Check Copy
Environmental Assessment
Base Realignment and Closure Recommendations and Master Planning Activities
Walter Reed Army Medical Center
Forest Glen Annex, Maryland

prepared by

U.S. Army Corps of Engineers, Mobile District

with Technical Assistance from

Tetra Tech, Inc.
Fairfax, Virginia 22030

July 2008

Check Copy Environmental Assessment

Implementation of Base Realignment and Closure Recommendations and Master Planning Activities

Walter Reed Army Medical Center Forest Glen Annex, Maryland

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July 2008

ENVIRONMENTAL ASSESSMENT

***LEAD AGENCY*:** Walter Reed Army Medical Center Forest Glen Annex, Maryland

***TITLE OF PROPOSED ACTION*:** Implementation of Base Realignment and Closure Recommendations and Master Planning Activities at Walter Reed Army Medical Center Forest Glen Annex, Maryland

***AFFECTED JURISDICTION*:** Montgomery County, Maryland

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ABSTRACT: This Environmental Assessment (EA) considers the proposed implementation of the Base Realignment and Closure Commission's recommendations and master planning activities at Walter Reed Army Medical Center Forest Glen Annex, Maryland. The EA identifies, evaluates, and documents the effects of facility construction, maintenance, management, and renovation to accommodate the changes mandated by the BRAC Commission and under the proposed Real Property Master Plan for the installation. A No Action Alternative is also evaluated. Implementation of the proposed action is not expected to result in significant environmental impacts. Therefore, preparation of an Environmental Impact Statement is not required and a Finding of No Significant Impact (FNSI) will be published in accordance with the National Environmental Policy Act.

REVIEW COMMENT DEADLINE: The EA and draft FNSI are available for review and comment for 30 days. A Notice of Availability of the documents was published in [TBD-newspapers] on August 20, 2008; the document review period will end, therefore, on September 19, 2008. Copies of the EA and draft FNSI can be obtained by contacting Ms. Anne Delp, WRAMC BRAC Office, Building 1, 6900 Georgia Avenue NW, Washington, DC, 20307-5001, or by e-mail requests to Anne.Delp@amedd.army.mil. A copy has also been provided to the following libraries: Silver Spring Branch Library (8901 Colesville Road, Silver Spring, MD) and the WRAMC Main Section Library, Washington, DC. Comments on the EA and draft FNSI should be submitted to the WRAMC BRAC Office at the physical address or e-mail address given above by no later than September 19, 2008.

ENVIRONMENTAL ASSESSMENT ORGANIZATION

This Environmental Assessment addresses the proposed action to implement the BRAC Commission's recommendations and master planning activities at Walter Reed Army Medical Center Forest Glen Annex, Maryland. It has been developed in accordance with the National Environmental Policy Act and implementing regulations issued by the Council on Environmental Quality (Title 40 *Code of Federal Regulations* [CFR] 1500–1508) and the Army (32 CFR 651). Its purpose is to inform decision-makers and the public of the likely environmental and socioeconomic consequences of the proposed action and alternatives.

An ***EXECUTIVE SUMMARY*** briefly describes the proposed action, environmental and socioeconomic consequences, and mitigation measures.

CONTENTS

SECTION 1.0: ***PURPOSE, NEED, AND SCOPE*** summarizes the purpose of and need for the proposed action and describes the scope of the environmental impact analysis process.

SECTION 2.0: ***PROPOSED ACTION*** describes the proposed action to implement the BRAC Commission's recommendations and master planning activities at Walter Reed Army Medical Center Forest Glen Annex.

SECTION 3.0: ***ALTERNATIVES*** examines alternatives to implementing the proposed action.

SECTION 4.0: ***AFFECTED ENVIRONMENT AND CONSEQUENCES*** describes the existing environmental and socioeconomic setting at Walter Reed Army Medical Center Forest Glen Annex and identifies potential effects of implementing the proposed action.

SECTION 5.0: ***FINDINGS AND CONCLUSIONS*** summarizes the environmental and socioeconomic effects of implementing the proposed action.

SECTION 6.0: ***LIST OF PREPARERS*** identifies the persons who prepared the document.

SECTION 7.0: ***DISTRIBUTION LIST*** indicates recipients of this Environmental Assessment.

SECTION 8.0: ***REFERENCES*** provides bibliographical information for cited sources.

SECTION 9.0: ***ACRONYMS AND ABBREVIATIONS*** provides a list of acronyms and abbreviations used in the document.

APPENDICES

A Emissions Calculations
B Economic Impact Forecast System Model
C Agency Coordination Letters *(Responses to be provided upon receipt)*

EXECUTIVE SUMMARY

INTRODUCTION

On September 8, 2005, the Defense Base Realignment and Closure (BRAC) Commission recommended that certain realignment actions occur at Walter Reed Army Medical Center (WRAMC) Forest Glen Annex (FGA), Maryland. These recommendations were approved by the President on September 15, 2005, and forwarded to Congress. Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law. The BRAC Commission recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended. Under the BRAC law, the Army must initiate all realignments not later than September 14, 2007, and complete all realignments not later than September 14, 2011.

This Environmental Assessment (EA) describes and analyzes the effects of the BRAC Commission's recommendations with respect to FGA on the human environment. In addition to the BRAC recommendations, the Army has identified certain units, agencies, and activities whose relocation to FGA would be appropriate on a discretionary basis (i.e., not BRAC-directed). The BRAC Commission also directed that certain units, agencies, and activities at FGA relocate to other military installations. To accommodate these changes at FGA, the Army would require construction, renovation, and demolition of certain facilities. FGA also proposes to revise its Real Property Master Plan (RPMP) to ensure the continued orderly development of the post.

FGA is a 127-acre Army installation in Montgomery County, Maryland, about four miles northwest of the WRAMC Main Section.

PROPOSED ACTION AND ALTERNATIVES

Realignment Actions. The Army proposes the following BRAC Commission-directed and discretionary realignment actions to FGA.

- The BRAC Commission directed that the Walter Reed Army Institute of Research (WRAIR) Division of Retrovirology move from leased space in Rockville, Maryland, to FGA.

- The BRAC Commission directed the closure of WRAMC but did not identify the future locations of certain units, agencies, and activities that would be retained by the Army. In its discretion, the Army proposes to relocate from the WRAMC Main Section to FGA the Armed Forces Institute of Pathology (AFIP) Department of Defense (DoD) Veterinary Pathology Residency Program, a portion of the AFIP Tissue Repository, and the National Museum of Health and Medicine. Command and control of FGA would also transfer from WRAMC to Fort Detrick. All mission activities on FGA would continue to be managed by Fort Detrick in accordance with all applicable environmental regulations.

The BRAC Commission directed that three units, agencies, and activities relocate from FGA. These are the Combat Casualty Care Research sub-functions of the WRAIR and the Naval Medical Research Center (NMRC) (to relocate to Fort Sam Houston, Texas), the Medical Biological Defense Research of WRAIR and NMRC (to relocate to Fort Detrick, Maryland), and the Medical Chemical Defense Research (to relocate to Aberdeen Proving Ground, Maryland).

The Army also proposes the following non-BRAC actions: move the WRAIR Medical Research Laboratory from its current location on FGA to a new Clinical Good Manufacturing Practices

(cGMP)-compliant facility, construct a new Child Development Center (CDC), construct a new warehouse and administrative space building, and expand the existing post fire station into a new emergency services facility complex.

As a result of the foregoing actions, FGA would experience an increase of approximately 220 personnel.

Revision of the RPMP. As a result of BRAC, the Army identified FGA as a receiver of several missions. Implementation of BRAC would require renovation of existing facilities and construction of new facilities to accommodate increases in personnel and functions assigned to FGA. The RPMP would be updated to accommodate these changes, and the primary parts of the RPMP update are as follows.

- Land use plan update, which addresses guidance for land use on FGA.
- Short-Range Component (SRC), which addresses short-range planning initiatives through 2011, including BRAC actions. The proposed projects under the SRC are listed in Table ES-1. The table shows project number, facility title, size (square feet), number of staff, and comments. The proposed new buildings and renovations would provide more than 270,000 square feet (SF) of administrative and laboratory space.
- Long-Range Component (LRC), which addresses requirements for long-term mission changes through 2026. Proposed projects under the SRC are listed in Table ES-2.
- Transportation Management Plan (TMP), which addresses corresponding transportation network changes needed to implement the SRC and LRC.

ENVIRONMENTAL CONSEQUENCES

The EA evaluates potential effects on land use and airspace, aesthetics and visual resources, air quality, noise, geology and soils, water resources, biological resources, cultural resources, socioeconomics (including environmental justice and protection of children), transportation, utilities, and hazardous and toxic substances. For each resource, the predicted effects from both the proposed action, identified as the Army's Preferred Alternative, and the no action alternative are briefly described below. The consequences of the Preferred Alternative and the No Action Alternative are summarized in Table ES-3.

Consequences of the Preferred Alternative

Land Use and Airspace. Long-term minor adverse and beneficial effects on land use would be expected. The proposed land use designations in the RPMP simplify and consolidate the existing land use categories in that they recognize broader actual compatibility between adjacent land uses on the installation. The more broadly defined categories provide Army planners at FGA with greater flexibility for future development and reduce land use compatibility issues. To facilitate assessment of land use impacts under the SRC and LRC, a comparison of the impact of the proposed SRC projects on land use was made between FGA's existing land use plan and the proposed land use plan. While approximately 48 percent of the acreage impacted by the SRC and BRAC actions and 41 percent of the LRC actions would convert areas from pervious to

Table ES-1
Proposed SRC facility projects

Map site ID	Project title	Size	Number of Staff	Comments
SRC-1	New WRAIR Medical Research Laboratory (BRAC)	100,000 SF	208	Construct new five-story laboratory facility (one floor would be for SRC-2).
SRC-2	New Medical Research Laboratory (Non-BRAC)	8,000 SF	31	Construct new one-story laboratory facility (see SRC-1).
SRC-3	DoD Veterinary Pathology Facility (BRAC)	5,000 SF	31	Renovate existing facility in Building 509.
SRC-4	Administration and Storage Facility (Non-BRAC)	50,000 SF	10	Construct new two-story warehouse facility and associated parking.
SRC-5	AFIP Tissue Repository (BRAC)	33,000 SF	36	Renovate existing facility in Building 606. Note: this action was covered under a Record of Environmental Consideration in Fall 2007 and is not further analyzed in this EA.
SRC-6	Child Development Center (CDC) (Non-BRAC)	13,000 SF	35	Construct new one-story facility for up to 124 children and associated parking.
SRC-7	National Museum of Health and Medicine (BRAC)	40,000 SF	25	Construct new two-story museum.
SRC-8	Emergency Services Facility Expansion (Non-BRAC)	21,500 SF	30	Expand existing fire station (7,500 SF two-story facility) and construct new military police (MP) station (14,000 SF) and associated parking to replace those functions that will no longer be provided by WRAMC.
Parking	Construct three new parking lots and reconfigure one parking lot	523, 305, 305, and 510 spaces	–	Four separate locations.
Entry	Provide entry point improvements	Two locations	–	Canopies and additional vehicles barriers.
	Total	Approx. 270,000 SF (232,538 SF new and 38,000 SF renovated)	220[a]	

[a] Reflects net increase in personnel, including those leaving FGA due to outgoing BRAC actions.
Notes: Facility sizes may change slightly as planning progresses. SF= square feet.

impervious, the projects generally fall within compatible land use designations under the proposed land use plan. No effects on airspace would be expected.

Table ES-2
Proposed LRC facility projects

Map site ID	Project title	Size	Comments
LRC-1	New Access Control Point (Linden Lane)	N/A	Planned for 2013. Existing post exchange and commissary parking lot (160 spaces) would be demolished to accommodate this project.
LRC-2	New Directorate of Public Works (DPW) Facility	30,000 SF	Consolidate DPW staff and equipment from Buildings 601, 602, 603, and 605 into new 20,000 SF building and 10,000 SF equipment storage facility and service/storage lot by 2015.
LRC-3	New Access Control Point (Brookville Road)	N/A	Planned for 2016. Existing motor pool lot would be demolished to accommodate this project.
LRC-4	DoD Tissue Repository Expansion	80,000 SF	Expand facility renovated under SRC-5 to two-story laboratory facility by 2023.
LRC-5	New DoD Veterinary Pathology Facility	5,000 SF	Construct new one-story laboratory facility to move staff from DoD Vet Lab (renovated under SRC-3) by 2024.
LRC-6	New Laboratory Facility	135,000 SF	Construct new three-story facility for 300 by 2025. Staff from Building 510 (15,300 SF) would be relocated to the new facility, and the remaining new space would be for new laboratories.
Parking	Construct three new parking lots and reconfigure one parking lot	523, 305, 305, and 510 spaces	Four separate locations.
	Total	250,000 SF	

Notes: Facility sizes may change as planning progresses. SF= square feet.

Aesthetics and Visual Resources. Short- and long-term minor adverse and beneficial effects would be expected. The short-term adverse effects would be from the increase of construction activities, which are inherently aesthetically displeasing. In the long term, new buildings built on previously undeveloped land adjacent to current development would cause a minor adverse effect, while renovated facilities would be expected to improve the area's overall aesthetic and visual appeal. The land use plan under the LRC would have a beneficial effect by consolidating the Industrial land use areas on the installation, a land use that generally has a moderate to low aesthetic integrity, into the southwest corner of the installation. The area north of Linden Lane, which is currently zoned as an Industrial-type land use and is adjacent to the historic district, would eventually change to Community Facilities land use under the LRC land use plan. The Industrial land use category would be consolidated in the southern portion of the installation and would be farther from the historic districts than at present.

Air Quality. Short- and long-term minor adverse effects on air quality would be expected. Emissions associated with construction and operation of facilities and traffic, however, would not exceed *de minimis* (of minimum importance) thresholds, be "regionally significant," contribute to a violation of any federal, state, or local air regulation, or contribute to a violation of the installation's air operating permit. All permitting of stationary sources and construction

Table ES-3
Summary of potential environmental and socioeconomic consequences

	Environmental and Socioeconomic Consequences	
Resource Area	**Preferred Alternative**	**No Action Alternative**
Land Use and Airspace	Long-term minor adverse and beneficial	No effects
Aesthetics and Visual Resources	Short- and long-term minor adverse and beneficial	No effects
Air Quality	Short- and long-term minor adverse	No effects
Noise	Short-term negligible to minor adverse	No effects
Geology and Soils		
Geology/Topography	Short- and long-term negligible to minor adverse	No effects
Soils	Short-term long-term negligible to minor adverse	No effects
Prime Farmland	No effects	No effects
Water Resources		
Surface Water and Groundwater	Short- and long-term negligible to minor adverse	No effects
Floodplains, Coastal Zone	No effects	No effects
Biological Resources		
Vegetation	Long-term minor adverse	No effects
Wildlife	Short- and long-term negligible to minor adverse	No effects
Threatened and Endangered Species	No effects	No effects
Wetlands	No effects	No effects
Cultural Resources	Long-term beneficial	No effects
Socioeconomics		
Economic Development	Short- and long-term beneficial	No effects
Housing	No effects	No effects
Law Enforcement, Fire Protection, and Medical Services	Short-term minor adverse	No effects
Schools	No effects	No effects
Family Support, Social Services, Shops, Services, and Recreation	Short-term minor adverse	No effects
Environmental Justice	No effects	No effects
Protection of Children	No effects	No effects
Transportation	Short-term and long-term minor adverse	No effects
Utilities	Short- and long-term minor adverse and long-term beneficial	No effects
Hazardous and Toxic Substances		
Petroleum	Long-term minor adverse and beneficial	No effects
Hazardous and Toxic Substances	Short-term negligible adverse and long-term minor adverse	No effects
Solid Waste	No effects	No effects
Asbestos	Long-term minor beneficial	No effects

(continued below)

Table ES-3 *(continued)*
Summary of potential environmental and socioeconomic consequences

	Environmental and Socioeconomic Consequences	
Resource Area	**Preferred Alternative**	**No Action Alternative**
Hazardous and Toxic Substances *(continued)*		
Lead-Based Paint	Long-term minor beneficial	No effects
PCBs	No effects	No effects
Pesticides	No effects	No effects
Regulated Medical Waste	Long-term minor adverse	No effects
Radioactive Material	Long-term minor adverse	No effects
Radon	Long-term minor adverse	No effects

would be accomplished in full compliance with Maryland regulatory requirements at the time of construction. No activities outlined in the TMP would generate any additional direct or indirect air emissions.

Noise. Short-term negligible to minor effects on the noise environment would be expected. A short-term increase in on-post noise would result from the use of heavy construction equipment. With use of BMPs, all on- and off-installation areas would be compatible with the expected changes to the noise environment.

Geology and Soils. Short and long-term negligible to minor adverse effects would be expected. The changes in land use designations from the 2003 FGA master plan to the proposed land use plan update could allow more changes in topography. The new land use designations include areas that are that are considered environmentally sensitive, although these environmental constraints (e.g. wetlands) would retain their protected status and potential development would continue to be limited in some of these areas. Effects to soils from construction activities would be associated with the increased potential for erosion and sedimentation resulting from excavation, grading, removal of vegetation, exposure of soil during construction, and loss of soil productivity and stability. No effects on prime farmland or soils of statewide importance would be expected.

Water Resources. Short- and long-term negligible to minor adverse effects on surface waters and groundwaters would be expected. Construction activities of both BRAC and non-BRAC actions would increase soil disturbance and potentially soil erosion, and total suspended solids could thus be increased in nearby waters. Also, leakage from construction equipment could increase petroleum hydrocarbon pollution in surface waters. Waterborne contaminants contributed by construction activities could be transported into the groundwater system. No effects on floodplains would be expected to result. There are no 100-year floodplains within the proposed impact areas.

Biological Resources. Short- and long-term negligible to minor adverse effects on vegetation and wildlife would be expected. Although areas previously designated as Open Space, which included buffer zones and wetlands, under the existing land use plan have been redesignated as land use categories that would permit development under the proposed land use plan, these environmentally sensitive areas within the new land use categories would remain protected under existing environmental regulations regardless of their land use designation. Construction

activities would cause the loss of small areas of native and non-native vegetation, but disturbed areas would be revegetated with native species. Construction activities on undeveloped land would also cause losses of habitat. There would be no effects on threatened, endangered, or other species of concern, or wetlands. All known habitats for sensitive species would be avoided, and no wetlands are located in the proposed construction footprints.

Cultural Resources. No effects on cultural resources would be expected on cultural resources would be expected from implementation of the SRC, LRC, and TMP, and long-term beneficial effects would be expected from the land use plan update. Under the LRC land use plan, the portion of FGA north of Linden Lane would be redesignated Community Facilities from Industrial, which would generally result in land uses more compatible with the National Park Seminary Historic District (NPSHD). The potential for impacts on unknown cultural and historical resources is always present, but adherence to policies and guidelines in FGA's Integrated Cultural Resources Management Plan (ICRMP) and consultation with the State Historic Preservation Office (SHPO) would be conducted as necessary to avoid potential adverse effects.

Socioeconomics. Short-and long-term beneficial effects on economic development would be expected as well as short-term minor adverse effects on law enforcement, fire protection, medical services, family support, social services, shops, services, and recreation. The expenditures associated with renovation and construction of facilities on FGA would increase sales volume, employment, and income in the region of influence (ROI). Short-term minor adverse effects on all services would be expected from an increased demand for and reduced availability of services in the ROI. In the long-term, services could adapt to the demands of the increased population base. No adverse effects on environmental justice or protection of children would be expected, as implementation of the RPMP at FGA would not create disproportionately high or adverse human health or environmental effects on minority of low-income populations in the ROI, or incur environmental health risks or safety risks on children.

Transportation. Short- and long-term minor adverse effects on transportation would be expected due to the Preferred Alternative. Short-term traffic effects would be due to additional construction vehicles and traffic delays near construction sites. Long-term effects to on-post, off-post, and gate traffic would be due to minor increases in the number of vehicle trips and traffic volumes associated with the Preferred Alternative.

Utilities. Short- and long-term minor adverse and beneficial effects on utilities would be expected. Utility infrastructure would be expected to be updated in concurrence with growth anticipated under the land use plan update. This should ultimately result in more harmonious systems that are easily adaptable for future growth. Service interruptions during construction would occur while new and renovated facilities are being hooked up to existing utilities systems. Long-term minor adverse effects would occur from an increase in generation of construction and demolition (C&D) debris, which would contribute to a reduction in local off-post landfill capacities.

Hazardous and Toxic Substances. Short-term negligible adverse and long-term minor adverse and beneficial effects would be expected. Implementation of the RPMP and facility construction and renovations would adhere to federal, state, local, and Army regulations for the removal and disposal of hazardous materials, and new facilities would minimize the generation and use of such materials. Remediation of existing contaminated sites would result in a beneficial effect. All materials handling, storage, and disposal would be in accordance with applicable laws and regulations.

Consequences of the No Action Alternative

No effects on any of the resource areas considered in the EA would be expected to result from implementation of the No Action Alternative.

CUMULATIVE EFFECTS

Short- and long-term minor adverse cumulative effects would be expected. These would involve increased erosion and runoff effects caused by possible construction activities during implementation of the RPMP. These cumulative effects would be minor and only present during the construction phase of the project. In addition, long-term minor adverse effects would be expected from increases in traffic due to the proposed action and other actions in the vicinity.

