	1,416.67	$111,001,342	$125,328,155
	Total Direct Effects	$182,273,360	2,787.26	$143,375,789	$157,276,214
	Secondary Effects	$183,924,953	1,454.55	$64,398,222	$115,905,720
	Total Effects	**$366,198,313**	**4,241.81**	**$207,774,011**	**$273,181,934**

Table 9: Economic Impact at National Level

IMPLAN No.	Industry Sector	Sales	Jobs	Labor Income	GRP
	Direct Effects				
386	Business support services	$62,097,939	1,494.61	$35,698,996	$35,238,053
439	* Employment and payroll only (federal govt, non-military)	$126,117,437	1,425.59	$111,719,019	$126,117,437
	Total Direct Effects	$188,215,377	2,920.20	$147,418,015	$161,355,491
	Secondary Effects	$305,893,732	2,023.71	$100,956,213	$177,476,176
	Total Effects	**$494,109,109**	**4,943.91**	**$248,374,228**	**$338,831,666**

The following table shows the top ten industries that typically benefit from the types of expenditures made for this project. This analysis was conducted at the national level and thus it cannot be guaranteed that these industries would be present in the regional impact area as analyzed.

Table 10: Top 10 Industries

Rank	Industry (millions)	IMPLAN No.	% of Total Employment
1	* Employment and payroll only (federal govt, non-military)	439	22 %
2	Business support services	386	17 %
3	Food services and drinking places	413	5 %
4	Real estate establishments	360	3 %
5	Employment services	382	2 %
6	Offices of physicians, dentists, and other health practitioners	394	2 %
7	Private hospitals	397	2 %
8	Wholesale trade businesses	319	2 %
9	Retail Stores - General merchandise	329	2 %
10	Nursing and residential care facilities	398	2 %
			60 %

EIFS Model Inputs for Fort Gordon Medium Growth Alternative (5,500 person increase)

Indicator Variable	Fort Gordon
Region of Influence (ROI)	
Change in Local Expenditures	$0
Change in Civilian Employment	+1,925
Average Income of Affected Civilian	$41,830
Percent Expected to Relocate	0%
Change in Military Employment	+3,575
Average Income of Affected Military	$41,830
Percent of Military Living On-post	0%

Based on the given inputs the outputs are as followed:

EIFS Model Outputs for Fort Gordon Medium Growth Alternative

Indicator Variable	Projected Change	Percentage Change	RTV Range
Direct Sales Volume	$137,866,400		
Induced Sales Volume	$289,519,600		
Total Sales Volume	$427,386,000	4.74%	-10.61% to 9.85%
Direct Income	$230,065,000		
Induced Income	$61,649,810		
Total Income	$291,714,800	4.27%	-5.85% to 6.53%
Direct Employment	6,316		
Induced Employment	1,713		
Total Employment	8,029	4.50%	-9.52% to 3.95%
Local Population	8,902		
Local Off-base Pop.	8,902	2.76%	-1.42% to 2.23%

Sales Volume

Implementing the Medium Growth Alternative would result in a less than significant impact on sales volume for the affected Region of Influence. Changes in local business activity include direct sales volume and induced volume. Direct sales volume is the change in the dollar value of sales in the retail and wholesale trade sector and receipts in the service sector resulting from local purchases by civilian and military personnel. Induced sales volume is the additional sales activity generated as a result of the direct change is sales. Sales volume related to implementing this alternative would be $427,386,000, a 4.74% change.

Income

Implementing the Medium Growth Alternative would result in a less than significant impact on income. Changes in income represent the wage and salary payments made to personnel and to the resident workforce. This alternative would increase total income of the Region of Influence by $291,714,800, a change of about 4.27%.

Employment

Implementing the Medium Growth Alternative would result in a significant employment impact. Employment changes include both direct and indirect changes, as well as short and long term changes. The direct long-term change in local employment is the increase in personnel based within the local area, and indirect employment associated with the personnel increase would result in an increase in total employment. Subsequent indirect increases in employment are produced by the multiplier effect resulting from increased spending by the additional staff. Increased military and civilian employment is outside of the historic RTV range for the Region of Influence (representing a change of 4.50%).

Population

Implementing the Medium Growth Alternative would result in a significant impact on population. This alternative would increase the Region of Influence's local population by 8,902 and local off-base population by 8,902, a change of 2.76%.

Summary Explanation of RECONS model Output - Medium Growth Alternative:

The anticipated change in expenditures for alternative 2 is estimated at $230,065,000. Of this total project expenditure $148,645,203 will be captured within the regional impact area. The remaining will be leaked out to the state or the nation. The expenditures made for various services and products are expected to generate additional economic activity in that can be measured in jobs, income, sales and gross regional product as summarized in the following table and includes impacts to the region, the State impact area, and the Nation. Table 11 is the overall economic impacts of the Medium Growth Alternative.