MITIGATION

Section 1508.20 of the Council on Environmental Quality's implementing regulations for the National Environmental Policy Act (NEPA) define mitigation to include (a) Avoiding the impact altogether by not taking a certain action or parts of an action, (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment, (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and (e) Compensating for the impact by replacing or providing substitute resources or environments.

Mitigation actions for the proposed BRAC projects at FGA would be undertaken largely in accordance with existing regulations and policies. Such regulatory or policy driven actions to reduce, avoid, or compensate for adverse effects would include, for example, following all applicable laws and regulations for handling all hazardous materials and wastes; implementing state-approved, best management practices for stormwater control during construction; designing facilities according to the principles of low-impact development; recycling construction debris where possible; and revegetating disturbed sites. Sound engineering practices and best management practices, current and future, would be used to the maximum extent practicable to mitigate any adverse environmental impacts. Related best management practices (BMPs) for each of the resource areas are presented in Table ES-4.

Table ES-4
Summary of BMPs and possible mitigation measures

Resource Area	BMPs
Land Use	• Follow DoD AT/FP standards during site design. • Incorporate low impact development (LID) principles into site layout.
Aesthetics and Visual Resources	• Landscape sites with native vegetation.
Air Quality	• Use water or chemicals for dust control when demolishing existing buildings or structures, construction operations, grading roads, or clearing land. • Apply water or suitable chemicals on dirt roads, materials stockpiles, and other surfaces that could create airborne dust. • Pave roadways and maintain them in a clean condition.

(continued)

Table ES-4 *(continued)*
Summary of BMPs and possible mitigation measures

Resource Area	BMPs
Air Quality *(continued)*	• Install and use hoods, fans, and fabric filters to enclose and vent the handling of dusty material, including the implementation of adequate containment methods during sandblasting or other similar operations. • Cover open equipment used to convey materials likely to create air pollutants. • Promptly remove spilled or tracked dirt from streets. • Sequence construction activities in a manner that would avoid multiple projects using heavy construction equipment on the same day.
Noise	• Limit construction activities to daylight hours on business days. • Use sound-dampening construction equipment and materials to attenuate noise. • Maintain vegetative buffers for noise attenuation.
Geology and Soils	• Use state-approved BMPs to reduce soil erosion and sedimentation. • Adhere to stormwater pollution prevention plans (SWPPPs) and any plans or guidance, as appropriate, per the installation's National Pollutant Discharge Elimination System (NPDES) Phase I permit.
Water Resources	• Implement BMPs to control surface erosion and runoff (e.g., silt fencing, hay bales). • Construct temporary construction sediment retention ponds as required. • Reseed and revegetate areas following construction activities to minimize effects. • Use LID practices where possible. • Follow protocols outlined in state sediment and erosion control guidelines. • Implement site-specific SWPPP in accordance with the installation's stormwater program.
Biological Resources	• Limit disturbed areas to the footprint plus a minimal amount of adjacent construction staging area. • Revegetate disturbed areas with native, indigenous vegetation. • Plant native trees and drought-tolerant vegetation near open spaces and around stormwater management structures. • Limit land disturbance on each land parcel to no more than what is necessary for the desired use or development.
Cultural Resources	• Implement stop work procedures to allow for documentation of findings if previously unknown archaeological resources are discovered during construction activities.
Socioeconomic Resources	• Secure construction vehicles and equipment when not in use. • Place barriers and "No Trespassing" signs around construction sites where practicable.
Transportation *(continued)*	• Continue and expand the currently active installation employee travel demand reduction program to minimize the amount of actual site generated traffic volume growth per the TMP. • Equip construction vehicles with backing alarms, two-way radios, and slow moving vehicle signs when appropriate. • Route and schedule construction vehicle traffic to minimize conflicts with other traffic.

Table ES-4 *(continued)*
Summary of BMPs and possible mitigation measures

Resource Area	BMPs
Transportation *(continued)*	• Strategically locate construction material staging areas to minimize traffic impacts. • As the BRAC mandated development takes place, monitor the amount of peak hour traffic entering and exiting the installation.
Utilities	*Potable water* • Train staff and contractors on water conservation measures. • Install water-efficient control devices, such as low-flow showerheads, faucets, and toilets, in all new facilities. *Energy* • Install energy-efficient interior and exterior lighting fixtures and controls in all new units. All new units would be built to EnergyStar energy efficiency standards. • Promote energy conservation and reduced utility consumption through the utility program developed by the Army. *Solid waste disposal and recycling* • Train staff and contractors on materials eligible for recycling municipal solid waste. • Recycle construction and demolition debris to the maximum extent feasible. • Recycle municipal solid waste collected from office locations.
Hazardous and Toxic Substances	• Implement measures to control airborne asbestos. • Evaluate and dispose of demolition materials in accordance with applicable local, state, and federal regulations at the time of demolition. • Store all hazardous material in accordance with regulations and implement a Hazard Communication Program that will include training personnel in proper handling of hazardous materials. • Document all hazardous material to be used and maintain copies of Material Safety Data Sheets (MSDS). • Ensure hazardous wastes are removed and properly disposed of in accordance with applicable local, state, and federal regulations. • Establish smoking areas and prohibit open flames near flammable material.

CONCLUSIONS

Based on the analysis performed in this EA, implementation of the Preferred Alternative would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment. Preparation of an Environmental Impact Statement is not required. Therefore, issuance of a FNSI would be appropriate.

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SECTION 1.0
PURPOSE, NEED, AND SCOPE

1.1 INTRODUCTION

On September 8, 2005, the Defense Base Closure and Realignment Commission ("BRAC Commission") recommended that certain realignment actions occur at Forest Glen Annex (FGA), an annex of Walter Reed Army Medical Center (WRAMC). These recommendations were approved by the President on September 15, 2005, and forwarded to Congress. The Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law. The BRAC Commission recommendations must now be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

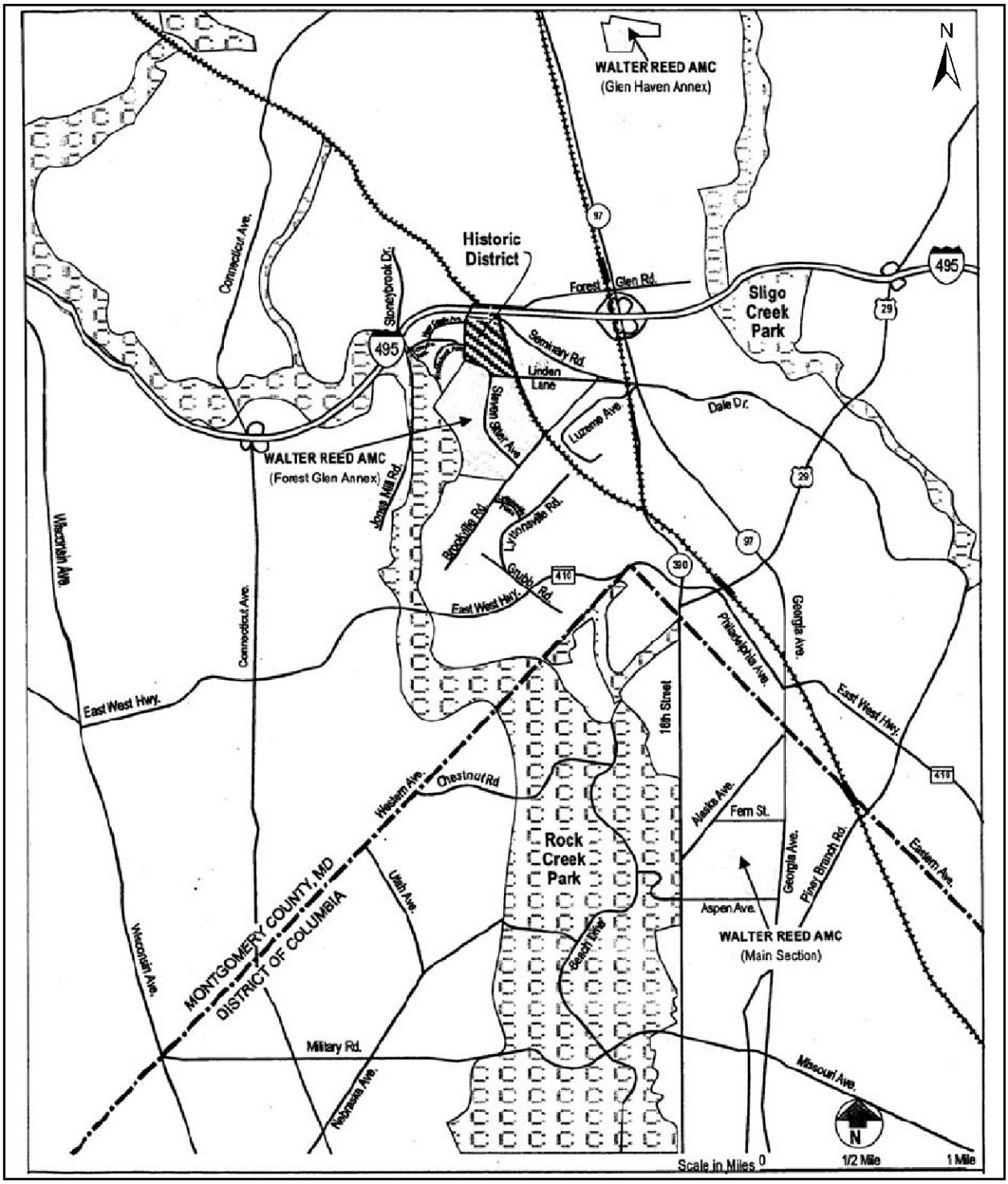
The BRAC Commission recommended the realignment of WRAMC. The BRAC Commission specified that certain units, agencies, and activities at WRAMC and other locations were to be relocated to FGA. In addition to the BRAC recommendations, the Army has identified certain units, agencies, and activities whose relocation to FGA would be appropriate on a discretionary basis (i.e., not BRAC-directed). The BRAC Commission also directed that certain units, agencies, and activities at FGA relocate to other military installations. Combined, these actions would result in a net increase of about 220 personnel at FGA. To accommodate these changes at FGA, the Army would require construction, renovation, and demolition of certain facilities. FGA also proposes to revise its Real Property Master Plan (RPMP) to ensure the continued orderly development of the post. This environmental assessment (EA) analyzes and documents environmental effects associated with the proposed actions at FGA. Details on the proposed actions are set forth at Section 2.0.

FGA is a secure military facility in Silver Spring, Maryland, approximately four miles northwest of the WRAMC Main Section. FGA has a land area of 127 acres on Brookville Road, adjacent to a mixed commercial district. Figure 1-1 shows the location of FGA and Figure 1-2 shows a site map of the installation.

1.2 PURPOSE AND NEED

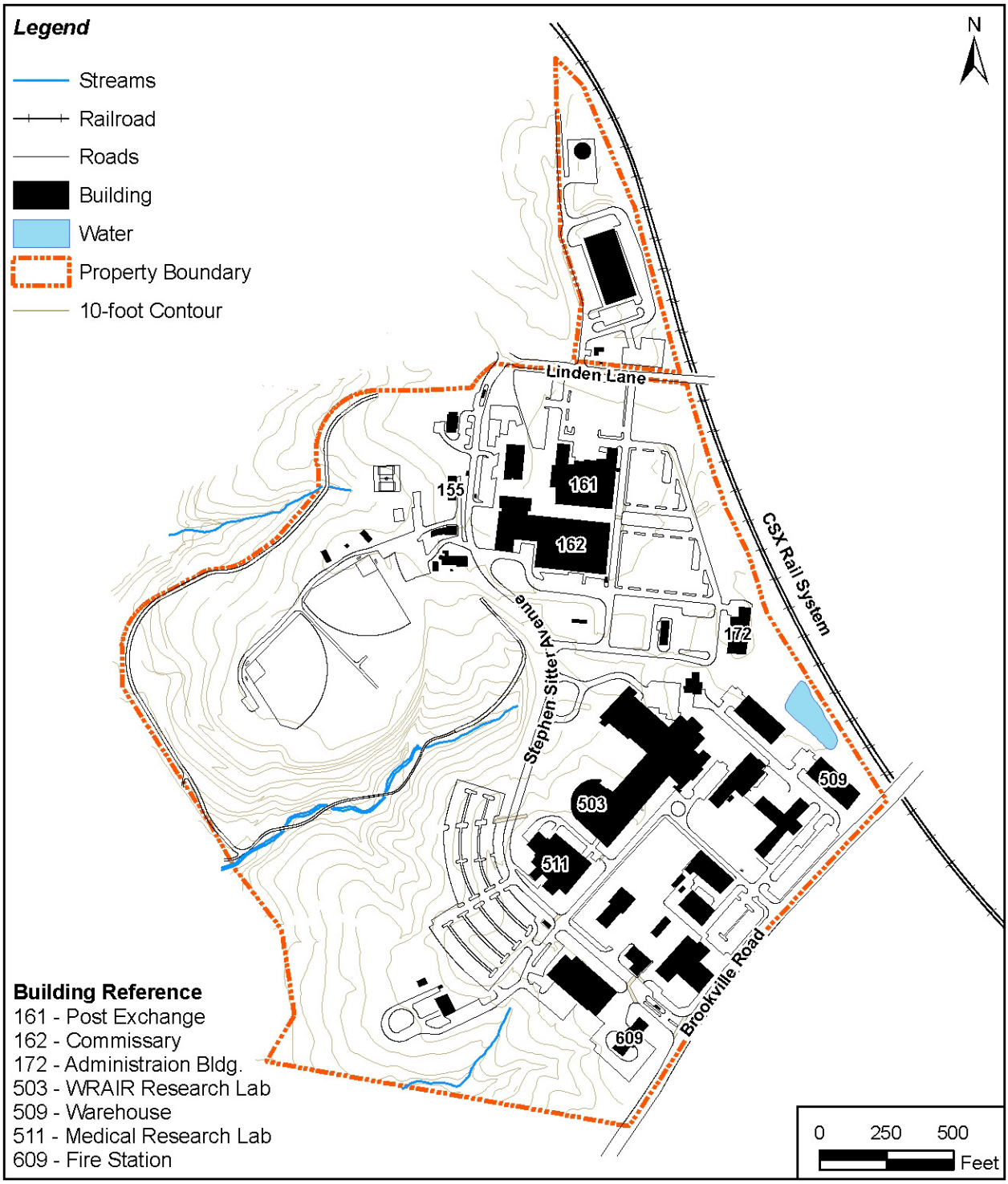
The purpose of the proposed action is for the Army to carry out the BRAC Commission's directed and discretionary actions, additional non-BRAC actions aimed at meeting Army requirements, facilities-related actions, and revision of the RPMP at FGA.

The need for the proposed action is to improve the ability of the nation to respond rapidly to challenges of the 21st century. The Army is legally bound to defend the United States and its territories, support national policies and objectives, and defeat nations responsible for aggression that endangers the peace and security of the United States. To carry out these tasks, the Army must adapt to changing world conditions and must improve its capabilities to respond to a variety of circumstances across the full spectrum of military operations. The following discusses three major initiatives that contribute to the Army's need for the proposed action.



Installation Location

Figure 1-1



Legend
Installation Boundary

Site Map

Source: WRAMC Forest Glen Annex GIS, 2006.

Figure 1-2

Base Realignment and Closure. In previous rounds of BRAC, the explicit goal was to save money and downsize the military in order to reap a "peace dividend." In the 2005 BRAC round, the Department of Defense (DoD) sought to reorganize its installation infrastructure to most efficiently support its forces, increase operational readiness and facilitate new ways of doing business. Thus, BRAC represents more than cost savings. It supports advancing the goals of transformation, improving military capabilities, and enhancing military value. The Army needs to carry out the BRAC recommendations at FGA in order to achieve the objectives for which Congress established the BRAC process and, as well, to comply with the BRAC law.

Master Plan Update. The purpose of the proposed action with respect to FGA's master plan is to provide an updated RPMP for allocation of functions and facilities at the post. FGA requires a revised RPMP that will enable sound use of physical and natural resources at the post with respect to both current and future land use requirements. Master planning is required by Army Regulation (AR) 210-20, *Real Property Master Planning for Army Installations*.

Installation Sustainability. On October 1, 2004, the Secretary of the Army and the Chief of Staff issued *The Army Strategy for the Environment.* The strategy focuses on the interrelationships of mission, environment, and community. A sustainable installation simultaneously meets current and future mission requirements, safeguards human health, improves quality of life, and enhances the natural environment. A sustained natural environment is necessary to allow the Army to train and maintain military readiness.

1.3 SCOPE

This EA has been developed in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations issued by the President's Council on Environmental Quality (CEQ) and the Army.[1] Its purpose is to inform decision makers and the public of the likely environmental consequences of the proposed action and alternatives.

This EA identifies, documents, and evaluates environmental effects of realignments and master planning activities at FGA. An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and military technicians has analyzed the proposed action and alternatives in light of existing conditions and has identified relevant beneficial and adverse effects associated with the action. The proposed action and alternatives, including the no action alternative, are described in Section 2.0. Alternatives to the proposed actions are described in Section 3.0. Conditions existing as of 2005, considered to be the "baseline" conditions, are described in Section 4.0, Affected Environment and Environmental Consequences. The expected effects of the proposed action, also described in Section 4.0, are presented immediately following the description of baseline conditions for each environmental resource addressed in the EA. Section 4.0 also addresses the potential for cumulative effects, and mitigation measures are identified where appropriate.

The Defense Base Closure and Realignment Act of 1990 specifies that the NEPA does not apply to actions of the President, the Commission, or the Department of Defense, except "(i) during the

[1] Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, 40 Code of Federal Regulations (CFR) Parts 1500–1508, and Environmental Analysis of Army Actions, 32 CFR Part 651.

process of property disposal, and (ii) during the process of relocating functions from a military installation being closed or realigned to another military installation after the receiving installation has been selected but before the functions are relocated (Sec. 2905(c)(2)(A), Public Law 101-510, as amended). The law further specifies that in applying the provisions of NEPA to the process, the Secretary of Defense and the secretaries of the military departments concerned do not have to consider "(i) the need for closing or realigning the military installation which has been recommended for closure or realignment by the Commission, (ii) the need for transferring functions to any military installation which has been selected as the receiving installation, or (iii) military installations alternative to those recommended or selected (Sec. 2905(c)(2)(B)). The Commission's deliberation and decision, as well as the need for closing or realigning a military installation, are exempt from NEPA. Accordingly, this EA does not address the need for realignment.

1.4 PUBLIC INVOLVEMENT

The Army invites public participation in the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decisionmaking. All agencies, organizations, and members of the public having a potential interest in the proposed action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the decisionmaking process. Letters regarding coordination with applicable federal and state agencies are included in Appendix C.

Public participation opportunities with respect to this EA and decisionmaking on the proposed actions are guided by 32 CFR Part 651. Upon completion, the EA will be made available to the public for 30 days, along with a draft Finding of No Significant Impact (FNSI). At the end of the 30-day public review period, the Army will consider any comments submitted by individuals, agencies, or organizations on the proposed actions, the EA, or draft FNSI. As appropriate, the Army may then execute the FNSI and proceed with implementation of the proposed actions. If it is determined prior to issuance of a final FNSI that implementation of the proposed actions would result in significant impacts, the Army will publish in the *Federal Register* a notice of intent to prepare an environmental impact statement, commit to mitigation actions sufficient to reduce impacts below significance levels, or not take the actions.

Throughout this process, the public may obtain information on the status and progress of the proposed actions and the EA through the WRAMC Public Affairs Office by calling the Public Affairs Officer, Chuck Dasey, at 202-782-7500.

1.5 REGULATORY FRAMEWORK

A decision on whether to proceed with the proposed actions rests on numerous factors such as mission requirements, schedule, availability of funding, and environmental considerations. In addressing environmental considerations, FGA is guided by relevant statutes (and their implementing regulations) and Executive Orders that establish standards and provide guidance on environmental and natural resources management and planning. These include the Clean Air Act, Clean Water Act, Noise Control Act, Endangered Species Act, National Historic Preservation Act, Archaeological Resources Protection Act, Resource Conservation and Recovery Act, and Toxic Substances Control Act. Executive Orders (EOs) bearing on the proposed action include Executive Order 11593 (*Protection and Enhancement of the Cultural Environment*), Executive Order 11988 (*Floodplain Management*), Executive Order 11990 (*Protection of Wetlands*),

Executive Order 12088 (*Federal Compliance with Pollution Control Standards*), Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), Executive Order 13045 (*Protection of Children from Environmental Health Risks and Safety Risks*), and Executive Order 13423 (*Strengthening Federal Environmental, Energy, and Transportation Management*). Note that this list is not all inclusive, and other federal, state, and local regulations might apply. These authorities are addressed in various sections throughout this EA when relevant to particular environmental resources and conditions. The full text of the federal laws, regulations, and EOs is available on the Defense Environmental Network & Information Exchange Web site at http://www.denix.osd.mil.

SECTION 2.0
PROPOSED ACTION

2.1 INTRODUCTION

This section describes the Army's preferred alternative for carrying out the BRAC Commission's directed and discretionary actions, additional non-BRAC actions aimed at meeting Army requirements, facilities-related actions, and revision of the RPMP at FGA. Section 2.2 addresses proposed realignment actions. Section 2.3 addresses revision of the RPMP and facilities-related actions encompassed by the RPMP revision.

2.2 REALIGNMENT ACTIONS

The Army proposes the following BRAC Commission-directed and discretionary realignment actions to FGA.

- The BRAC Commission directed that the Walter Reed Army Institute of Research (WRAIR) Division of Retrovirology move from leased space in Rockville, Maryland, to FGA.

- The BRAC Commission directed the closure of WRAMC but did not identify the future locations of certain units, agencies, and activities that would be retained by the Army. In its discretion, the Army proposes to relocate from the WRAMC Main Section to FGA the Armed Forces Institute of Pathology (AFIP) DoD Veterinary Pathology Residency Program, a portion of the AFIP Tissue Repository, and the National Museum of Health and Medicine. Administrative command and control of FGA and the Glen Haven Section, a housing area for WRAMC located about 4 miles north of the WRAMC Main Section and 3 miles northeast of FGA, would also transfer from WRAMC to Fort Detrick, located in Frederick, Maryland. All mission activities on FGA would continue to be managed by Fort Detrick in accordance with all applicable environmental regulations.

The BRAC Commission directed that three units, agencies, and activities relocate from FGA. These are the Combat Casualty Care Research sub-functions of the WRAIR and the Naval Medical Research Center (NMRC) (to relocate to Fort Sam Houston, Texas), the Medical Biological Defense Research of WRAIR and NMRC (to relocate to Fort Detrick), and the Medical Chemical Defense Research (to relocate to Aberdeen Proving Ground, Maryland).

The Army also proposes the following non-BRAC actions: move the WRAIR Medical Research Laboratory from its current location on FGA to a new Clinical Good Manufacturing Practices (cGMP)-compliant facility, construct a new Child Development Center (CDC), construct a new warehouse and administrative space building, and expand the existing post fire station into a new emergency services facility complex.

Implementation of the foregoing relocations would result in a net increase of approximately 220 personnel at FGA.

2.3 REVISION OF THE REAL PROPERTY MASTER PLAN

2.3.1 Background

As a result of BRAC, the Army identified FGA as a receiver of several missions. Implementation of BRAC would require renovation of existing facilities and construction of new facilities to accommodate increases in personnel and functions assigned to FGA. To provide for the orderly development of FGA, BRAC reveals a need to revise the RPMP. Four major parts of the RPMP are the land use plan, which addresses guidance for land use on FGA, the Short-Range Component (SRC), which addresses short-range planning initiatives through 2011, the Long-Range component (LRC), which addresses requirements for long-term mission changes through 2026, and the Transportation Management Plan (TMP), which addresses corresponding transportation network changes needed to implement the SRC and LRC. These plan components are described in the subsections below.

2.3.2 Land Use Plan Update

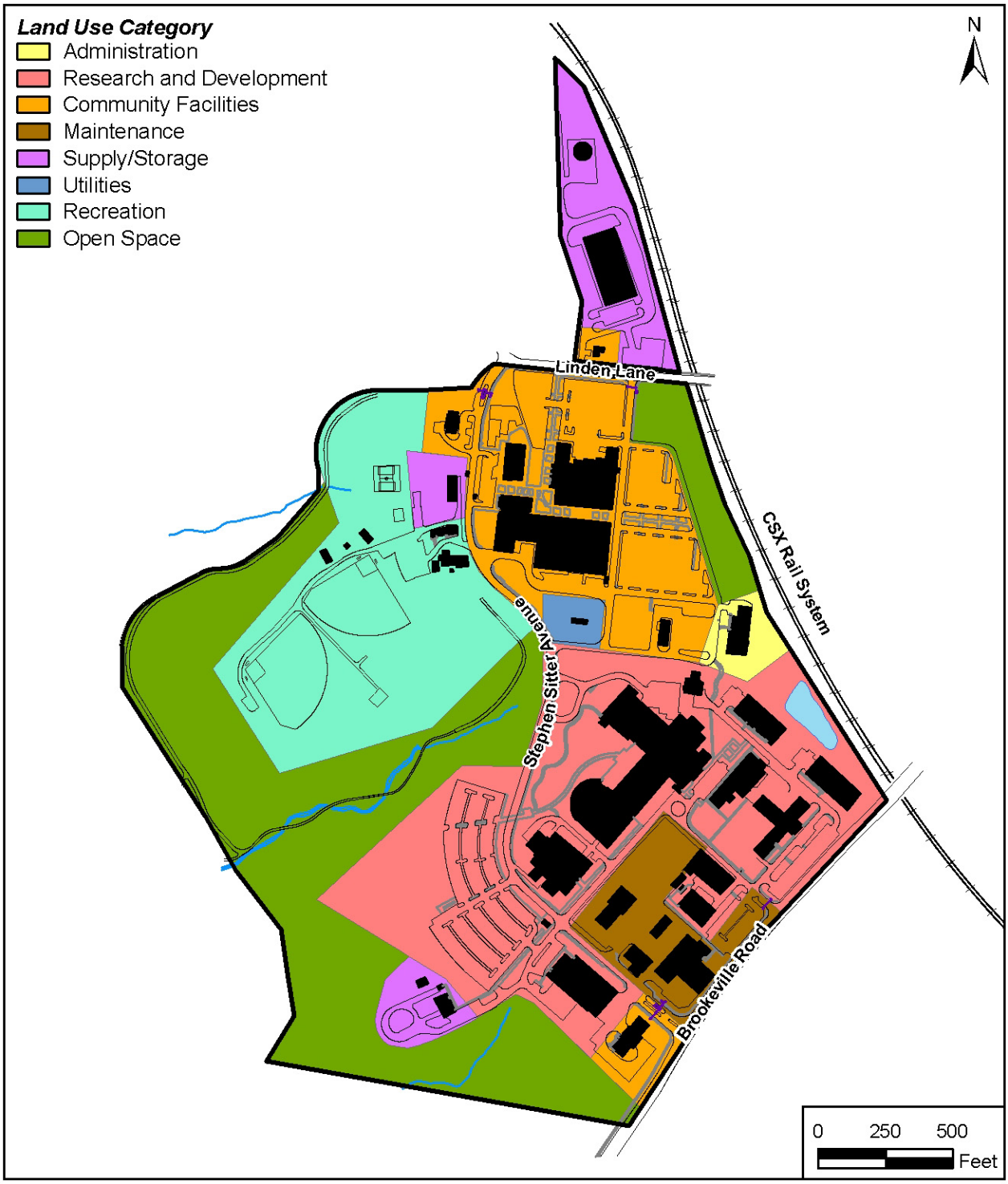
The existing land use plan for FGA, which was last updated in 2003, is shown in Figure 2-1. It identifies eight land use categories on FGA: Administration, Community Facilities, Maintenance, Open Space, Recreation, Research and Development, Supply and Storage, and Utilities. These land uses and their acreages are listed in Table 2-1. The revision of the RPMP would include a reduction in the number of land use categories so that all property at FGA would be identified as Community Facilities, Research and Development, or Industrial uses. Two phases of the land use plan would be implemented, the first by 2011, and the second by 2026. Table 2-1 compares current and projected land use categories and their acreages at FGA, and Figures 2-2 and 2-3 shows the proposed land uses. The proposed land use plan differs from the existing land use plan in several important respects in that it:

- Uses fewer, but broader, land use designations (Community Facilities, Research and Development, and Industrial) that encompass compatible land uses. The new categories allow for more flexible groupings of compatible types of facilities.

Table 2-1
Comparison of existing and proposed land use allocations

Existing land use plan		Proposed 2011 land use plan		Proposed 2026 land use plan	
Land use	**Acres**	**Land use**	**Acres**	**Land use**	**Acres**
Administration	2	-	-	-	-
Community Facilities	20	Community Facilities	58	Community Facilities	64
Maintenance	6	-	-	-	-
Open Space	32	-	-	-	-
Recreation	20	-	-	-	-
Research and Development	36	Research and Development	46	Research and Development	44
Supply and Storage	10	Industrial	23	Industrial	19
Utilities	1	-	-	-	-
Total	**127**		**127**		**127**

Source: PBS&J, 2008.

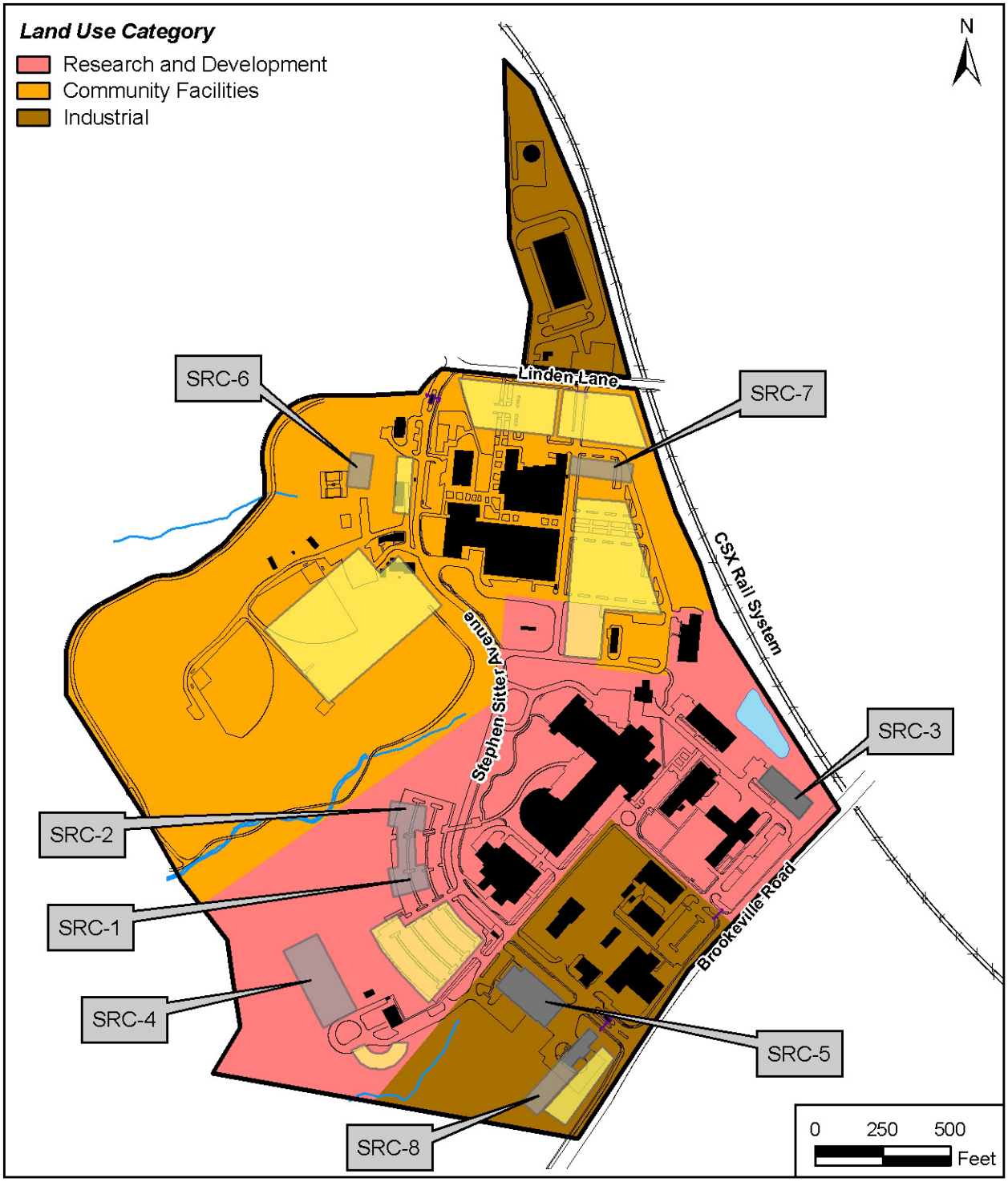


Legend
Installation Boundary
Water

Existing Land Use

Source: WRAMC Forest Glen Annex GIS, 2006.

Figure 2-1



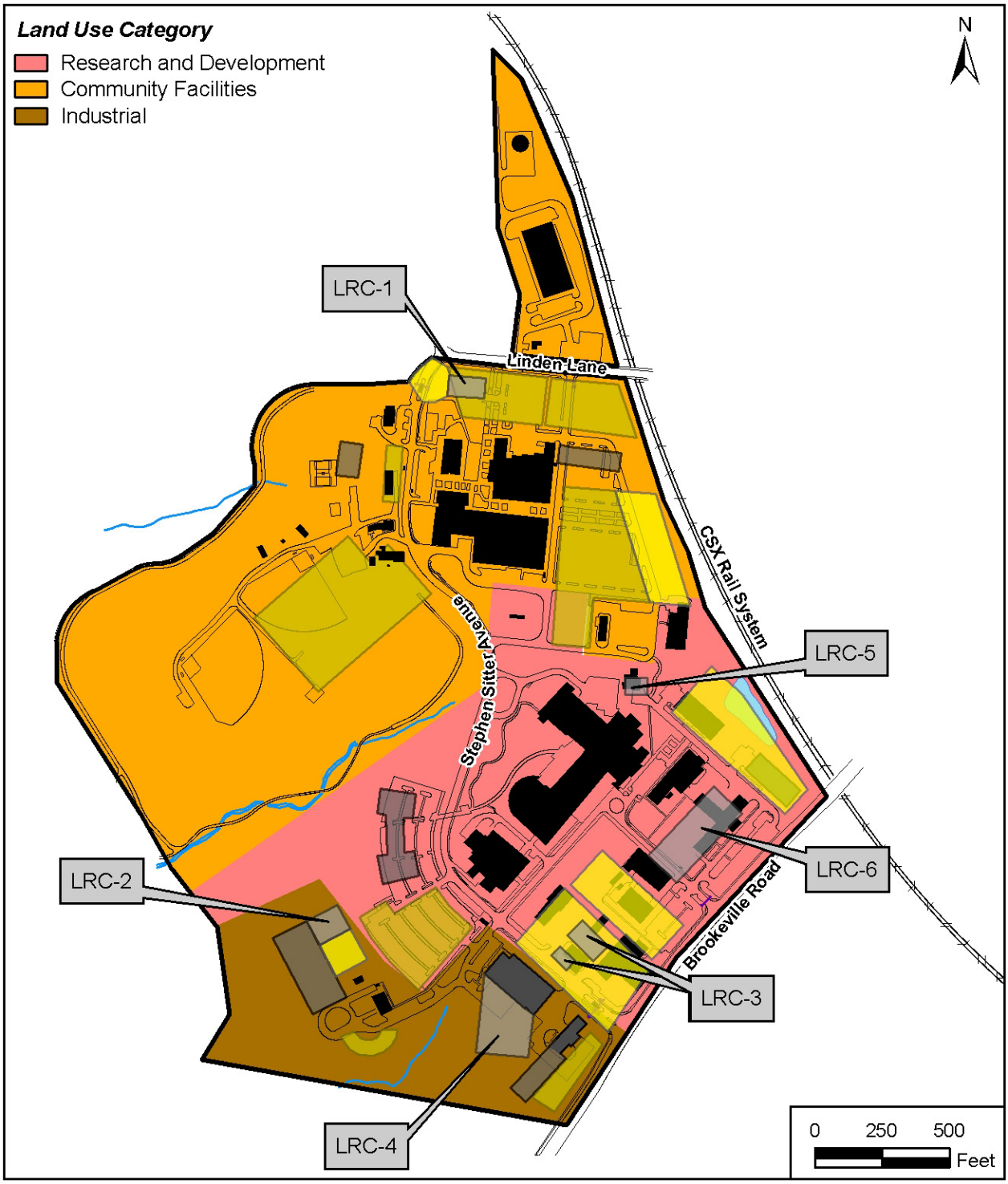
Legend

Proposed Land Use and SRC (BRAC 2011) Projects

Installation Boundary
Proposed SRC (BRAC 2011) New Construction Projects
Proposed SRC (BRAC 2011) Parking
Proposed SRC (BRAC 2011) Renovation Projects

Sources: WRAMC Forest Glen Annex GIS, 2006; PBS&J, 2008.

Figure 2-2



Legend

Proposed 2026 Land Use and LRC Projects

- Installation Boundary
- Proposed LRC (2026) New Construction Projects
- Proposed LRC (2026) Parking
- Proposed BRAC 2011 Projects
- Proposed BRAC 2011 Parking

Sources: WRAMC Forest Glen Annex GIS, 2006; PBS&J, 2008.

Figure 2-3

- Changes land use designations for a number of areas on the basis of revised assessment of their suitability for particular uses, projection of future needs, and the desire to make land uses broader and more encompassing.

- Subjects acreage formerly designated as open space to any of the three proposed land use designations; however, development would still occur outside environmentally constrained areas.

Through 2011 under the SRC, the dominant land uses at FGA are expected to continue to be the combined Research and Development and Industrial land uses, located primarily in the southern portion of the installation along Brookville Road. The Research and Development land use category would cover 46 acres (36 percent) of the installation, and Industrial land use would cover 23 acres (18 percent). The Community Facilities land use in the north, along Linden Lane, is expected to continue to be the hub of commercial, community, and recreational activities at FGA. The Community Facilities land use would include 58 acres (46 percent) of the installation. The Industrial land use would also include a narrow parcel extending north of Linden Lane, currently designated primarily as a similar land use, Supply and Storage, in the existing land use plan. This site is adjacent to the National Park Seminary Historic District (NPSHD) to the west.

Under the LRC (through 2026), the land use plan is slightly different in two respects. The Industrial land use in the southern portion of the installation would shift slightly to the west, to allow for best use of parcels and allow proposed LRC projects to be sited in a more relevant land use category. Similarly, the area to the north of Linden Lane would be re-designated as Community Facilities.

2.3.3 Short-Range Component

The SRC integrates real property master planning into the Army's budgetary and operational planning processes by tracking recommended real property master planning initiatives into the Army's five- to seven-year Program Objective Memorandum (POM) process. The SRC is a time-phased moving snapshot of priority projects planned and programmed on the installation. The SRC for FGA focuses on siting the proposed construction projects developed to address the BRAC 2005 and other short-term impacts and requirements. The SRC reviews the best development options to accommodate the relocating organizations and includes renovation of existing facilities, new construction, use of existing infrastructure, and development of open areas. The plan integrates sustainability principles, force protection, and good urban design concepts.

The RPMP SRC addresses both the BRAC-directed and discretionary relocations, as well as the needs of the WRAIR to move from its present facility. The actions identified in Section 2.2 would require approximately 270,000 square feet (SF) of space, of which approximately 232,000 SF would be new construction and the remaining 38,000 SF would be renovation of existing facilities. A portion of the required space is available upon the departure of activities relocating from FGA. Changes required by these projects would effect a net increase in on-site employment of 220 persons, a 13 percent increase from the current employment level of 1,680.

Table 2-2 lists the projects in the SRC that would meet the facilities requirements of actions listed in Section 2.2. The table shows project number, facility title, size, and notes. The proposed new

Table 2-2
Proposed SRC facility projects

Map site ID	Project title	Size	Number of Staff	Comments
SRC-1	New WRAIR Medical Research Laboratory (BRAC)	100,000 SF	208	Construct new five-story laboratory facility (one floor would be for SRC-2).
SRC-2	New Medical Research Laboratory (Non-BRAC)	8,000 SF	31	Construct new one-story laboratory facility (see SRC-1).
SRC-3	DoD Veterinary Pathology Facility (BRAC)	5,000 SF	31	Renovate existing facility in Building 509.
SRC-4	Administration and Storage Facility (Non-BRAC)	50,000 SF	10	Construct new two-story warehouse facility and associated parking.
SRC-5	AFIP Tissue Repository (BRAC)	33,000 SF	36	Renovate existing facility in Building 606. Note: this action was covered under a Record of Environmental Consideration in Fall 2007 and is not further analyzed in this EA.
SRC-6	Child Development Center (CDC) (Non-BRAC)	13,000 SF	35	Construct new one-story facility for up to 124 children and associated parking.
SRC-7	National Museum of Health and Medicine (BRAC)	40,000 SF	25	Construct new two-story museum.
SRC-8	Emergency Services Facility Expansion (Non-BRAC)	21,500 SF	30	Expand existing fire station (to 7,500 SF two-story facility) and construct new military police (MP) station (14,000 SF) and associated parking to replace those functions that will no longer be provided by WRAMC.
Parking	Construct three new parking lots and reconfigure one parking lot	523, 305, 305, and 510 spaces	–	Four separate locations.
Entry	Provide entry point improvements	Two locations	–	Canopies and additional vehicles barriers.
	Total	Approximately 270,000 SF (232,000 SF new and 38,000 SF renovated)	220[a]	

[a] Reflects net increase in personnel, including those leaving FGA due to outgoing BRAC actions.
Notes: Facility sizes may change slightly as planning progresses. SF= square feet.

buildings and renovations would provide approximately 270,000 SF of administrative, warehouse, and laboratory space. Figure 2-2 shows the proposed location of these projects.