Table 11: Overall Summary Economic Impacts

Impacts	Impact Areas	Regional	State	National
Total Spending		$230,065,000	$230,065,000	$230,065,000
Direct Impact				
	Output	$148,645,203	$222,778,551	$230,041,016
	Job	2,101.96	3,406.65	3,569.13
	Labor Income	$117,484,632	$175,237,076	$180,177,574
	GRP	$131,310,547	$192,226,484	$197,212,266
Total Impact				
	Output	$223,317,152	$447,575,715	$603,911,133
	Job	2,808.34	5,184.43	6,042.56
	Labor Income	$140,210,500	$253,946,014	$303,568,501
	GRP	$176,112,506	$333,889,030	$414,127,592

Table 12: Economic Impact at Regional Level

IMPLAN No.	Industry Sector	Sales	Jobs	Labor Income	GRP
	Direct Effects				
386	Business support services	$33,037,540	795.17	$15,978,839	$15,702,885
439	* Employment and payroll only (federal govt, non-military)	$115,607,663	1,306.79	$101,505,793	$115,607,662
	Total Direct Effects	$148,645,203	2,101.96	$117,484,632	$131,310,547
	Secondary Effects	$74,671,949	706.38	$22,725,868	$44,801,959
	Total Effects	**$223,317,152**	**2,808.34**	**$140,210,500**	**$176,112,506**

Table 13: Economic Impact at State Level

IMPLAN No.	Industry Sector	Sales	Jobs	Labor Income	GRP
	Direct Effects				
386	Business support services	$69,599,695	1,675.16	$39,568,770	$39,047,628
439	* Employment and payroll only (federal govt, non-military)	$153,178,856	1,731.49	$135,668,306	$153,178,856
	Total Direct Effects	$222,778,551	3,406.65	$175,237,076	$192,226,484
	Secondary Effects	$224,797,164	1,777.78	$78,708,938	$141,662,547
	Total Effects	**$447,575,715**	**5,184.43**	**$253,946,014**	**$333,889,030**

Table 14: Economic Impact at National Level

IMPLAN No.	Industry Sector	Sales	Jobs	Labor Income	GRP
	Direct Effects				
386	Business support services	$75,897,482	1,826.74	$43,632,106	$43,068,732
439	* Employment and payroll only (federal govt, non-military)	$154,143,535	1,742.39	$136,545,468	$154,143,535
	Total Direct Effects	$230,041,016	3,569.13	$180,177,574	$197,212,266
	Secondary Effects	$373,870,117	2,473.43	$123,390,927	$216,915,326
	Total Effects	**$603,911,133**	**6,042.56**	**$303,568,501**	**$414,127,592**

The following table shows the top ten industries that typically benefit from the types of expenditures made for this project. This analysis was conducted at the national level and thus it cannot be guaranteed that these industries would be present in the regional impact area as analyzed.

Table 15: Top 10 Industries

Rank	Industry (millions)	IMPLAN No.	% of Total Employment
1	* Employment and payroll only (federal govt, non-military)	439	22 %
2	Business support services	386	17 %
3	Food services and drinking places	413	5 %
4	Real estate establishments	360	3 %
5	Employment services	382	2 %
6	Offices of physicians, dentists, and other health practitioners	394	2 %
7	Private hospitals	397	2 %
8	Wholesale trade businesses	319	2 %
9	Retail Stores - General merchandise	329	2 %
10	Nursing and residential care facilities	398	2 %
			60 %

EIFS Model Inputs for Fort Gordon High Growth Alternative (7,500 person increase)

Indicator Variable	Fort Gordon
Region of Influence (ROI)	
Change in Local Expenditures	$0
Change in Civilian Employment	+2,625
Average Income of Affected Civilian	$41,830
Percent Expected to Relocate	0%
Change in Military Employment	+4,875
Average Income of Affected Military	$41,830
Percent of Military Living On-post	0%

Based on the given inputs the outputs are as followed:

EIFS Model Outputs for Fort Gordon Alternative 3

Indicator Variable	Projected Change	Percentage Change	RTV Range
Direct Sales Volume	$187,999,700		
Induced Sales Volume	$394,799,400		
Total Sales Volume	$582,799,100	6.47%	-10.61% to 9.85%
Direct Income	$313,725,000		
Induced Income	$84,067,920		
Total Income	$397,792,900	5.83%	-5.85% to 6.53%
Direct Employment	8,613		
Induced Employment	2,336		
Total Employment	10,949	6.13%	-9.52% to 3.95%
Local Population	12,139		
Local Off-base Pop.	12,139	3.76%	-1.42% to 2.23%

Sales Volume

Implementing the High Growth Alternative would result in a less than significant impact on sales volume for the affected Region of Influence. Changes in local business activity include direct sales volume and induced volume. Direct sales volume is the change in the dollar value of sales in the retail and wholesale trade sector and receipts in the service sector resulting from local purchases by civilian and military personnel. Induced sales volume is the additional sales activity generated as a result of the direct change is sales. Sales volume related to implementing Alternative 3 would be $582,799,100, a 6.47% change.