In addition to the foregoing, the Army proposes to decommission Building 516, a former Diamond Ordnance Reactor Facility (DORF). The reactor was decommissioned in the 1990s, but the building is still used for temporary (120-day) storage of radioactive waste. In addition to decommissioning the building and remediating residual radioactive waste to acceptable levels, the

building would be removed from WRAMC's Nuclear Regulatory Commission (NRC) license as one of the sites to store radioactive waste on the installation. The decommissioning process will not be conducted or evaluated in this EA, but will be subject to future studies and documentation.

2.3.4 Long-Range Component

The LRC of the RPMP revision focuses on the facilities and subsequent expansion of the built environment needed to address long-term mission changes to 2026. The LRC addresses carrying capacity of the installation, projected mission requirements, and projected population growth. The LRC involves a proposed land use plan and identifies potential long-range projects that could be constructed to meet mission requirements between 2012 and 2026.

The specific proposed major LRC projects in the RPMP update are listed in Table 2-3 and shown in Figure 2-3. The LRC projects would accommodate the projected future requirements and growth at FGA.

Table 2-3
Proposed LRC facility projects

Map site ID	Project title	Size	Comments
LRC-1	New Access Control Point (Linden Lane)	N/A	Planned for 2013. Existing post exchange and commissary parking lot (160 spaces) would be demolished to accommodate this project.
LRC-2	New Directorate of Public Works (DPW) Facility	30,000 SF	Consolidate DPW staff and equipment from Buildings 601, 602, 603, and 605 into new 20,000 SF building and 10,000 SF equipment storage facility and service/storage lot by 2015.
LRC-3	New Access Control Point (Brookville Road)	N/A	Planned for 2016. Existing motor pool lot would be demolished to accommodate this project.
LRC-4	DoD Tissue Repository Expansion	80,000 SF	Expand facility renovated under SRC-5 to two-story laboratory facility by 2023.
LRC-5	New DoD Veterinary Pathology Facility	5,000 SF	Construct new one-story laboratory facility to move staff from DoD Vet Lab (renovated under SRC-3) by 2024.
LRC-6	New Laboratory Facility	135,000 SF	Construct new three-story facility for 300 by 2025. Staff from Building 510 (15,300 SF) would be relocated to the new facility, and the remaining new space would be for new laboratories.
Parking	Construct three new parking lots and reconfigure one parking lot	523, 305, 305, and 510 spaces	Four separate locations.

Notes: Facility sizes may change as planning progresses. SF= square feet.

2.3.5 Transportation Management Plan

The Transportation Management Plan (TMP) for the proposed RPMP update describes several potential facility improvements associated with the increased travel demands projected to be generated by the BRAC-mandated actions at FGA. These facility improvements pertain to internal installation traffic operations and employee travel patterns changes, external roadway system changes, and public sector transportation system improvements. The TMP identifies:

- Preliminary traffic impact assessment of the envisioned near-term BRAC related installation development through 2011.
- Transportation improvements associated with potential long-term development plans through 2026.
- Requirements for parking. For the projected staff increase of approximately 220 persons, this would require the construction or dedication of approximately 147 additional parking spaces.
- Measures for monitoring, auditing, evaluating, and adjusting the TMP over time.

Additional details on the TMP are provided in Section 4.11.

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SECTION 3.0
ALTERNATIVES

3.1 INTRODUCTION

A bedrock principle of NEPA is that an agency should consider reasonable alternatives to a proposed action. Considering alternatives helps to avoid unnecessary impacts and allows analysis of reasonable ways to achieve the stated purpose. To warrant detailed evaluation, an alternative must be reasonable. To be considered reasonable, an alternative must be "ripe" for decisionmaking (any necessary preceding events having taken place), affordable, capable of implementation, and satisfactory with respect to meeting the purpose of and need for the action. This section addresses potential alternatives to the proposed actions described in Section 2.0, as well as the No Action Alternative. Directed moves (i.e., WRAIR Retrovirology) do not need alternative locations outside of FGA to be analyzed. However, the EA analyzes the alternatives for BRAC discretionary, non-BRAC, and the RPMP actions.

3.2 ALTERNATIVES FOR RELOCATION ACTIONS

In the case of the discretionary moves of units, agencies, and activities proposed for relocation to FGA, the Army considered the potential effects on mission performance that might arise by placing them at a location outside the medical community. The Army also considered "span of control," that is, the ability of the medical community to operate as a cohesive organization. Finally, the Army considered the need to provide force protection, that is, the benefit of there being a secure operational environmental for mission performance.

DoD Veterinary Pathology Residency (DoDVPR) Program. The Army examined four potential locations for relocation of the DoDVPR Program: FGA; Fort Detrick, Maryland; Fort Sam Houston, Texas; and the Uniformed Services University of the Health Sciences, Bethesda, Maryland. In comparison to FGA, the latter three potential locations were found to have very few benefits for relocation of the DoDVPR Program. The Army found that FGA was the preferred site because:

- FGA currently houses a veterinary pathology laboratory at the WRAIR. This laboratory could provide the histology, immunohistochemistry, and electron microscopy needs of the DoDVPR. The consolidation of laboratory assets would reduce duplication, and the efficiency of volume could be expected to ultimately reduce costs to the research mission as well as to the training mission.

- Locating at FGA would expose pathology residents to DoD research earlier in their careers. In addition, it would provide abundant laboratory animal tissue for training purposes. Limited integration of residents into research support roles would hasten their transition from resident to research study pathologist.

- The DoDVPR could relieve WRAIR of the histopathologic analysis segment of their laboratory animal colony quality assurance program. Relieving the WRAIR pathologists of this duty would increase the time they have to support active research areas.

- Movement of personnel to FGA would be at no cost to the government, as it falls within the same region as the current location of the AFIP.

- Co-location of the National Tissue and Case Material Repository at FGA would continue to provide case accessioning, QA/QC, storage and retrieval of all diagnostic consultation cases received as part of the training program.

Compared to other potential receiving locations, the relative mission-related and cost benefits provided by FGA were greater. Accordingly, relocation of the DoDVPR Program to the other locations is not evaluated in detail in this EA.

National Museum of Health and Medicine. The BRAC Commission directives included "… disestablish all elements of the AFIP except the National Medical Museum and Tissue Repository …." The Army considered relocation of the museum to the new Walter Reed National Military Medical Center in Bethesda, Maryland. Subsequent to that proposal, requirements associated with the establishment of the new medical center in Bethesda grew substantially upon inclusion of the Warrior Transition Unit and Center of Excellence for Traumatic Brain Injury and Post Traumatic Stress Disorder. These high priority initiatives have brought the new medical center's physical capacity to its limit. The Army now proposes to relocate the museum to FGA. Data on cost of base realignment actions identified placement of the museum at FGA. The museum's relocation to the Bethesda site is no longer practicable and is not evaluated in detail in this EA.

3.3 ALTERNATIVES FOR THE SHORT-RANGE COMPONENT

3.3.1 Projects Included in the Short-Range Component

As noted in Section 2.3.3, the SRC is a snapshot of priority projects planned and programmed on FGA. It focuses on siting the proposed construction projects developed to address BRAC 2005 and other near-term requirements.

The SRC includes the eight facilities projects shown in Section 2.3.3. This assortment of projects reflects the minimum needs of FGA, as currently known, to receive and house relocating units, agencies, and activities and to continue to provide appropriate levels of support (e.g., emergency services and child care). Inclusion of other projects is not necessary to meet mission requirements; exclusion of any of the cited projects would impair the abilities of FGA to perform is mission. Accordingly, other projects are not evaluated in detail.

3.3.2 Requirements for Renovation or New Construction

Realignment of units involves ensuring that the installation has adequate physical accommodations for personnel and their operational requirements. The Army considers four means of meeting increased space requirements: use of existing facilities, modernization or renovation of existing facilities, leasing of off-post facilities, and construction of new facilities.

AR 210-20 establishes Army policy to maximize use of existing facilities. New construction is not authorized when support for a new mission can be achieved by using existing underutilized adequate facilities, provided that using such facilities does not degrade operational efficiency. Selection and use of facilities to support mission requirements adheres to the foregoing four choices in the order in which they are listed. That is, if there are adequate existing facilities to accommodate requirements, and absent other overriding considerations, further examination of renovation, leasing, or construction alternatives is not required. Similarly, if a combination of use of existing facilities and renovation satisfies the Army's needs, leasing or new construction need

not be addressed. New construction may proceed only when using existing facilities, renovating, leasing, or a combination of such measures is inadequate to meet mission requirements.

Implementation of BRAC and discretionary actions at FGA would result in a net increase of approximately 220 civilians to the post's present workforce. Evaluation of all facilities at FGA shows a substantial shortfall in built space to accommodate the additional personnel and their equipment. In limited instances, some units and functions could be assigned to existing facilities. Of these, some would require renovation to adequately support new occupants (see Table 2-2 for facilities renovation projects). Overall, however, the post requires more than 270,000 SF of additional space to support the proposed actions.

Using off-post leased space to meet FGA's requirements would involve several major drawbacks. Force protection policies specify certain facilities characteristics, such as physical security features, set-back from roadways, and "hardened" construction. Using leased space in the private sector—having personnel and equipment both on-post and off-post—would adversely affect command and control functions, result in higher operational costs, and impair efficient use of resources. For these reasons, use of leased space is not feasible and is not further evaluated in this EA.

Construction of new facilities is driven by the need to ensure that adequate space is available for mission requirements. Before the installation considers construction of new buildings, existing space and renovations are used whenever possible. Officials at FGA have examined the post's existing inventory of approximately 1 million SF of space and found, with only two exceptions, that it is fully utilized for current mission requirements. Buildings that can be utilized for portions of the BRAC moves include Buildings 606 and 508. Beyond these renovations, new construction is required. Potential environmental effects associated with new construction are evaluated in detail in this EA.

3.3.3 Siting of New Construction

The Army considers new construction of facilities when using existing facilities, renovating or leasing would fail to provide for adequate accommodations of realigned functions. The Army considers both general and specific siting criteria for construction of new facilities.

General siting criteria include consideration of compatibility between the functions to be performed and the installation's land use designation for the site, adequacy of the site for the function, proximity to related activities, distance from incompatible activities, availability and capacity of roads, efficient use of property, development density, potential future mission requirements, and special site characteristics, including potential environmental incompatibilities.

Specific siting criteria include consideration of workforce location and efficient, streamlined management of functions. Co-location of similar types of functions, as opposed to dispersion, permits more efficient use of equipment, vehicles, and other assets.

As shown in Table 2-2, FGA has identified several facilities projects required to support the proposed action. The majority of these projects involve new construction that would provide approximately 232,000 SF of new built space.

Proposed locations for new construction in the cantonment area are shown in Figure 2-2. These proposed locations adhere to the general and specific siting criteria set forth above. Notably, 23 acres of the installation are constrained by steep slopes of more than a 20 percent grade, and

another 18 acres are constrained by slopes in excess of 10 percent grade. Also, three of the proposed facilities (medical research laboratory, medical warehouse, and administrative offices) must meet medium, rather than minimum, antiterrorism and force protection standards. While some variations of the present proposal for siting of facilities might be possible, the locations shown in Figure 2-2 reflect a sound, compatible set of solutions. Alternative siting schemes would produce different, but not better, layouts.

3.4 ALTERNATIVES FOR THE LONG-RANGE COMPONENT

As noted in Section 2.3.4, the LRC of the RPMP revision focuses on the facilities and expansion of the built environment subsequent to the period covered by the SRC. The LRC addresses carrying capacity of the installation, projected mission requirements, and projected population growth. The LRC identifies potential long-range projects that could be constructed to meet mission requirements between 2012 and 2026. Six proposed major LRC projects in the RPMP update, as well as future parking arrangements, are shown in Table 2-3, and their proposed locations are shown in Figure 2-3. These LRC projects would accommodate the projected future requirements and growth at FGA.

The LRC's facilities projects reflect the minimum needs of FGA, as currently known, to meet future needs. Inclusion of other projects is not yet known to be necessary to meet mission requirements; exclusion of any of the cited projects would impair the abilities of FGA to perform its mission in the future. Accordingly, other projects are not evaluated in detail in this EA.

Requirements for renovation or new construction, as well as siting of new construction, are subject to the same principles as those recited in Sections 3.3.2 and 3.3.3, above. Accordingly, other alternatives for renovation, new construction, and siting are not evaluated in detail in this EA.

3.5 ALTERNATIVES FOR THE TRANSPORTATION MANAGEMENT PLAN

The TMP consists of examination of the work site setting (existing conditions), future conditions, existing employee travel behavior, and travel demand management strategies. The TMP concludes with logical and feasible recommendations based on their components. The recommendations pertain to existing conditions, Year 2011 BRAC, Year 2026 Master Plan, and the transportation management program strategy. The FGA TMP provides a potential series of physical and operational improvements to the on-post transportation system. Recommendations also are presented for improvements to the public street system in the vicinity of FGA. Further discussions of the recommendations are presented in Section 4.11.

The TMP, reflecting the best professional judgment of its authors, may be adopted by the FGA. While it might be possible for various transportation management specialists to derive alternative recommendations, those that are contained in the TMP are believed to represent the best coherent set of strategies for FGA's present and future transportation needs. In light of the way the TMP is compiled, it currently represents the sole set of proposed solutions. Accordingly, other alternatives, likely not as feasible as those contained in the TMP, are not evaluated in detail in this EA.

3.6 SCHEDULE

Alternatives for scheduling of proposed realignment actions are principally affected by three factors: the availability of facilities to house realigned personnel and functions, efforts to minimize potential disruption of mission activities on the basis of the number of personnel involved in the relocation or the amount of work to be performed, and early realization of benefits to be gained by completion of the realignments. In most cases, minor shifts in schedule would not produce different environmental results.

Under the BRAC law, the Army must initiate all realignments not later than September 15, 2007, and complete all realignments not later than September 15, 2011.[2] Implementation of the proposed action would occur over a span of approximately 3 years. The proposed relocations of personnel and functions would occur upon completion of making facilities ready. Shifting of schedules to accomplish realignment at a later date would unnecessarily delay realizing benefits to be gained. Because earlier implementation is not possible and because delay is avoidable and unnecessary, alternative schedules are not further evaluated in this EA.

3.7 NO ACTION ALTERNATIVE

CEQ regulations require inclusion of the No Action Alternative. The No Action Alternative serves as a baseline against which the impacts of the proposed action and alternatives can be evaluated.

Under the No Action Alternative, FGA would not implement the proposed actions of relocating functions and revising the RPMP. Organizations currently assigned to FGA would continue to operate from the post. No units, agencies, or activities would relocate to FGA from other posts. FGA would use its current inventory of facilities, though routine renovation or replacement actions could occur, through normal military maintenance and construction procedures, as circumstances independently warrant. Since the BRAC recommendations have the force of law and must be implemented, the No Action Alternative is not possible. Consistent with CEQ requirements, however, the No Action Alternative is evaluated in detail in this EA.

[2] Section 2904(a), Public Law 101-510, as amended, provides that the Army must "… initiate all closures and realignments no later than two years after the date on which the President transmits a report [by the BRAC Commission] to the Congress … containing the recommendations for such closures or realignments; and … complete all such closures and realignments no later than the end of the six year period beginning on the date on which the President transmits the report…" The President took the specified action on September 15, 2005.

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SECTION 4.0
AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

Sections 4.2 through 4.13 describe the affected environment for each resource area at Walter Reed Army Medical Center Forest Glen Annex and the consequences of implementation of the Preferred Alternative and the No Action Alternative on those resource areas. Sections 4.14 and 4.15 describe cumulative effects and mitigation measures, respectively.

4.2 LAND USE AND AIRSPACE

4.2.1 Affected Environment

4.2.1.1 Land Use

The Forest Glen Annex (FGA) is an annex of the Walter Reed Army Medical Center (WRAMC). WRAMC includes three areas, Walter Reed Main Section, FGA, and Glen Haven Section. All three areas reside in a four-mile radius of each other, with the Walter Reed Main Section located within Washington, DC, and the other two residing within Montgomery County, Maryland. The mission of the WRAMC is to operate a tertiary care medical center; provide specia1ty and subspecia1ty health services on a worldwide referral basis, conduct graduate medical education programs, and technical education and training programs for health care professional and paramedical personnel, serve as the principal clinical teaching hospital facility for medical students from Uniformed Services University of the Health Sciences, conduct clinical investigation programs, and test and evaluate new systems and concepts (USACE, 2003). FGA is located in Silver Spring, Maryland, about 1.5 miles northwest of the Washington, DC, border. FGA encompasses 127 acres and is bordered by the CSX Rail Line to the east, light industrial areas along Brookville Road to the southeast, Rock Creek to the west, and the National Park Seminary Historic District (NPSHD) to the north (PBS&J, 2007). FGA was originally a private school for girls and was acquired by the DoD in 1942. Since its conversion to a military installation, FGA has acquired several tenants, including Walter Reed Army Institute of Research (WRAIR), the Naval Medical Research Center (NRMC), the Patient Simulation Center, the U.S. Army Biomechanical Research Laboratory, and the Armed Forces Pest Management Board.

Currently, FGA supports several different land uses as shown in Figure 2-1 and listed in Table 4-1, and include the following in approximate descending order of acreage:

Research and Development: Contains facilities in which the conduct of medical research is the primary use, and where these activities are general in scope rather than limited to the direct support of another activity at the installation.

Open Space and Buffer: Areas lacking development, which include both forested and unforested areas.

Recreational: Areas, either open or with structures, which are used for organized or unorganized recreational activities or provide open areas for parades and reviews.

Table 4-1
Acreage by land use

Function	Acreage	Percent of total
Research and development	36	28
Open space and buffer	32	25
Recreation	20	16
Community facilities	20	16
Supply and storage	10	8
Maintenance	6	5
Administration	2	1
Utilities	1	1
TOTALS	127	100

Source: PBS&J, 2008.

Community Facilities: Activities providing personnel services such as chapel, library, day care center, schools, and museums. Commercial services such as the Commissary, post exchange, bank, gas station, are also included.

Supply/Storage: Activities involving the provision or storage of materials and equipment.

Maintenance: Activities involved in the repair and servicing of operational equipment, vehicles, buildings, and grounds, and other uses associated with such activities.

Administration: Land where facilities containing personnel doing administrative or support missions work, generally of a community-support or customer service nature.

Utilities: Areas either open or with structures which are used to provide utilities including water or sewage treatment facilities, heating and power generating plants and major distribution and storage facilities.

The concentration of Research and Development land use is located in the southern portion of FGA south of Forney Road and the southern section of the Ireland Road. The area is dominated by the Sen. Daniel K. Inouye Building, which houses a portion of WRAIR, the largest biomedical research laboratory in the DoD (WRAIR, 2007). The northeast portion contains the Community and Facilities land use, while the entire northwestern portion and a corridor along the southwestern boundary consist of undeveloped land and recreation land use.

The NPSHD is located north of the installation. The area, which totals 32 acres, was placed on the National Register of Historic Places in 1972 while it was still part of FGA. In 2000, the Army declared the historic district as excess to its needs and transferred it to the General Services Administration (GSA). It has since been turned over to Montgomery County and was subsequently sold to a private developer. The NPSHD is currently being redeveloped as a neighborhood of historic condominiums, townhouses courtyard, and single-family homes. Currently there are no buildings on FGA that are considered part of the NPSHD, although an architectural investigation in 1990 stated that Building 136, located north of Linden Lane, was potentially eligible for National Register listing. Another historic district near FGA is the Linden Historic District, which is located east of FGA, and is separated from the installation by the CSX railroad tracks. Montgomery County created the Linden Historic District in May 1993 (PBS&J, 2008).

Although there is a large portion of undeveloped land along the western half of FGA, there is only a limited amount of room for additional development. FGA is bounded on all sides by commercial, industrial, and residential development as well as an active rail line restricting the ability for outward expansion. In addition, the majority of the undeveloped land within FGA has steep slopes greater than the Corps of Engineers recommended 5 percent slope limit for development. Furthermore, the undeveloped portions would require major utility expansion for development. The NPSHD also limits the development opportunities due to potential viewshed impacts. Although some of the older buildings are obsolete and could be demolished to make way for new developments, many of the structures and features in the NPSHD possess historic value and should be preserved. However, because of the age and character of the historic buildings, many would require high amounts of revitalization and maintenance. In addition, the Ireland Road corridor that surrounds the northwest portion of FGA should also be preserved.

FGA has varying levels of Anti Terrorism Force Protection (AT/FP). Medical Research Laboratories, Warehouses, and Administrative Offices have been given a Medium level of protection, requiring them to have a 182-foot perimeter to the controlled perimeter of the installation and a 111-foot perimeter to roadways and parking areas. All other buildings on FGA have standard AT/FP standoff distances (PBS&J, 2008).

FGA and Montgomery County are not within Maryland's Coastal Zone, therefore federal and state coastal zone regulations do not apply to FGA (Maryland DNR, 2007).

4.2.1.2 Airspace

There is a visual flight rules (VFR) limited use helipad located near the softball fields on the western portion of FGA. The associated airfield safety imaginary surfaces constrain development around the helipad. Neither natural nor man-made objects are permitted to penetrate the airfield safety surface. This limits development in the area by restricting building height near the northeast section of FGA and by prohibiting any construction in the Clear Zone. Although the helipad results in some associated noise issues, it is used infrequently. There were only 29 rotary wing landings (27 military and two MedStar) at FGA during 2006 (PBS&J, 2007). This amount of use would place noise levels in the range of Noise Zone I, which is compatible with most land uses. These flights are most likely related to travel associated with WRAMC. With the BRAC closing of WRAMC in 2011, need for the helipad would most likely not exist. The helipad has been recommended for demolition, thus eliminating any land use restrictions associated with it.

4.2.2 Environmental Consequences

4.2.2.1 Preferred Alternative

Long-term minor adverse and beneficial effects on land use would be expected under the Preferred Alternative.

4.2.2.1.1 Land Use Plan Update

The Preferred Alternative land use plan would aggregate land use categories in a way that reflects and supports the evolution in FGA's mission. The expanded and consolidated land use categories—Research and Development, Community Facilities, and Industrial—support FGA's mission within the region as a medical research facility.

The Preferred Alternative land use plan provides for the orderly development of FGA. The land use plan would be adopted in two stages in accordance with the RPMP. The SRC (Figure 2-2)

would be adopted by 2011 and the LRC (Figure 2-3) would be adopted by 2026. The land use plan also allows for the consolidation of current Research and Development, Maintenance, and Supply and Storage land uses in the southern portion of FGA into a single Research and Development category under the land use plan update. The Community Facilities and Recreation land use categories would consolidate into a single Community Facilities category. The Supply and Storage land use north of Linden Lane would become an Industrial category under the revised 2011plan, and become Community Facilities under the 2026 plan as Industrial land uses consolidate in the southern portion of FGA. The Research and Development and Industrial land use categories would be better aligned between 2011 and 2026 to accommodate proposed LRC projects including LRC-2, the proposed new DPW facility. While the Open Space land use category under the existing land use plan would be consumed by other land use categories and not be carried forth to the land use plan update, regulatory requirements protecting high-value environmental resources would remain in effect.

The proposed land use designations simplify and consolidate the existing land use categories in that they recognize broader actual compatibility between adjacent land uses on the installation. The more broadly defined categories provide Army planners at FGA with greater flexibility for future development and reduce land use compatibility issues.

Off-post effects of the Preferred Alternative land use plan would be negligible. The proposed plan would not contravene local planning efforts.

4.2.2.1.2 Short-Range Component and BRAC Actions

Under the SRC, BRAC and non-BRAC actions on FGA include six projects involving new structures, renovation of an existing building, construction of four new parking lots (considered as one action), construction of one temporary parking lot, and improvement to two entry points. The BRAC projects include new buildings that will house the WRAIR Medical Research Laboratory (SRC-1), another new medical research laboratory (SRC-2), and the new National Museum of Health and Medicine (SRC-7). The renovated building will house a DoD Veterinary Facility (SRC-3), another BRAC project. Three additional non-BRAC actions are planned under the SRC, a new administration and storage facility (SRC-4), a child development center (CDC) (SRC-6), and expansion of the post's emergency facility (SRC-8). The concentration of SRC and BRAC activities occurs in the southern portion of the installation. This minimizes potential adverse effects on the historic districts to the north and east of FGA.

Approximately 48 percent of the acreage impacted by the SRC and BRAC action would convert areas from pervious to impervious, and the remainder would occur on already impervious surfaces. The two medical research laboratories would replace an existing parking lot in the southern half of FGA.

To facilitate assessment of land use impacts under the SRC, a comparison of the impact of the proposed SRC projects on land use was made between FGA's existing land use plan and the proposed land use plan. The south-central portion of FGA where the laboratories are planned under the Preferred Alternative is designated as Research and Development land use in the existing land use plan as well as in the proposed land use plan. The non-BRAC administration and storage facility (SRC-4) is located in the southwest corner of the installation on an area that is half forested and half open field. Under the existing land use plan this storage facility would cover an area that is designated Open Space, Supply/Storage, and Research and Development. Under the proposed land use change the entire footprint would fall under the Research and

Development land use. Although the proposed storage facility would occur partly in the Open Space land use, it would only cause a minor effect on land use as the land is unused, generally has slopes less than 10 percent and does not form a major buffer between land use types. The area already has road access and utilities that accommodate Building 516 adjacent to a storage facility. The building that would be renovated for the DoD veterinary facility (SRC-3) is located in the Research and Development land use in both the existing and proposed land use plans. It would not result in any adverse effects on land use. The proposed CDC (SRC-6) would be constructed on land that is currently used for storage and partially forested. The area is located in the Community land use category under the proposed land use plan and would cause no impact on land use. An indoor pistol shooting range is currently adjacent to the proposed CDC site, which would result in an incompatible adjacent land use. The proposed National Museum of Health and Medicine (SRC-7) would be constructed on an existing parking area. Under the proposed land use plan this area would be designated as a Community land use area, which would be compatible with the facility. The emergency facilities expansion (SRC-8) would occur in a cleared area to the southwest of the existing facility. Under the proposed land use plan this area would be designated Industrial, and would not have an adverse effect on land use. The proposed parking lots would be expected to have little to no impact on land use. The largest permanent parking area is proposed to be sited on an area that is currently a parking lot. The remaining three permanent parking areas are sited on two cleared areas and a forested area, respectively. The lots are sited and in Open Space, Research and Development, and Maintenance land use areas under the existing land use plan and in Research and Development areas in the proposed land use plan. The temporary parking area is larger than the other permanent lots. It is sited to the east of the softball fields on FGA. This area is designated as Recreation under the existing land use plan and as Community under the proposed land use. The temporary parking area would have no lasting adverse effect on land use. The renovations to the entry gates would have no effect on land use.

Transfer of administrative command and control of FGA from WRAMC to Fort Detrick would be expected to have no adverse effects on land use or other resource areas. All mission activities on FGA would continue to be managed by Fort Detrick in accordance with all applicable environmental regulations.

All proposed structures fit within AT/FP standards without requiring additional planning. No effect on airspace is expected due to SRC and BRAC actions.

4.2.2.1.3 Long-Range Component

The LRC actions on FGA would include three new structures, expansion of an existing building, two new access control points (ACPs), three new parking lots, and reconfiguration of an existing lot. The new structures would house the Directorate of Public Works (DPW) (LRC-2); DoD Veterinary Pathology Facility (LRC-5), which would replace SRC-3; and a 135,000 SF laboratory (LRC-6). The expansion project would increase the size of the DoD Tissue Repository Building (LRC-4) currently proposed under the SRC as SRC-5. The two new ACPs would be located at the Brookville Road (LRC-3) and Linden Lane (LRC-1) entrances. Similar to the SRC actions, the LRC activities occur in the southern portion of the installation, with the exception of the Linden Lane ACP. This would result in no adverse effects on the historic districts to the north and east of FGA. Of the LRC activities, only the DPW building and the tissue repository expansion would be constructed on land that's not already developed.

To facilitate assessment of land use impacts under the LRC, a comparison of the impact of the proposed LRC projects on land use was made between FGA's existing land use plan and the proposed land use plan. Approximately 41 percent of the acreage impacted by the LRC projects

would convert areas from pervious to impervious. The proposed DPW facility (LRC-2) is located in the southwest corner of the installation on an area that is half forested and half open field. Under the existing land use plan this facility and its corresponding parking lot would cover an area that is designated Open Space, Supply/Storage, and Research and Development. Under the proposed land use plan the entire footprint would fall under the compatible Industrial land use category. Although the proposed expansion would occur partly in Open Space land use designated under the existing land use plan, it would only cause a minor effect on land use as the land is unused, generally has slopes less than 10 percent and does not form a major buffer between land use types. The area already has road access and utilities that accommodate Building 516 adjacent to it. The DoD tissue repository facility, renovated under SRC-5 and expanded under LRC-4, is located in the Research and Development land use in the existing land use plan and its expansion would extend it into the Open Space land use. It would be completely within the Research and Development land use under the proposed land use plan. Although the proposed expansion would occur partly in the Open Space land use under the existing plan, it would only cause a minor effect on land use for reasons similar to those described for LRC-2 above. The proposed DoD veterinary pathology facility (LRC-5) and laboratory facility (LRC-6) projects would both be constructed in the Research and Development land use in the existing and proposed plan and have no effect on land use. The proposed parking lots would be expected to have little to no impact on land use. The three permanent parking areas to be constructed are sited on two cleared areas and a forested area. Another parking lot is to be reconfigured. The lots are sited and in Open Space, Research and Development, Administration, Community, Supply/Storage, and Maintenance land use areas under the existing land use plan and in Research and Development, Community, and Industrial land use areas in the proposed land use plan. The two new access control points at the Brookville Road (LRC-3) and Linden Lane (LRC-1) entrances would be located, respectively, in the Community and Maintenance land uses in the existing plan and in the Community and Research and Development land uses in the proposed plan. They would have no effect on land use.

4.2.2.1.4 Transportation Management Plan

Long-term beneficial effects would be expected on land use from implementation of the TMP. Construction of parking facilities as described above would accommodate the facility development proposed under both the SRC and LRC without restricting other land uses.

4.2.2.2 No Action Alternative

No impacts would be expected. No land use designations would change under the No Action Alternative, no new activities that could create land use incompatibilities would be introduced, and no changes to existing or proposed airspace would occur.

4.2.3 BMPs/Mitigation Measures

Apart from general best management practices (BMPs) listed in Table 4-20 in Section 4.15, no mitigation measures to land use would be required with the implementation of the Preferred Alternative.

4.3 AESTHETICS AND VISUAL RESOURCES

4.3.1 Affected Environment

The aesthetic nature of FGA varies greatly throughout its relatively small 127-acre parcel due to the varied land uses within and around it. Views to the south and east of FGA are characterized by light industrial activities with a low aesthetic value. The CSX rail line adds to the low aesthetic value of the eastern border. This is contrasted by the views to the north and west which are characterized by the NPSHD and forested parkland, both of which have a high aesthetic value. The interior of FGA is just as aesthetically diverse. Development has occurred on the eastern portion of FGA since the 1940s. This has left the eastern side with a wide array of buildings of differing sizes, styles, and levels of upkeep. The area is dominated by the Sen. Daniel K. Inouye Building, whose large size and modern architecture overshadow other developments in the area. Smaller buildings and parking areas fill up the remainder of the eastern side. There are also several historical buildings towards the north of the installation that are in varying states of repair. The western half of FGA is largely undeveloped. Aside from two softball fields, the western half is characterized by steep slopes and forested areas, which slowly merge in with Rock Creek Stream Valley Park to the west.

4.3.2 Environmental Consequences

4.3.2.1 Preferred Alternative

Short- and long-term minor adverse and beneficial effects on aesthetics would be expected under the Preferred Alternative.

4.3.2.1.1 Land Use Plan Update

The Preferred Alternative land use plan would have long-term minor beneficial effects on aesthetics of the area. The land use plan under the LRC would have a beneficial effect by consolidating the Industrial land use areas on the installation, a land use that generally has a moderate to low aesthetic integrity, into the southwest corner of the installation. The area north of Linden Lane, which is currently zoned as an Industrial-type land use and is adjacent to the historic district, would eventually change to Community Facilities land use under the LRC land use plan. The Industrial land use category would be consolidated in the southern portion of the installation and would be farther from the historic districts than at present.

4.3.2.1.2 Short-Range Component and BRAC Actions

Short- and long-term minor adverse and beneficial effects would be expected due to BRAC actions on FGA. The majority of BRAC activities occur in the southwest portion of the installation. This minimizes potential effects on the historic districts to the north and east of FGA. The exceptions to this are the temporary parking facility sited to the east of the softball fields, the new one-story CDC (SRC-6) sited on a storage area north of the softball fields, the National Museum of Health and Medicine (SRC-7) sited on a parking area in the northeast portion of the installation, and one of the entry gate improvements sited at the gate that lies on the northern border of FGA. The temporary lot would be in a location with a high traffic of community members and family, thus it may have a minor adverse effect on aesthetics surrounding the athletic fields; although its effect would only be temporary. The new structures for the CDC and museum are sited on areas that currently have a moderate to low aesthetic quality. Their location and relative small size would result in them having only a negligible adverse impact on aesthetics. The plans for the entry gate improvements call for an overhead

canopy and additional vehicle barriers. These additions would have a negligible effect on the existing aesthetic character of the entry gate and would therefore not have an effect on the historic district directly to the north. The aesthetic effect of the southern entry gate would be expected to be similar.

The SRC actions on the southern portion of the installation include the construction of new buildings for three projects. The two medical research facilities (SRC-1 and SRC-2) would be adjoining. They are sited on an existing parking lot with forested areas to the north and west, large research facilities to the east, and parking lot to the south. Even though the proposed buildings would be four and five stories respectively, their aesthetic impact would be minimal due to the dominance of the aesthetic viewshed by the Inouye building as well as the low aesthetic value of the current parking lot. The buildings will be visible from Brookville Road, and would be expected to have negligible adverse aesthetic effect on the Brookville Road area, because of the existing light industrial land use along this road. The other proposed building, the administration and storage facility (SRC-4), is sited on a semi-forested area with forested areas to the north, south, and west, and parking area to the east. The facility would be expected to have a minor adverse effect on aesthetics due to its two story building height, and it being adjacent to forested areas.

The proposed parking lots would be expected to have minor adverse effects on aesthetics. The largest permanent parking area is sited on a current parking lot and surrounded by research facilities. The remaining three permanent parking areas are sited on two cleared areas and a forested area, respectively. The most northern lot is located to the north of Forney Road with parking areas to the north and east, the Inouye building to the south, and a cleared field to the west. The two southern lots are both relatively small with 40 parking spaces. The easternmost of these lots would be visible from Brookville Road, although it would only have a negligible aesthetic effect due to the existing light industrial area located there. The westernmost lot would have a tree buffer to the east, south, and west, and the newly constructed administration and storage facility to the north. The temporary parking lot is larger than the other permanent lots, and would be sited to the east of the softball fields on FGA. As mentioned previously, the temporary parking area would have no long-term adverse effects on aesthetics.

The proposed renovation to the veterinary facility (SRC-3) would be expected to have a minor beneficial effect on aesthetics due to improvements to the buildings. The expansion of the emergency services facility (SRC-8) would have only negligible adverse effects on aesthetics due to the same factors as the administration and storage facility.

4.3.2.1.3 Long-Range Component

Similar to the SRC, the LRC would have short- and long-term minor adverse aesthetic impacts. The LRC actions on FGA would include three new structures, expansion of an existing building, two ACPs, three new parking lots, and reconfiguration of an existing lot. The new structures would house the Directorate of Public Works (DPW), the DoD Veterinary Pathology Facility, and a 135,000 SF laboratory. The expansion project would increase the size of the DoD Tissue Repository Building. The two new ACPs would be located at the Brookville Road and Linden Lane entrances. Similar to the SRC actions, the LRC activities occur in the southern portion of the installation, with the exception of the Linden Lane ACP. This would result in no adverse effects on the historic districts to the north and east of FGA. Of the LRC activities, only the

DPW building and the tissue repository expansion would be constructed on land that's not already developed.

The majority of the LRC projects are small buildings, additions to existing buildings, and parking lot reconfigurations that would have little impact on aesthetics. The one exception is LRC-6, a 3-floor 135,000 SF laboratory. This proposed structure is sited in the southeast section of FGA. Its aesthetic impact would be minor due to its proximity to the existing Inouye Building, which dominates the aesthetic character of the area. There would be short-term adverse aesthetic impacts due to construction activities.

4.3.2.1.4 Transportation Management Plan

Short-term minor adverse effects would be expected on aesthetics from implementation of the TMP. Construction related to transportation improvements would have an adverse effect until completion.

4.3.2.2 No Action Alternative

No effects on aesthetic and visual resources would be expected under the No Action Alternative.

4.3.3 BMPs/Mitigation Measures

Apart from general BMPs listed in Table 4-20 in Section 4.15, no mitigation measures to a would be required with the implementation of the Preferred Alternative.

4.4 AIR QUALITY

4.4.1 Affected Environment

4.4.1.1 National Ambient Air Quality Standards and Ambient Air Quality

The U.S. Environmental Protection Agency (EPA) Region 3 and the Maryland Department of the Environment (MDE) regulate air quality in Maryland. The Clean Air Act (CAA) (42 U.S.C. 7401-7671q), as amended, gives EPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) that set acceptable concentration levels for seven criteria pollutants: particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulfur dioxide (SO_2), carbon monoxide (CO), nitrous oxides (NO_X), ozone (O_3), and lead. Short-term NAAQS (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term NAAQS (annual averages) have been established for pollutants contributing to chronic health effects. Each state has the authority to adopt standards stricter than those established under the federal program; however, the State of Maryland accepts the federal standards.

Federal regulations designate Air-quality Control Regions (AQCRs) in violation of the NAAQS as *nonattainment* areas. Federal regulations designate AQCRs with levels below the NAAQS as *attainment* areas. *Maintenance* AQCRs are areas that have previously been designated *nonattainment* and have been redesignated to *attainment* for a probationary period through implementation of maintenance plans. According to the severity of the pollution problem, nonattainment areas can be categorized as marginal, moderate, serious, severe, or extreme.

Montgomery County (and therefore FGA) is within the National Capital Interstate AQCR (AQCR 47) (40 CFR 81.12). AQCR 47 is in the O_3 transport region (OTR) that includes 12 states and Washington, DC. EPA has designated this area as the following:

- Moderate nonattainment for the 8-hour O_3 NAAQS
- Nonattainment for the $PM_{2.5}$ NAAQS
- Maintenance area for CO
- Attainment for all other criteria pollutants (40 CFR 81.347).

4.4.1.2 Local Ambient Air Quality

Existing ambient air quality conditions near FGA can be estimated from measurements conducted at air quality monitoring stations close to the installation. The most recent available data are used to describe the existing ambient air quality conditions at the installation (Table 4-2).

4.4.1.3 FGA Air Permit and Existing Emissions

FGA is designated as a synthetic minor stationary source of air pollutants and operates under permit number 031-00983A, issued by MDE March 28, 2006. Permitted stationary sources on the installation include primarily heating units and diesel-powered emergency generators. FGA conducts comprehensive annual air emission inventories for the installation. FGA 2006 installation-wide air emissions are shown in Table 4-3.

4.4.2 Environmental Consequences

4.4.2.1 Preferred Alternative

Implementation of the Preferred Alternative would have short-term and long-term minor adverse effects on air quality. Minor increases in emissions would be *de minimis* (of minimum importance), and would not contribute to a violation of any federal, state, or local air regulation.

4.4.2.1.1 Land Use Plan Update

The planning activities associated with the new land use plan under the Preferred Alternative would not generate any direct or indirect air emissions. Therefore, updating the land use plan designations would have no effect on air quality. A detailed analysis is presented in the next sections on implementation and potential effects associated with the SRC, LRC, and TMP activities.

4.4.2.1.2 Short-Range Component and BRAC Actions

General Conformity. The CAA contains the legislation that mandates the general conformity rule (GCR) to ensure that federal actions in nonattainment and maintenance areas do not interfere with a state's timely attainment of the NAAQS. The general conformity process requires federal agencies to determine if their action(s) would increase emissions of criteria pollutants above preset threshold levels (40 CFR 93.153). The general conformity rule specifies threshold or *de*

Table 4-2
Local ambient air quality near FGA

Pollutant	Primary NAAQS[a]	Secondary NAAQS[a]	Monitored data[b]
CO			
8-hour maximum[c] (ppm)	9	None	1.7
1-hour maximum[c] (ppm)	35	None	2.7
NO_2			
Annual arithmetic mean (ppm)	0.053	0.053	0.024
Ozone			
8-hour maximum[d] (ppm)	0.08	0.12	0.097
$PM_{2.5}$			
Annual arithmetic mean[e] ($\mu g/m^3$)	15	15	15.3
24-hour maximum[f] ($\mu g/m^3$)	65	65	37.7
PM_{10}			
Annual arithmetic mean[g] ($\mu g/m^3$)	50	50	20
24-hour maximum[c] ($\mu g/m^3$)	150	150	59
SO_2			
Annual arithmetic mean (ppm)	0.03	None	0.006
24-hour maximum[c] (ppm)	0.14	None	0.021

Notes:

[a]Source: 40 CFR 50.1-50.12

[b]Source: USEPA, 2007.

[c]Not to be exceeded more than once per year.

[d]The 3-year average of the fourth highest daily maximum 8-hour average ozone concentrations over each year must not exceed 0.08 ppm.

[e]The 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from must not exceed 15.0 $\mu g/m^3$.

[f]The 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor must not exceed 65 $\mu g/m^3$.

[g]The 3-year average of the weighted annual mean PM_{10} concentration at each monitor within an area must not exceed 50 $\mu g/m^3$.

ppm = parts per million

$\mu g/m^3$ = micrograms per cubic meter

NO_2 = Nitrogen dioxide

NA = Not Applicable/ Not monitored in this region

Table 4-3
2006 annual emissions at FGA

Pollutant	FGA emissions (tons/year)
Volatile organic compounds (VOCs)	1.93
Nitrogen oxides (NO_X)	15.14
Carbon monoxide (CO)	8.50
Sulfur dioxide (SO_2)	0.41
PM_{10} ($PM_{2.5}$)	0.79

Source: U.S. Army, 2007.

minimis emission levels. *De minimis* emissions are total direct and indirect emissions of a criteria pollutant caused by a federal action in a nonattainment or maintenance area at rates less than specified applicability thresholds. FGA is located in an AQCR designated as moderate nonattainment for the 8-hour O_3 NAAQS, nonattainment for the $PM_{2.5}$ NAAQS, and maintenance area for CO. Therefore, the applicability thresholds are 100 tons per year for $PM_{2.5}$, SO_2, NO_X and CO, and 50 tons per year for VOCs. In addition, the general conformity rule applies if the emissions are *regionally significant*. *Regionally significant* emissions are defined as the total direct and indirect emissions of a federal action that represents 10 percent or more of an area's total emissions for a criteria pollutant. Under the SRC, the construction emissions included estimating equipment use for site preparation, construction and landscaping for the projects listed in Table 2-2.