Income

Implementing the High Growth Alternative would result in a less than significant impact on income. Changes in income represent the wage and salary payments made to personnel and to the resident workforce. This alternative would increase total income of the Region of Influence by $397,792,900, a change of about 5.83%.

Employment

Implementing the High Growth Alternative would result in a significant employment impact. Employment changes include both direct and indirect changes, as well as short and long term changes. The direct long-term change in local employment is the increase in personnel based within the local area, and indirect employment associated with the personnel increase would result in an increase in total employment. Subsequent indirect increases in employment are produced by the multiplier effect resulting from increased spending by the additional staff. Increased military and civilian employment is outside of the historic RTV range for the Region of Influence (representing a change of 6.13%).

Population

Implementing the High Growth Alternative would result in a significant impact on population. This alternative would increase the Region of Influence's local population by 12,139 and local off-base population by 12,139, a change of 3.76%.

Summary Explanation of RECONS model Output – High Growth Alternative:

The anticipated change in expenditures for the High Growth Alternative is estimated at $313,725,000. Of this total project expenditure $202,698,003 will be captured within the regional impact area. The remaining will be leaked out to the state or the nation. The expenditures made for various services and products are expected to generate additional economic activity in that can be measured in jobs, income, sales and gross regional product as summarized in the following table and includes impacts to the region, the State impact area, and the Nation. Table 16 is the overall economic impacts of the High Growth Alternative.

Table 16: Overall Summary Economic Impacts

Impacts / Impact Areas		Regional	State	National
Total Spending		$313,725,000	$313,725,000	$313,725,000
Direct Impact				
	Output	$202,698,003	$303,788,933	$313,692,295
	Job	2,866.31	4,645.43	4,867.00
	Labor Income	$160,206,316	$238,959,649	$245,696,692
	GRP	$179,059,837	$262,127,023	$268,925,818
Total Impact				
	Output	$304,523,389	$610,330,521	$823,515,181
	Job	3,829.55	7,069.68	8,239.85
	Labor Income	$191,196,137	$346,290,018	$413,957,047
	GRP	$240,153,417	$455,303,223	$564,719,444

Table 17: Economic Impact at Regional Level

IMPLAN No.	Industry Sector	Sales	Jobs	Labor Income	GRP
	Direct Effects				
386	Business support services	$45,051,191	1,084.32	$21,789,325	$21,413,025
439	* Employment and payroll only (federal govt, non-military)	$157,646,813	1,781.99	$138,416,991	$157,646,812
	Total Direct Effects	$202,698,003	2,866.31	$160,206,316	$179,059,837
	Secondary Effects	$101,825,386	963.24	$30,989,820	$61,093,580
	Total Effects	**$304,523,389**	**3,829.55**	**$191,196,137**	**$240,153,417**

Table 18: Economic Impact at State Level

IMPLAN No.	Industry Sector	Sales	Jobs	Labor Income	GRP
	Direct Effects				
386	Business support services	$94,908,675	2,284.31	$53,957,413	$53,246,766
439	* Employment and payroll only (federal govt, non-military)	$208,880,258	2,361.12	$185,002,236	$208,880,258
	Total Direct Effects	$303,788,933	4,645.43	$238,959,649	$262,127,023
	Secondary Effects	$306,541,588	2,424.25	$107,330,369	$193,176,200
	Total Effects	**$610,330,521**	**7,069.68**	**$346,290,018**	**$455,303,223**

Table 19: Economic Impact at National Level

IMPLAN No.	Industry Sector	Sales	Jobs	Labor Income	GRP
	Direct Effects				
386	Business support services	$103,496,566	2,491.01	$59,498,327	$58,730,089
439	* Employment and payroll only (federal govt, non-military)	$210,195,729	2,375.99	$186,198,365	$210,195,729
	Total Direct Effects	$313,692,295	4,867.00	$245,696,692	$268,925,818
	Secondary Effects	$509,822,887	3,372.86	$168,260,355	$295,793,626
	Total Effects	**$823,515,181**	**8,239.85**	**$413,957,047**	**$564,719,444**

The following table shows the top ten industries that typically benefit from the types of expenditures made for this project. This analysis was conducted at the national level and thus it cannot be guaranteed that these industries would be present in the regional impact area as analyzed.

Table 20: Top 10 Industries

Rank	Industry (millions)	IMPLAN No.	% of Total Employment
1	* Employment and payroll only (federal govt, non-military)	439	22 %
2	Business support services	386	17 %
3	Food services and drinking places	413	5 %
4	Real estate establishments	360	3 %
5	Employment services	382	2 %
6	Offices of physicians, dentists, and other health practitioners	394	2 %
7	Private hospitals	397	2 %
8	Wholesale trade businesses	319	2 %
9	Retail Stores - General merchandise	329	2 %
10	Nursing and residential care facilities	398	2 %
			60 %

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Appendix D
Traffic Study

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Traffic Report is on CD in binder pocket

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