The facility's operational emission estimates included:

- Personal operating vehicles for employees
- Heating emissions from natural gas boilers.

To determine the applicability of the GCR, estimated air emissions from proposed construction activities, and stationary and mobile sources were compared to the *de minimis* rates (Table 4-4). The total of direct and indirect emissions of CO, NO_X, VOCs, $PM_{2.5}$, and SO_2 are less than the applicability thresholds. The maximum CO, NO_X and VOC annual emissions are less than 10 percent of the emissions in the National Capital AQCR; therefore are not regionally significant (Tables 4-5 and 4-6). Pending the full implementation of the $PM_{2.5}$ NAAQS, there is no current regional emission budget for $PM_{2.5}$ or SO_2. Due to the limited size and scope of the alternatives when compared to the overall regional activity, it is not anticipated that emissions of $PM_{2.5}$ or SO_2 would be regionally significant. The GCR does not apply and no formal conformity determination is required. Therefore, impacts would be considered minor. Detailed methodologies for estimating air emissions and a Draft Record of Non-Applicability (RONA) to the GCR are provided in Appendix A.

Table 4-4
Air emissions compared to applicability thresholds

Year	CO [tpy]	NO_X [tpy]	$PM_{2.5}$ [tpy]	SO_2 [tpy]	VOC [tpy]	*De minimis* threshold [tpy][a]	Would emissions equal/exceed *de minimis* levels? [Yes/No]
2008	0.18	0.45	0.03	0.07	0.03	100(50)	No
2009	1.75	4.39	0.30	0.69	0.32	100(50)	No
2010	2.46	6.13	0.43	0.98	0.47	100(50)	No
2011	3.21	8.38	0.73	1.27	0.72	100(50)	No
2012	0.44	1.16	0.12	0.19	0.10	100(50)	No
2013	1.15	2.89	0.43	0.62	0.22	100(50)	No
Operational emissions	15.4	1.50	0.10	0.00	1.20	100(50)	No

tpy = tons per year
[a] *De minimis* threshold for VOC is 50 tpy.

Table 4-5
VOC emissions compared to AQCR 47 total emissions

Year	VOC emissions [tpd]	AQCR 47 Total VOC emissions[a] [tpd]	Percent of regional emissions [%]	Regionally significant? [Yes/No]
2008	0.000	325.8	<0.1%	No
2009	0.001	325.8	<0.1%	No
2010	0.002	325.8	<0.1%	No
2011	0.003	325.8	<0.1%	No
2012	0.000	325.8	<0.1%	No
2013	0.001	325.8	<0.1%	No
Operational emissions	0.010	325.8	<0.1%	No

[a]Sources: MWCOG, 2003; 2005 Projected Levels.
tpd = tons per day

Table 4-6
NO_X emissions compared to AQCR 47 total emissions

Year	NO_X emissions [tpd]	AQCR 47 Total NO_X emissions[a] [tpd]	Percent of regional rmissions [%]	Regionally significant? [Yes/No]
2008	0.002	487.5	<0.1%	No
2009	0.019	487.5	<0.1%	No
2010	0.027	487.5	<0.1%	No
2011	0.036	487.5	<0.1%	No
2012	0.005	487.5	<0.1%	No
2013	0.013	487.5	<0.1%	No
Operational emissions	0.010	487.5	<0.1%	No

[a]Source: MWCOG, 2003.
tpd = tons per day

Regulatory Review. The new facilities would be equipped with boilers and would be subject to federal and state air permitting regulations, including new source review (NSR) or New Source Performance Standards (NSPS). Any heating unit above 1 million British Thermal Units (BTUs) per hour would have a construction permit application submitted to MDE at least 90 days prior to construction (COMAR 26.11.02).

The construction projects would be accomplished in full compliance with current and pending Maryland regulatory requirements, through the use of compliant practices and/or products. Within the region, these regulatory requirements are applicable to:

- Visible emissions and fugitive dust
- Asphalt paving operations
- Open burning
- Use of portable fuel containers
- Architectural and industrial maintenance coatings
- Use of consumer products.

During construction, reasonable precautions would be taken to prevent fugitive dust from becoming airborne, including, but not limited to:

- Use of water for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land
- Application of asphalt, water, or suitable chemicals on dirt roads, materials, stockpiles, and other surfaces that can give rise to airborne dusts
- Covering open-bodied trucks that are transporting materials likely to give rise to airborne dusts
- Removal of earth or other material from paved streets onto which earth or other material has been deposited

4.4.2.1.3 Long-Range Component

Short- and long-term minor adverse effects would be expected. The activities outlined in the LRC are listed in Table 2-3 and are similar in size and in scope as those outlined under the SRC. They involve the construction and operation of approximately 250,000 SF of administrative, and laboratory facilities over a 6-year period. The annual emission and their impacts for these activities are expected to be less that those outlined for the SRC and would therefore be considered minor.

General Conformity. The GCR is only applicable for a five year period preceding the implementation of a proposed federal action. The activities outlined in the LRC would require additional emission estimations at the time the action was taken to ensure the total direct, indirect emissions from the action would not exceed the applicability thresholds, and that the GCR would not apply. Notably, these activities are well beyond the act mandated attainment year for the region's pollutants of concern. It is likely that the attainment status, air quality rules, and regulations within the region will significantly change by that time.

Regulatory Review. Permitting requirements and applicable air quality regulations would be similar to those outlined under the SRC. Air quality regulations and applicable standards are updated frequently. All permitting of stationary sources and construction would be accomplished in full compliance with Maryland regulatory requirements at the time of construction. BMPs would be similar to those outlined for the SRC.

4.4.2.1.4 Transportation Management Plan

Some components of the currently adopted TMP include staggered work hours, the provision of transit and vanpool discounts, the establishment of reserved carpool/vanpool parking spaces, shuttle bus services to Metrorail stations, and personalized rideshare matching services. All activities and traffic management approaches outlined in the TMP would limit further these already minor effects on air quality. No activities outlined in the TMP would generate any additional direct or indirect air emissions. No substantial transportation improvement projects are planned to be implemented to meet the modest increases in on and off-post traffic due to the new personnel. Changes in traffic patterns would be minimal.

Mobile sources of concern include primarily automobiles and vehicular traffic. The primary air pollutants from mobile sources are CO, NOx, and VOCs. Lead emissions from mobile sources

have declined in recent years through the increased use of unleaded gasoline and are extremely small. Potential SO_2 and particulate emissions from mobile sources are small compared to emissions from point sources, such as power plants and industrial facilities. Air quality effects from traffic are generally evaluated on two scales.

Meso-scale—Meso-scale analysis is performed for the entire AQCR by the states and the Metropolitan Washington Council of Governments (MWCOG). Potential emission increases from additional vehicle miles traveled (VMT) resulting from an action could affect regional O_3 and/or $PM_{2.5}$ levels. However, because these are problems of regional concern and subject to air transport phenomena under different weather conditions, regional effects are generally evaluated by the Metropolitan Planning Organization (MPO) using regional airshed model(s). Meso-scale analysis is generally not conducted on a project-specific basis and is not necessary for this EA.

Microscale—CO is a site-specific pollutant with higher concentrations found adjacent to roadways and signalized intersections. Microscale analysis is performed to identify localized hot spots of criteria pollutants at the intersection level. There would be a net increase in on-site employment of 220 persons, a 13 percent increase from the current employment level of 1,680. Although the area is a maintenance area for CO, no change in the Level of Service (LOS) at any intersections on or near the installation is anticipated due to these additional vehicles. As a result, minimal differences exist between the Preferred Alternative and No Action Alternative with respect to CO. In addition, all intersections on or close to the installation operate at a LOS B or greater and are expected to for the foreseeable future with or without implementation of the Preferred Alternative. Therefore, CO would not be greater than the NAAQS at any of these intersections (PBS&J, 2008; VDOT, 2006).

The traffic associated with the Preferred Alternative is not anticipated to be an air quality concern for PM because it does not involve new highways or expressways, and the intersections affected are primarily secondary arterial roads (USEPA, 2006). In addition, Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the CAA. The MSATs are compounds emitted from highway vehicles and non-road equipment. As with PM, traffic from these intersections is not anticipated to be an air quality concern for MSAT because the intersections affected are primarily secondary arterial roads and new traffic is expected to be very small. Quantitative procedures to address MSAT analysis have not yet been standardized and are not standard practice for non-transportation projects on secondary arterials; therefore not included in this EA (FHWA, 2006).

4.4.2.2 No Action Alternative

Selecting the No Action Alternative would result in no impact to the existing air quality. No construction, changes in traffic, or changes in military operations at FGA would be expected. Ambient air quality conditions would remain as described in Section 4.4.1.

4.4.3 BMPs/Mitigation Measures

Apart from general BMPs listed in Table 4-20 in Section 4.15, no mitigation measures to air quality would be required with the implementation of the Preferred Alternative.

4.5 NOISE

This section describes the existing noise environment, the effects associated with the alternatives, and the potential mitigation measures, if required.

4.5.1 Affected Environment

4.5.1.1 Noise Fundamentals

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies, depending on the type and characteristics of the noise; distance between the noise source and the receptor; receptor sensitivity; and time of day. Noise may interfere with communication, produce awakenings from sleep or, in some cases, damage hearing. Noise is often generated by activities essential to a community's *quality of life*, such as construction or vehicular traffic.

Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz (Hz) are use to quantify sound frequency. The human ear responds differently to different frequencies. "A-weighing", described in a-weighted decibels (dBA), approximates this frequency response to express accurately the perception of sound by humans. Sounds encountered in daily life and their approximate level in dBA is provided in Table 4-7.

The dBA noise metric describes steady noise levels. Although very few noises are, in fact, constant. Therefore, a noise metric, the A-weighted Day-night Sound Level (ADNL), has been developed. Day-night Sound Level (DNL) is defined as the average sound energy in a 24-hour period with a 10-dB penalty added to the nighttime levels (10 PM to 7 AM). DNL is a useful descriptor for noise because (1) it averages ongoing yet intermittent noise, and (2) it measures total sound energy over a 24-hour period. In addition, Equivalent Sound Level (L_{eq}) is often used to describe the overall noise environment. L_{eq} is the average sound level in dB.

Table 4-7
Common sounds and their levels

Outdoor	Sound level (dBA)	Indoor
Snowmobile	100	Subway train
Tractor	90	Garbage disposal
Noisy restaurant	85	Blender
Downtown (large city)	80	Ringing telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: Harris, 1998.

The Noise Control Act of 1972 (PL 92-574) directs federal agencies to comply with applicable federal, state, interstate, and local noise control regulations. In 1974, EPA provided information suggesting continuous and long-term noise levels in excess of DNL 65 dBA are normally unacceptable for noise-sensitive land uses such as residences, schools, churches, and hospitals.

4.5.1.2 Existing Ambient Noise Levels

There are no significant sources of noise at FGA. The existing urban soundscape is predominantly influenced by car and truck traffic, lawn maintenance equipment, human and bird vocalizations. In addition, intermittent noise from the Building 503 rooftop heating, ventilation, and air conditioning (HVAC) units has had a history of affecting a nearby community. A noise abatement study is currently being conducted to resolve the issue. There are no live-fire training or military aircraft operations at the installation. There are no incompatible land uses at FGA due to noise. The CSX Railroad along the eastern boundary and intermittent helicopter operations are an infrequent sources of noise; 29 flights took place in 2006 (PBS&J, 2008). Existing noise levels (L_{eq} and ADNL) were estimated using the techniques specified in the *American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound Part 3: Short-term measurements with an observer present* (ANSI, 2003). Table 4-8 presents the estimated noise levels for FGA.

Table 4-8
Estimated existing noise levels at FGA (dBA)

L_{eq} (daytime)	L_{eq} (nighttime)	ADNL
58	52	60

Source: ANSI, 2003.

4.5.2 Environmental Consequences

4.5.2.1 Preferred Alternative

Implementation of the Preferred Alternative would have short-term negligible to minor adverse effects on the noise environment. These minor increases in noise would primarily be due to the use of heavy equipment during construction. These minor increases would be temporary in nature and would end upon completion of construction.

4.5.2.1.1 Land Use Plan Update

The planning activities associated with the new land use plan under this alternative would not generate any noise. Therefore, updating the land use plan designations would have no effect on the noise environment. A detailed analysis is presented in the next sections on implementation and potential noise effects associated with the SRC, LRC, and TMP activities.

4.5.2.1.2 Short-Range Component and BRAC Actions

The Preferred Alternative SRC would require construction activities at FGA. Individual pieces of construction equipment typically generate noise levels of 80 to 90 A-weighted decibels (dBA) at a distance of 50 feet. With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction sites. The zone of relatively high construction noise levels typically extends to

distances of 400 to 800 feet from the site of major equipment operations. Locations more than 1,000 feet from construction sites seldom experience appreciable levels of construction noise. Table 4-9 presents typical noise levels (dBA at 50 feet) that EPA has estimated for the main phases of outdoor construction. Given the temporary nature of proposed construction activities, and the limited amount of noise that construction equipment would generate, this impact would be considered minor.

No changes in subsequent operational noise levels would be expected.

Table 4-9
Noise levels associated with outdoor construction

Construction phase	dBA L_{eq} at 50 feet from source
Ground clearing	84
Excavation, grading	89
Foundations	78
Structural	85
Finishing	89

Source: USEPA, 1971.
L_{eq} = Equivalent Sound Level

4.5.2.1.3 Long-Range Component

Short-term minor adverse effects to the noise environment would be expected with implementation of the Preferred Alternative LRC, similar to those under to SRC. These effects would primarily be due to noise generated during the period of LRC project construction period.

4.5.2.1.4 Transportation Management Plan

No activities outlined in the TMP would generate appreciable amounts of noise. No transportation improvement projects would be implemented to meet the modest increases in traffic due to the new personnel. Changes in traffic patterns would be minimal, and their effects on the noise environment would be negligible.

4.5.2.2 No Action Alternative

Selecting the No Action Alternative would result in no impact to the ambient noise environment. No construction or changes in traffic at FGA would be expected. Ambient noise conditions would remain as described in Section 4.5.1.

4.5.3 BMPs/Mitigation Measures

Although construction-related noise impacts would be minor, the following BMPs would be performed to reduce further any realized noise impacts:

- Construction would primarily occur during normal weekday business hours
- Construction equipment mufflers would be properly maintained and in good working order.

Construction noise would dominate the soundscape for all on-site personnel. Construction personnel, and particularly equipment operators, would don adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.

Other BMPs are listed in Table 4-20 in Section 4.15.

4.6 GEOLOGY AND SOILS

4.6.1 Affected Environment

4.6.1.1 Geologic and Topographic Conditions

Geologically, FGA lies in the easternmost portion of the Upland Section of the Piedmont Plateau physiographic province of the Appalachian Highlands (PBS&J, 2007). The landscape is generally rolling hills although steep slopes occur along streams and rivers. Erosion and weathering have left well-developed soils overlying the bedrock. Bedrock consists of metamorphosed sedimentary and igneous rocks, including schist, gneiss, and gabbro. Mineral resources in the Piedmont Plateau province include building stone, slate, and small deposits of nonmetallic minerals; crushed stone is used in aggregate, cement and lime. Saprolite, a layer of weathered bedrock occurs within FGA (Department of the Army, 2002).

The topography of FGA is gently rolling with steeper slopes to the south and west, adjacent to South Ireland and Rock Creeks. Slopes range from nearly level to greater than 25 percent. Slopes exceeding 20 percent cover about 23 acres and slopes between 10 and 19 percent cover 18 acres (PBS&J, 2007). The minimum elevation on FGA occurs near Rock Creek and is approximately 190 feet above mean sea level (msl). The high point of 340 feet msl occurs in the eastern portion of FGA near the Service Building and Community Center Complex (Department of the Army, 2002).

4.6.1.2 Soils

Eleven soil mapping units representing 10 soil series (and Urban Land) occur across the FGA. Table 4-10 summarizes key characteristics for these soil mapping units. Generally, soil depth ranges from less than 10 inches to greater than 60 inches. Most are well-drained to moderately well-drained with the exception of Baile Silt Loam, which is poorly drained. Baile Silt Loam, occurring near the facility's northern boundary, is also on the National Hydric Soils List. Hydric soils are a component of jurisdictional wetlands if specific vegetation and hydrological characteristics also occur on particular site (see Section 4.8.1.4 below). The Brinklow-Blockton Channery Silt Loam is the only soil mapping unit to have a moderate shrink/swell potential, a characteristic that would need to be considered in building foundations and roads; all other soil types have low shrink/swell potential. In addition to this soil mapping unit, there are three other soil types found on the FGA that are considered to be highly erodible or potentially highly erodible (see Table 4-10) due to their soil characteristics and slope ranges (USDA, 2007).

Urban soils occur in the eastern portion of the FGA northwest of Brookville Road and south of Linden Lane. Urban soil types demonstrate little structure and are a result of cut and fill (soil removal and placement) activities resulting from the construction of roads, buildings, and infrastructure. These soil types therefore, do not demonstrate the typical characteristics observed in undisturbed soils (Department of the Army, 2002).

Table 4-10
Soil mapping unit characteristics

Soil mapping unit	Drainage class	Shrink/swell potential	Hydric	Other
Galia Silt Loam 8-15% Slope	Well-drained	Low	No	Highly Erodible, Farmland of Statewide Importance
Glenelg Silt Loam 3-8% Slope	Well-drained	Low	No	Potentially Highly Erodible, Farmland of Statewide Importance
Glenelg Silt Loam 8-15% Slope	Well-drained	Low	No	Highly Erodible, Farmland of Statewide Importance
Glenelg-Urban Land Complex 8-15% Slope	Well-drained	Low	No	Farmland of Statewide Importance
Baile Silt Loam 0-3% Slope	Poorly drained	Low	Yes	Potentially Highly Erodible
Brinklow-Blockton Channery Silt Loam 15-25% Slope	Well-drained	Moderate	No	Highly erodible
Occoquan Loam 8-15% Slope	Well-drained	Low	No	Farmland of Statewide Importance
Codorous Silt Loam 0-3% Slope	Moderately well-drained	Low	No	Soil occasionally flooded
Wheaton Silt Loam 0-8% Slope	Well-drained	Low	No	Potentially Highly Erodible, Farmland of Statewide Importance
Urban-Wheaton Complex 0-8% Slope	Well-drained	Low	No	Potentially Highly Erodible
Blocktown Channery Silt Loam 15-25% slope	Well-drained	Low	No	Highly erodible
Urban Land	N/A	N/A	N/A	Not Highly Erodible

USDA, 2007.

4.6.1.3 Prime Farmland

Prime farmland refers to soils that have the best combination of physical and chemical characteristics for producing agricultural crops. *Farmlands of statewide importance* are not as productive as prime farmlands but are still valuable for agricultural production. Both of these soil classifications are protected under the Farmland Protection Policy Act (FPPA) of 1981. The intent of the act is to minimize the extent to which federal programs contribute to the unnecessary or irreversible conversion of farmland soils to nonagricultural uses. The act also ensures that federal programs are administered in a manner that, to the extent practicable, would be compatible with private, state, and local government programs and policies to protect farmland. The Natural Resources Conservation Service (NRCS) is responsible for overseeing compliance with the FPPA and has developed rules and regulations for implementation of the act (see 6 CFR Part 658; revised January 1, 1998).

There are no prime farmlands on FGA. However, six soil mapping units on FGA are classified as farmlands of statewide importance as listed in Table 4-10. However, the FFPA does not apply to FGA because of its urban location and built-up nature of the site (Department of the Army, 2002).

4.6.2 Environmental Consequences

4.6.2.1 Preferred Alternative

Short and long-term negligible to minor adverse effects would be expected on geology, topography, and soils from the implementation of the proposed construction projects associated with the implementation of the Preferred Alternative. Comprehensive planning and precautions should be taken into account when developing erosion and sediment control plans for the development on these proposed construction areas. The use of appropriate erosion control measures and site stabilization solutions following construction have proven successful in similar settings and should be adequate to minimize the extent and severity of impacts that may result from erosion and sediment.

4.6.2.1.1 Land Use Plan Update

Development that could be allowed under the Preferred Alternative land use plan could result in localized long-term minor adverse changes to topography resulting from construction. The changes in land use designations from the 2003 FGA master plan to the proposed land use plan update could allow more changes in topography. The new land use designations include areas that are that are considered environmentally sensitive, although these environmental constraints (e.g. wetlands) would retain their protected status and potential development would continue to be limited in some of these areas. Changes to topography on FGA as a result of the change in land use plans would be minor and localized.

4.6.2.1.2 Short-Range Component and BRAC Actions

Short- and long-term minor effects on geology, topography, and soils would be expected. Construction activities would generally involve stripping, cut and fill of topsoil and the weathered, fractured portion of the bedrock would likely be disturbed or removed with little to no effect on the underlying consolidated bedrock. Topography and soils would be permanently modified within and immediately adjacent to the footprints of buildings and parking lots that would be built under the Preferred Alternative. Specifically, the proposed parking lot southwest of Building 516 would require a substantial amount of fill material as slopes in that area exceed 20 percent. Increases in slopes would also increase the potential for erosion. In accordance with the Clean Water Act (CWA), the Army would also prepare a site-specific stormwater pollution prevention plan (SWPPP) before construction is started. Implementation of sediment control measures would minimize or eliminate adverse effects that could result to changes in topography and soils.

Proposed construction of facilities and infrastructure would involve locations that had been disturbed previously, while other facilities would be built on relatively undisturbed ground. Long-term losses of soil productivity would occur under new buildings and parking lots. Other areas disturbed in the construction process would exhibit short-term losses in soil stability, most of which would be regained once post-construction landscaping became established. Other effects to soils would be associated with the increased potential for erosion and sedimentation resulting from excavation, grading, removal of vegetation, and exposure of soil during construction. As noted above, the implementation of standard construction practices identified in

the erosion and sediment control plan and SWPPP would focus on minimizing erosion, sediment, and soil losses.

The proposed WRAIR Medical Research Laboratory (SRC-1), Medical Research Facility (SRC-2), administration and storage facility (SRC-4), and a small parking lot proposed west and south of Building 516 are all proposed on sites undlerlain by Brinklow-Blockton Channery Silt Loam 15-25 percent slopes. This soil type occurs on steep slopes and is highly erodible, which warrants special attention in developing the sediment and erosion control plans. In addition, the proposed site the DoD Veterinary Pathology Facility (SRC-3) and the northeastern portion of the site for the proposed National Museum of Health and Medicine (SRC-7) are on Gaila Silt Loam 8-15 percent slopes. This soil type also occurs on steep slopes and is highly erodible.

The proposed CDC (SRC-6) and a large portion of the proposed parking facility that would be located on the recreation fields south of SRC-6 would be built upon Brinklow-Blockton Channery Silt Loam 15-25 percent slopes, Glenelg Silt Loam 3-8 percent slopes, and Wheaton Silt Loam 0-8% percent slopes, which are all highly or potentially highly erodible.

No effects on prime farmland or soils of statewide importance would be expected. Since all areas of the FGA have been determined to be committed to urban development, no further action is required under the FPPA.

4.6.2.1.1 Long-Range Component

The proposed LRC projects planned for FGA would have similar effects to geology and soils as the SRC projects described above. A number of the projects are located on sloping topography and soil types that can be characterized as highly erodible or have the potential to be highly erodible. Special consideration and precautions should be taken into account when developing erosion and sediment control plans for the development on these proposed construction areas. The use of appropriate erosion control measures and site stabilization solutions following construction have proven successful in similar settings and should be adequate to minimize the extent and severity of impacts that may result from erosion and sediment.

The proposed ACP at Linden Lane (LRC-1) is currently proposed to be built upon Gailia Silt Loam 8-15 percent slopes, which is considered to be a highly erodible soil type. However, the area the site would be built upon is relatively flat; therefore, major soil erosion is unlikely to occur. The other ACP project at Brookville Lane (LRC-3) is proposed on Urban Land which is not highly erodible.

The proposed DPW facility (LRC-2) and its adjacent parking facility located to the southeast are positioned on top of Glenelg Silt Loam with slopes ranging from 3-15 percent, which is a potentially highly erodible soil type.

The southern boundary for the proposed DoD Tissue Repository Facility (LRC-4) and the northeastern corner of the proposed DoD Veterinary Pathology Facility (LRC-5), as well as the two proposed parking facilities to the northeast and southeast, are situated on Brinklow-Blockton Channery Silt Loam 15-25 percent slopes, which is highly erodible. LRC-4 also overlaps Urban-Wheaton Complex 0-8 percent slopes, which has the potential to be highly erodible.

4.6.2.1.4 Transportation Management Plan

Long-term negligible adverse effects would be expected on geology, soils, and topography from implementation of the TMP. Proper planning and precautions should be taken into account when developing erosion and sediment control plans for the development on proposed physical transportation infrastructure improvements. The use of appropriate erosion control measures and site stabilization solutions following construction have proven successful in similar settings and should be adequate to minimize the extent and severity of impacts that may result from erosion and sediment.

4.6.2.2 No Action Alternative

No effects would be expected. There would be no effect on geology, topography, or soils under the No Action Alternative.

4.6.3 BMPs/Mitigation Measures

Apart from general BMPs listed in Table 4-20 in Section 4.15, no mitigation measures to geology and topography would be required with the implementation of the Preferred Alternative.

4.7 WATER RESOURCES

4.7.1 Affected Environment

4.7.1.1 Surface Water

Surface Water Features. FGA is entirely within the drainage basin of Rock Creek, which originates in Montgomery County, Maryland, and flows generally south, crossing from Montgomery County into Washington, DC, where it ends at its confluence with the Potomac River less than 10 miles south of FGA. Runoff from FGA discharges into Rock Creek along the installation's western boundary and thereafter flows south through Washington, DC, into the Potomac River, and eventually to the Chesapeake Bay.

Several small streambeds collect FGA surface water runoff (Figure 4-1). All streams flow east to west eventually draining into Rock Creek. Accumulated precipitation drains into these stream beds or overland into Rock Creek. The water depths of these streams vary from completely dry to approximately eight inches. Earlier installation documents identify the prominent streambed draining the central area of FGA as South Ireland Creek (WRAIR, 1993), although that stream name is not recognized in the federal Geographic Names Information System (GNIS) (USGS, 2008a). No other streambeds within FGA are indicated as having perennial flow (USGS, 2008b). There are no U.S. Geological Survey (USGS) gaging stations in Rock Creek, or immediately near the FGA. The nearest USGS gage (#01648000) is on Rock Creek at Sherrill Drive in Washington, DC, about 3 miles downstream from FGA. The average daily streamflow for the period 1929 to date at this gage is 63.7 cubic feet per second (cfs). The average daily flow at this station has ranged from 0.5 cfs to 5000 cfs during the same time period (USGS, 2008b). One stormwater retention pond is located on the eastern boundary of FGA (WRAMC GIS, 2006).

Surface Water Quality. The water quality of Rock Creek has been degraded by sedimentation and other forms of nonpoint source pollution as well as by limited point source pollutants discharged in the creek's highly urbanized watershed (Woolpert, 2002). Montgomery County DEP's watershed restoration action plan for Rock Creek identified the water quality in the portion

Legend

Installation Boundary
Detention Pond
100-Year Floodplains
Stream Buffer

Water Resources

Sources: WRAMC Forest Glen Annex GIS, 2006; Maryland DNR GIS, 2006.

Figure 4-1

of Rock Creek closest to FGA as fair to poor (Montgomery County DEP, 2001). Section 303(d) of the Clean Water Act requires states to identify and develop a list of waterbodies that are impaired and for which technology-based and other required controls have not resulted in attainment of water quality standards. The Maryland Department of the Environment (MDE) has listed Rock Creek on its 2006 303(d) list of waters impaired for bacteria, aquatic life use, nutrients, and sediment, but not impaired for metals or toxics (MDE, 2006).

It is highly unlikely that toxins and etiologic agents originating at FGA from medical waste would be released in the effluent of the Blue Plains wastewater treatment plant in Washington, DC, because etiologic and toxic liquid wastes are discharged from the FGA facilities only after being decontaminated. The Blue Plains treatment plant then provides primary, secondary, and tertiary treatment to the effluents, which further reduces any harmful concentrations of toxins and chemicals (Gaudy and Gaudy, 1980). FGA has an NPDES Phase I permit for the entire annex for stormwater associated with industrial activities.

4.7.1.2 Hydrogeology/Groundwater

FGA lies above the Piedmont Hard Rock Formation (Maryland Office of Environmental Programs, 1986). These formations contain the most productive hard rock aquifers in the state. Approximately 20 percent of these formations may be expected to yield 50 gallons per minute or more of water. In general, the quality of the groundwater of the Piedmont Hard Rock formation is good. Geologically, these formations are fractured non-calcareous rocks. Since the fractures are not extensively interconnected, the potential for groundwater contamination is moderate. Any contamination is likely to be localized (Maryland Office of Environmental Programs, 1986). More productive aquifers are located to the south and southeast of FGA. These coastal aquifers include the Patuxent, Patapsco, and Magothy aquifers and their respective recharge areas. Because of the character of the bedrock on which FGA is situated, it does not provide a useable aquifer for supply of drinking water.

The well nearest FGA is part of the Maryland Geological Survey's Observation-Well Network and is located in Fairland, Maryland (well number MOEh20). Water in this well has ranged from 4.4 to 16.4 feet below land surface with usual levels ranging from 10 to 15 feet below land surface during 31 years of monitoring (1955-1986). There is no evidence that seeps or springs are present near FGA (WRAIR, 1993).

4.7.1.3 Floodplains

FGA includes a small portion of 100-year floodplain that borders Rock Creek (Woolpert, 1999; FEMA, 2006).

4.7.1.4 Coastal Zone

FGA and Montgomery County are not in a state-designated Coastal Zone area (Maryland DNR, 2007).

4.7.2 Environmental Consequences

4.7.2.1 Preferred Alternative

Short- and long-term negligible to minor adverse effects on water resources would be expected. These effects would primarily be a consequence of increased runoff associated with land

disturbance activities during construction and renovation in the short term, and increased impervious surfaces in the longer term.

4.7.2.1.1 Land Use Plan Update

Consolidating and aggregating land use categories as outlined in the Preferred Alternative could have minor adverse effects on water resources. The Preferred Alternative land use plan would reclassify land uses from a total of 72 acres of Community Facilities, Open Space, and Recreation, to 58 acres of Community Facilities in the SRC, then to 64 acres of Community Facilities in the LRC (Table 2-1). In addition, as part of the reconfiguration, some existing Open Space in the southwest part of FGA would be reclassified to Research and Development and Industrial (SRC), then mostly Industrial (LRC). All the redesignated land use categories would permit development, which generally can contribute to adverse impact on water resources. At the same time, environmentally sensitive area, such as streambeds, buffer zones, and steep streamside terrain, would remain protected under existing regulations and BMPs regardless of their land use designation. Specific measures to minimize adverse impacts from SRC, LRC, and TMP development activities are discussed in the following sections.

4.7.2.1.2 Short-Range Component and BRAC Actions

Surface Water. Short- and long-term minor adverse effects on surface waters would be expected as a consequence of planned construction and operation activities. Approximately 48 percent of the acreage impacted by the SRC and BRAC actions would convert surface areas from pervious to impervious, and the remainder would occur on already impervious surfaces. The two medical research laboratories (SRC-1 and SRC-2) would replace an existing parking lot in the southern half of FGA. Water quality impairments to the surface water within FGA could arise from stormwater runoff from impervious surfaces, such as vehicle parking lots, chemicals used for lawn maintenance, and highly erodible soils. Vehicle parking lots contribute small, unquantified amounts of fuel, oils, grease, antifreeze, and other contaminants from leakage and routine activities. Because of the presence of potentially erodible soils at FGA (see Section 4.6, Geology and Soils), sedimentation and high turbidity could result from soil erosion from stormwater events in the absence of adequate vegetative cover.

In the short term, construction and renovation activities could increase erosion and could increase dissolved solid, sediment, and petroleum hydrocarbon runoff. The Preferred Alternative would increase the amount of impervious surface and correspondingly the amount of runoff at the sites of new construction for relocated and renovated facilities. Increased roadway surfaces resulting from the creation of one temporary and four new parking lots would also increase the quantity and decrease the quality of surface stormwater runoff. During the clearing, grading, and construction phases of the various SRC and BRAC projects, there would be short-term increases in erosion and sediment-containing runoff. Long-term impacts following construction may include additional pollutants, such as hydrocarbons and metals (from increases in vehicular use), being carried into surface waters and thereafter Rock Creek. All short- and long-term impacts to the receiving waters of Rock Creek would be minimized by appropriate stormwater management, erosion, and sediment control plans and BMPs, such as silt fencing, straw bales, and other BMPs that comply with the latest version of the *Maryland Stormwater Design Manual* (MDE 2000) and regulations governing Maryland's stormwater management and sediment and erosion control programs, including *Maryland Stormwater Management Guidelines for State and Federal Projects* (MDE 2001), *Maryland Erosion & Sediment Control Guidelines for State and Federal Projects* (MDE 2004), and the Stormwater Management Act of 2007 (MDE 2008).

Groundwater. Short-term minor and long-term negligible adverse effects on groundwater resources could occur. Increased waterborne pollutants (e.g., dissolved solids, petroleum hydrocarbons, sediment) resulting form demolition, renovation, construction, and operation activities could be transported into the groundwater system. Adherence to water protection protocols as described in the preceding paragraph would reduce potential adverse effects.

Floodplains. No facilities are proposed in the 100-year floodplain of Rock Creek; therefore, no effects would be expected.

Coastal Zone. Because FGA is not in the coastal zone, no effects on the coastal zone would be expected.

4.7.2.1.3 Long-Range Component

Similar to the SRC, the LRC would be expected to have short- and long-term minor adverse impacts on water resources. LRC projects (Figure 2-3, Table 2-3) are similar in size and in scope to SRC projects and would primarily take place in the southern portion of FGA where development already exists or is planned to occur in the intervening time under the SRC. Approximately 41 percent of the acreage impacted by the LRC projects would convert surface areas from pervious to impervious. Potential adverse impacts would be minimized by following stormwater management, erosion, and sediment control plans and BMPs as outlined in Section 4.7.2.1.2. One of the LRC parking lots would overlap the existing stormwater retention pond along the eastern boundary of FGA. Loss of this existing retention pond area would be offset by constructing appropriate replacement stormwater management facilities to meet or exceed existing capabilities for stormwater management and water resource protection.

4.7.2.1.4 Transportation Management Plan

Similar to the SRC and LRC, short- and long-term minor adverse effects on water resources would be expected during construction and reconfiguration of new parking facilities and on-post access roads, and during ongoing operations. Potential adverse impacts would be minimized by following stormwater management, erosion, and sediment control plans and BMPs as outlined in Section 4.7.2.1.2.

4.7.2.2 No Action Alternative

No effects on water resources would be expected under the No Action Alternative.

4.7.3 BMPs/Mitigation Measures

Stormwater management and low impact development methods would be incorporated into the design and construction of all new facilities at FGA. This would include use of BMPs such as maintenance of stream buffers, installation of bioretention cells in parking lots and in areas receiving rooftop runoff, maximum use of open swales, pervious pavement, and infiltration trenches as appropriate. In addition, the installation's NPDES Phase I permit may require updating to account for construction activities planned during implementation of the RPMP. These and other BMPs are listed in Table 4-20 in Section 4.15. No mitigation measures to water resources would be required with the implementation of the Preferred Alternative.

4.8 BIOLOGICAL RESOURCES

4.8.1 Affected Environment

4.8.1.1 Vegetation

Vegetation on the FGA reflects a mix of densely forested areas occurring along the slopes and streams on the southern and western portions of the facility, and maintained lawns and landscape plantings in the vicinity of the facilities. The vegetation on the FGA exhibits a history typical of the eastern seaboard where virgin forests were cleared by early settlers for agricultural purposes. These long-abandoned fields experienced a successional process where weedy species initially become established only to be displaced by species better adapted to those sites. Through numerous replacements over time, a native forest species become reestablished with a mixture of native and introduced species in the understory.

Forests are dominated by native tree species common to the area, including white oak (*Quercus alba*), black oak, (*Q. velutina*), tulip tree (*Liriodendron tulipifera*), and smoothbark hickories (*Carya* sp.). Chestnut oak (*Q. prinus*), scarlet oak (Q. coccinea), scrub pine (*Pinus virginiana*) and pitch pine (*P. rigida*) occur less commonly but are also present (WRAIR, 1993). Native understory species include spicebush (*Linera benzoin*), mapleleaf viburnum (*Viburnum acerfolium*), blask snakeroot (*Sanicula canadensis*) and hairy sweet cicely (*Osmorhiza daytoni*). Typical of urbanized environments, a number of non-native species have displaced native species and also occur as dominants in the understory; these species include amur honeysuckle (*Lonicera maakii*), English ivy (*Hedera helix*), Japanese honeysuckle (*L. japonica*), climbing euonymous (*Euonymous fortunei*) and oriental bittersweet (*Celastrus orbiculatus*) (PBS&J, 2007).

4.8.1.2 Wildlife

The wildlife present within the grounds of the FGA reflect the terrestrial and aquatic habitats present in Montgomery County. Wildlife noted in routine observational and trapping surveys include common species for the area – eastern gray squirrel (*Sciurus carolinensis*), white-tailed deer (*Odocoileus virginianus*), woodchuck (*Marmota monax*), raccoon (*Procyon lotor*), white-footed mice (*Peromyscus leucopus*) and short-tailed shrew (*Blarina brevicauda*) (Woolpert, 2003). Two amphibians (gray tree frog [*Hyla versicolor*] and two-lined salamander [*Eurycea bislineata*]) and one amphibian (common box turtle [*Terrapene carolina*]) were observed in surveys of the FGA grounds (Woolpert, 2003). Bird species observed at the site reflect a mixture of residents and neotropical migrants. Resident species occurring within and adjacent to the FGA include common house sparrow (*Passer domesticus*), northern cardinal (*Cardinalis cardinalis*), blue jay (*Cyanocitta cristata*), rock dove (*Columba livia*), American crow (*Corvus brachyrhynchos*), and European starling (*Sturnus vulgaris*). Dominant neotropical migratory species observed in the vicinity include blackpoll warbler (*Dendroica striata*), red-eyed vireo (*Vireo olivaceus*), American robin (*Turdus migratorius)*, and American redstart (*Setophaga ruticillia*) (Woolpert, 2003; PBS&J, 2007). Birds and mammals are primarily associated with the native forested areas within and adjacent to the facility although many species could also be observed within the managed landscapes. Streams within the facility are intermittent, providing limited habitat for aquatic species (PBS&J, 2007).

4.8.1.3 Sensitive Species

The Endangered Species Act (ESA) (16 U.S.C. 1532 et. seq.) of 1973, and as amended, was enacted to provide a program for the preservation of endangered and threatened species and to provide protection for the ecosystems upon which these species depend for their survival. All federal agencies are required to implement protection programs for designated species and to use their authorities to further the purposes of the act.

The U.S. Fish and Wildlife Service (USFWS) was consulted regarding the potential presence of ESA-listed species in the vicinity of the FGA, according to procedures established in ESA Section 7. The response from USFWS indicated that no proposed or listed federal threatened or endangered species were known to exist in the area except for occasional transient individuals (PBS&J, 2007). Three state rare plant species have been documented within FGA boundaries, a 10-foot patch of passionflower vine (*Passiflora incarnata*), a 10 to 12-foot tall sapling of umbrella tree (*Magnolia tripetala*), and an American chestnut tree (*Castanea dentata*) (PBS&J, 2007). All species were located within the 100-buffer associated with Ireland Creek.

4.8.1.4 Wetlands

The objective of the CWA is to maintain and restore the chemical, physical, and biological integrity of waters of the United States. Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into waters of the United States, including deepwater habitats, special aquatic sites, and wetlands. The USACE has the authority to make decisions regarding the jurisdictional status of waters, including wetlands. For an area to be considered a jurisdictional wetland by the USACE, it must have evidence of hydrophytic vegetation, hydric soils, and wetland hydrology. Under normal circumstances (site not altered in the last 5 years), the absence of any one of these three parameters results in a non-wetland determination. The State of Maryland's Nontidal Wetlands Act requires a 25-foot buffer around jurisdictional wetlands and increases the buffer to 100 feet for wetlands of special state concern. Wetlands of state special concern include wetlands adjacent to steep slopes (in excess of 15 percent) or having an erodibility factor (K_w) greater than 0.35.

Three small jurisdictional wetlands are reported near the southern end of the facility border, east of Buildings 513 and 516 (PBS&J, 2007). These wetlands, including the 25-foot buffer, account for a total of 0.41 acres. The wetlands are classified as palustrine deciduous forested and palustrine emergent/scrub-shrub wetlands (Department of the Army, 2002). Palustrine forested wetlands are also known to occur in the stream bottoms that drain into Rock Creek. The jurisdictional status of these wetlands has not been determined although they occur within the 100-foot stream buffers (PBS&J, 2007; WRAIR, 1993).

4.8.2 Environmental Consequences

4.8.2.1 Preferred Alternative

Short- and long-term negligible to minor effects on biological resources would be expected from the Preferred Alternative.

4.8.2.1.1 Land Use Plan Update

The Preferred Alternative land use plan would aggregate land use categories in a way that reflects and supports the evolution in FGA's mission. The expanded and consolidated land use

categories—Research and Development, Community Facilities, and Industrial—support FGA's mission within the region as a medical research facility, as described in Section 4.2.2.1.1. Consolidating land use categories would have a negligible effect on biological resources. A long-term minor adverse effect would be the rerouting of wildlife corridors due to encroachment of new development in undeveloped areas. Also, areas previously designated as Open Space, which included buffer zones and wetlands, under the existing land use plan have been redesignated as land use categories that would permit development. However, environmentally sensitive areas such as buffer zones and wetlands within these land use categories would remain protected under existing environmental regulations regardless of their land use designation. No effects on threatened, endangered, or other species of concern would be expected by implementation of the land use plan. All known habitats for sensitive species would be avoided.

4.8.2.1.2 Short-Range Component and BRAC Actions

Vegetation. Long-term minor adverse effects on vegetation would be expected from construction associated with the SRC and BRAC actions. Approximately 48 percent of the acreage impacted by the SRC and BRAC projects would convert areas from pervious to impervious. Long-term minor adverse effects from construction activities would include the loss of a small area of mature forest in with construction of the administration and storage facility (SRC-4) and the parking lot south of Building 516. Construction of the emergency services facility expansion (SRC-8) and a parking lot would occur on a previously disturbed grassy area located southwest of Buildings 606 and 609. The CDC (SRC-6) and two other permanent parking lots would also be developed on grassy areas. A temporary parking lot would also be developed in the grassed area east of the FGA ballfields and west of Stephen Sitter Avenue. Construction of these buildings and parking lots would result in the permanent loss of portions of the managed landscape and a temporary loss in the case of the temporary parking lot. Other aspects of the Preferred Alternative would involve renovation or construction in areas that are parking lots or previously developed, neither of which would adversely affect vegetation.

Wildlife. Long-term negligible to minor adverse effects to wildlife from construction activities would include direct losses of habitat at SRC project sites. Effects would result from the displacement of wildlife resulting from disturbance from ground clearing operations and construction of new facilities. Similar habitat would remain in the area; therefore, implementation of the SRC and BRAC actions would not significantly affect wildlife communities on a regional basis. Short-term minor adverse effects to wildlife would result in displacement as a result of construction noises. This displacement would occur over a wider area than the construction disturbance footprints. As noted previously, similar habitat is available in adjacent areas; further, most wildlife in the area are adapted to human activities and are not likely to be affected (displaced) over the long term.

Threatened and endangered species. No effects on threatened, endangered, or other species of concern would be expected by implementation of the SRC and BRAC actions. All known habitats for sensitive species would be avoided.

Wetlands. No effects on wetlands would be expected as a result of implementing the SRC and BRAC actions. Wetlands would be avoided by SRC and BRAC projects.

4.8.2.1.3 Long-Range Component

Vegetation. Long-term minor adverse effects on vegetation would be expected from construction associated with the LRC. Approximately 41 percent of the acreage impacted by the LRC projects would convert areas from pervious to impervious. Long-term minor adverse effects from construction activities would include the loss of a small area of mature forest in with construction of the DPW facility (LRC-2) and parking lot east of the proposed administration and storage facility (SRC-4). Construction of the new laboratory facility (LRC-6) southeast of Building 503 and expansion of the DoD Tissue Repository (LRC-4) and would occur on previously disturbed and presently managed grassy areas. Two parking lots would also be constructed on managed grassy areas. Construction of these buildings and parking lots would result in the permanent loss of portions of the managed landscape. Other aspects of the Preferred Alternative would involve renovation or construction in areas that are parking lots or previously developed. Neither of these situations would affect vegetation.

Wildlife. Long-term negligible to minor adverse effects to wildlife from construction activities would include direct losses of habitat at LRC project sites. Effects would result from the displacement of wildlife resulting from disturbance from ground clearing operations and construction of new facilities. Similar habitat would remain in the area; therefore, implementation of the LRC would not significantly affect wildlife communities on a regional basis. Short-term minor adverse effects to wildlife would result in displacement as a result of construction noises. This displacement would occur over a wider area than the construction disturbance footprints. As noted previously, similar habitat is available in adjacent areas; further, most wildlife in the area are adapted to human activities and are not likely to be affected (displaced) over the long term.

Threatened and endangered species. No effects on threatened, endangered, or other species of concern would be expected by implementation of the LRC. All known habitats for sensitive species would be avoided.

Wetlands. No effects on wetlands would be expected as a result of implementing the LRC. Wetlands would be avoided by LRC projects.

4.8.2.1.4 Transportation Management Plan

Long-term minor adverse effects would be expected on biological resources from implementation of the TMP. Construction of parking facilities as described above would result in the permanent loss of small areas of mature forest and managed grassy lands. The implementation of the TMP would also result in long-term minor adverse effects to wildlife as described in Sections 4.8.2.1.2 and 4.8.2.1.3. No effects on threatened, endangered, or other species of concern would be expected by implementation of the TMP. All known habitats for sensitive species would be avoided. No effects on wetlands would be expected.

4.8.2.2 No Action Alternative

No effects on vegetation, wildlife, threatened or endangered species, or wetlands would be expected under the No Action Alternative.

4.8.3 BMPs/Mitigation Measures

Apart from general BMPs listed in Table 4-20 in Section 4.15, no mitigation measures to biological resources would be required with the implementation of the Preferred Alternative.

4.9 CULTURAL RESOURCES

4.9.1 Affected Environment

Cultural resources are aspects of the physical environment that relate communities to their culture and history. They provide definition for communities and link them to their surroundings. Cultural resources include tangible remains of past activities that show use or modification by people. This type of cultural resource can include prehistoric and historic archaeological sites, buildings, structures, objects, or districts. Cultural resources also include aspects of the natural environment, such as landscapes, specific places, topographic features, or biota, which are a part of traditional lifeways and practices and are associated with community values and institutions.

4.9.1.1 Prehistoric and Historic Background of Walter Reed Army Medical Center Forest Glen Annex

Prehistoric Period. FGA is located on a suburban campus on 127 acres in Montgomery County, Maryland. The complex lies within the Piedmont Upland physiographic zone. For the majority of the past 8,000 years this area has been characterized by deciduous forests. Hunter and gather and gatherers occupied the area in prehistoric times with settlement generally occurring in the region's flat or gently sloping areas.

Erosion is believed to have destroyed many of the archaeological sites associated Indian occupation. Furthermore, steep topography and extensive ground disturbance lead to the conclusion that there is a low potential of finding sites that would reveal significant information about pre-contact use of the FGA property (Goodwin, 2006).

Historic Period. European occupation probably dates to the 1680s. The FGA property was a part of a 4,500 acre tract patented by Lord Baltimore. It is not clear when the property came into cultivation. The Carroll family took ownership of the property in 1748 and certainly used it for agricultural purposes. Again, knowledge of the property's early history is limited by ground disturbance and erosion that has destroyed archaeological evidence. Tobacco, however, was the region's principal crop so it is reasonable to believe that the parts of the FGA property suitable for cultivation were planted in tobacco.

During the late-18th and early 19th-centuries, William Carroll subdivided the estate into smaller plantations. One plantation, known as "The Highlands" remained in the control of the Carroll family, while "Robert Brent" established "Edgewood". Portions of both the Highlands and Edgewood plantations comprise the current installation boundaries (Goodwin, 2006).

The Keys family acquired Edgewood in 1862 where farming operations continued until purchase by the U.S. Army in 1942. Due to steep slopes, much of The Highlands tract remained wooded for most of the 19th century. In the 1880s the Forest Glen Improvement Company began subdividing Highlands for suburban development. The effort met with limited success and in 1894 John and Vesta Cassedy purchased 40 acres of the Forest Glen subdivision and opened the National Park Seminary. Between 1894 and 1915 the Cassedy's erected a celebrated collection of fanciful and architecturally exuberant buildings on the Seminary campus.

The Army purchased both the National Park Seminary and the Edgewood Farm in 1942 as a satellite campus for the Walter Reed Army Medical Center. The Army acquired these properties to use as a convalescent hospital for soldiers returning from World War II. Most post-1942

facility construction took place on previously undeveloped land situated south and west of the former school. Seminary buildings were retained and adapted for use by the U.S. Army. Buildings associated with the Edgewood plantation, however, were subsequently destroyed.

In 1972 the former National Park Seminary was listed on the National Register of Historic Places. The nominated district occupied 23 acres. In October 2004 the U.S. Army transferred approximately 19 acres of the NPSHD to Montgomery County. This transfer included all but one of the buildings associated with the historic Seminary complex.

4.9.1.2 Cultural Resources Compliance at FGA

A number of federal statutes address cultural resources and federal responsibilities regarding them. The long history of legal jurisdiction over cultural resources, dating back to 1906 with the passage of the *Antiquities Act* (16 U.S.C. 431-433), demonstrates Americans' continuing concern for their cultural resources. Foremost among these statutes is the *National Historic Preservation Act* (NHPA) of 1966, as amended (16 U.S.C. 470). Section 106 of this statute requires federal agencies to take into account the effect of federal undertakings on *historic properties*. Historic properties are cultural resources that are included in or eligible for inclusion in the National Register of Historic Places (NRHP). Inclusion in the NRHP is granted if a resource retains its physical integrity and is evaluated as important to the culture. The regulations that implement section 106 (36 CFR Part 800) describe the process for identification and evaluation of cultural resources, assessment of effects of federal actions on historic properties, and consultation to avoid, reduce, or mitigate adverse effects. The NHPA does not require preservation of historic properties, but does ensure that federal agency decisions concerning the treatment of these resources result from meaningful consideration of cultural and historic values and identification of options available to protect the resources.

4.9.1.3 Cultural Resources at FGA

Many studies have examined historic properties at FGA. Other reports look at archaeological or architectural resources as part of a broader conditions assessment or study that also examines the main WRAMC campus. In addition, private scholarship has greatly contributed to understanding the history of the National Park Seminary. Many relevant documents related to cultural resource investigations have been created such as the *Walter Reed Army Medical Center Integrated Cultural Resources Management Plan* (Goodwin, 2006).

No National Historic Landmarks, National Register-listed properties, or resources formally determined eligible for listing on the National Register are located on the FGA installation. A 1992 KFS study concluded that Building 136 (Carpenter's Quarter's) may be eligible for listing on the National Register of Historic Places as a contributing resource to the NPSHD, but to date no formal determination has been carried out. Building 136 is located at the north end of the FGA campus, immediately east of the property boundary separating FGA and the National Park Seminary complex.

The National Park Seminary in the NPSHD is the only National Register listed or formally determined eligible property located within a ½ mile radius of FGA. The National Park Seminary is located immediately northwest of the FGA installation, north of Linden Lane and south of the Washington Beltway (I-495). Prior to 1972 the 19 acres currently associated with the National Park Seminary was part of the FGA installation. In addition to the one nationally registered property within ½ mile radius of FGA, there are 15 historic properties on the Maryland Inventory of Historic Properties that are not eligible for listing on the National Register of Historic Places.

Another historic district near FGA is the Linden Historic District, which is located east of FGA and separated from the installation by the CSX railroad tracks. Montgomery County created the Linden Historic District in May 1993 (PBS&J, 2008).

4.9.1.4 Pending Investigations and Compliance

Determination of Eligibility for Building 136 (Carpenter's Quarters) needs to be conducted. KFS (1992a) identified this building as potentially eligible for National Register listing as part of the National Park Seminary Historic District. A Determination of Eligibility form needs to be prepared and submitted to the Maryland Historical Trust for review. In addition, determination of National Register Eligibility needs to be evaluated for building/structure 191 (Transformer); 500 (Science Laboratory); 501 (Science Laboratory); 506 (Science Laboratory); 508 (Medical Research laboratory); and 512 (Science Laboratory). These buildings were not evaluated in previous studies because they had not then reached 50 years of age. They have now reached that minimum age threshold for National Register listing and must be evaluated.

BRAC recommendations call for the renovation of Building 508. In order to comply with NHPA and NEPA, that building's potential National Register eligibility must be explored before that undertaking proceeds.

4.9.2 Environmental Consequences

Proposed activities would be considered to have a significant impact on cultural resources if they result in any of the following:

- Disturbance of cultural resources that are listed on or eligible for listing on the NRHP
- Disturbance of archaeological or historical resources.

4.9.2.1 Preferred Alternative

4.9.2.1.1 Land Use Plan Update

Long-term beneficial effects would be expected. In the short term under the SRC, the Preferred Alternative land use plan would aggregate land use categories in such a way that would not result in new land uses that would be incompatible with historic features, namely the NPSHD, near FGA. Under the LRC land use plan, the portion of FGA north of Linden Lane would be redesignated Community Facilities from Industrial, which would generally result in land uses more compatible with the NPSHD.

4.9.2.1.2 Short-Range Component and BRAC Actions

No effects would be expected on cultural resources due to the proposed BRAC actions on FGA. Proposed BRAC activities at FGA include the construction of two new laboratories, an administration and storage facility, the renovation of an existing building that would house a DoD Veterinary facility, the medical museum, a CDC, four new parking lots, a temporary parking lot, and gate improvements. Current plans call for the new buildings to be primarily located near the southern half of the installation. Woods, vegetation, topography and distance would prevent visual communication between the new construction and contributing resources at the NPSHD. The nearest visible proposed facility to the NPSHD, the medical museum, would not be expected

to be a land use incompatible with the historic district. The determination of no effect is based upon construction taking place at the proposed locations.

4.9.2.1.3 Long-Range Component

No effects would be expected. The LRC actions on FGA would include three new structures, expansion of an existing building, two new ACPs, three new parking lots, and reconfiguration of an existing lot. The new structures would house the DPW, the DoD Veterinary Pathology Facility, and a 135,000 SF laboratory. The expansion project would increase the size of the DoD Tissue Repository Building. The two new ACPs would be located at the Brookville Road and Linden Lane entrances. Similar to the SRC actions, the LRC activities occur in the southern portion of the installation, with the exception of the Linden Lane ACP. This would result in no adverse effects on the historic districts to the north and east of FGA.

4.9.2.1.4 Transportation Management Plan

No effects would be expected on cultural resources from implementation of the TMP.

4.9.2.2 No Action Alternative

The No Action Alternative would result in no impacts to cultural resources. There would be no demolition or renovation of buildings, no construction activities, and no expansion of range areas. As such, no impacts would occur to historic properties.

4.9.3 BMPs/Mitigation Measures

Apart from general BMPs listed in Table 4-20 in Section 4.15, no mitigation measures to cultural resources would be required with the implementation of the Preferred Alternative.

4.10 SOCIOECONOMICS

4.10.1 Affected Environment

This section is a description of the socioeconomic conditions of the region of influence (ROI)—industry, employment, population, housing, public services, environmental justice, and protection of children. The geographic area in which the predominant social and economic effects of the project alternatives would occur defines the ROI for this study. The major factors used to determine the ROI are the residency distribution of FGA's employees, their commuting distances and times, and the location of businesses providing goods and services to FGA and their personnel. On the basis of these criteria, the ROI for the Preferred Alternative is Montgomery County, Maryland. FGA is in Montgomery County, just north of Washington, DC. Montgomery County is part of the greater Washington, DC Metropolitan Area.

The baseline year for socioeconomic data is 2005, the date of the BRAC Commission's announcement of the FGA realignment. Where 2005 data are not available, the most recent data available are presented. For comparative purposes, additional data are presented for the United States.

4.10.1.1 Economic Development

Industry and Employment. The ROI civilian labor force totaled 507,556 in 2005, with 491,643 people employed and 15,913 unemployed. The ROI unemployment rate was 3.1 percent, up from 2.6 percent in 2000, reflecting the national trend of rising unemployment rates. During the same time period, the United States unemployment rate increased from 4.0 to 5.1 percent, and Maryland's unemployment rate changed from 3.6 to 4.2 percent (BLS, 2007).

The primary sources of employment in the ROI are professional and technical services, government, health care and social assistance, and retail trade. These four industries accounted for about 50 percent of regional employment. The largest source of jobs in the ROI was the professional and technical service sector, which provided 16 percent of the total employment. The next largest source of jobs in the ROI was the government sector, which provided 14 percent of the total employment. Within the government sector, federal civilian jobs accounted for 48 percent of employment, military jobs accounted for 7 percent, and state and local government jobs accounted for 45 percent. The other major employers in the ROI are the health care and social assistance sector, which provided 10 percent of the jobs in the ROI, and the retail trade sector, which accounted for 9 percent of regional employment (BEA, 2007a).

In 2006, FGA employed 291 military personnel (both Officers and Enlisted) and 1,389 civilians (PBS&J, 2007). WRAMC contributes little direct tax revenue to Montgomery County and the District of Columbia. However, WRAMC's operations indirectly provide revenue to local jurisdictions through sales taxes on local purchases, or other taxes paid by its private-sector suppliers and service providers, and through income or other taxes paid by employees who reside in the area.

Income. The ROI had a per capita personal income (PCPI) of $59,953. This PCPI was 174 percent of the national average of $34,471. The ROI 2005 PCPI reflects an increase of 20.7 percent from 2000, compared to the national change of 15.5 percent (BEA, 2007b).

Population. In 2005 the ROI's population was 918,046, an increase of 5.1 percent from the 2000 population of 873,341 (U.S. Census Bureau, 2000; 2005). For comparison, the population of the United States grew 2.5 percent between 2000 and 2005. Most of the ROI growth may be attributed to a significant expansion of the Washington, D.C. regional economy and a large in-migration of a commuter force from this metropolitan area. The ROI's population is projected to increase to about 990,000 by 2010 with an annual average growth rate of 1.21 percent between 2005 and 2010 (MDP, 2006).

4.10.1.2 Sociological Environment

Housing. WRAMC provides no housing at FGA for its personnel. All permanent-party housing is located either at the WRAMC Main Section or the Glen Haven Section. The Fisher House is the only residential facility at FGA. It provides accommodations for families of military personnel who are undergoing medical treatment. The Fisher House can accommodate up to 25 guests. WRAMC has a housing referral office at the Main Section which assists personnel looking for off-post housing (PBS&J, 2007).

There were about 356,603 housing units in the ROI in 2005, of which about 344,038 (96.5 percent) were occupied. Of the occupied units, about 69 percent are owner occupied and 31 percent are renter occupied. The median value of owner-occupied housing units was $466,100

which is much greater than the national median value of $167,500. Median rent in the ROI was $1,183, also greater than the national median rent of $728. The number of housing units in the ROI increased by about 6.6% (about 21,971 units) between 2000 and 2005 (U.S. Census Bureau, 2000; 2005).

Medical Services. Washington, suburban Maryland, and Virginia have excellent medical facilities capable of providing state-of-the-art medical care. Washington Adventist Hospital, Holy Cross Hospital, and Montgomery General Hospital are four, five, and twelve miles respectively from FGA. Trauma units are available at Suburban Hospital in Bethesda, Prince George's General in Cheverly, and Med-Star at the Washington Hospital Center in Washington, DC. Helicopter transportation is provided by the Maryland State Police and Med-Star. The District of Columbia Hospital Association includes 14 medical facilities within the District of Columbia (PBS&J, 2007).

In addition to WRAMC, other nearby area military hospitals include DeWitt Army Hospital at Fort Belvoir, Virginia, located 30 miles from FGA and the Kimbrough Ambulatory Care Center at Fort George G. Meade, Maryland, located 20 miles from FGA (both of which are part of the WRAMC Health Care System); the Malcolm Grow U.S. Air Force Medical Center at Andrews Air Force Base, Maryland, located 25 miles from FGA; and the Bethesda National Naval Medical Center, which is about 5 miles from FGA (PBS&J, 2008).

The reciprocal assistance agreement between WRAMC and Montgomery County Fire and Rescue Services also applies for emergency medical services. Montgomery County provides this service to FGA as it does to the surrounding neighborhood (PBS&J, 2007).

Law Enforcement. FGA is a closed facility. The military and WRAMC police provide all routine patrols and respond to all calls for police service at FGA. Twenty-four DoD security guards provide access and internal security. Since September 11, 2001, this security force has been augmented with an additional 24 contract security personnel who primarily provide access control (PBS&J, 2007).

A Memorandum of Understanding (MOU) exists between the Department of the Army (DA) and the State of Maryland where there has been a partial retrocession of legislative jurisdiction of the FGA. The MOU is intended to enable the Montgomery County Police Department to enforce and be responsible for applying all federal, state, and county laws in the same manner as they are enforced throughout Montgomery County in compliance with existing policies and procedures (PBS&J, 2007).

Fire Protection. A WRAMC Fire Station serves the FGA. The station, formerly located in the NPSHD, was relocated in 2001 to a site near the intersection of Brookville Road and Stephen Sitter Avenue. The FGA fire department consists of 14 personnel. This includes 10 full-time fire fighters working in shifts of five, one Chief, two assistant chiefs working alternate shifts, and one fire inspector. Fire fighters work one 24-hour shift every other day. FGA has one 1,500 gallons per minute pumper and one 1-ton Chevrolet dually available for fire-fighting use (PBS&J, 2007).

An MOU is also in effect between Montgomery County Fire and Rescue Services and WRAMC. This agreement is to provide emergency service (fire and ambulance) for the benefit of both entities. The Montgomery County Fire Department assists the FGA with fire fighting, if needed. The FGA Fire Station provides assistance to the local community, if requested, only after all county personnel have been utilized (PBS&J, 2007).

Schools. There are no on-post elementary or secondary schools. There are many public schools in the vicinity of the FGA. The Montgomery County Public school system is the largest in the state of Maryland and the 17th largest in the United States with a total of 199 schools, 21,840 employees and 137,798 students for the 2006-2007 school year. This includes 129 elementary, 38 middle, 25 high, and 7 special or alternative schools. The estimated enrollment for 2008 is 145,622 students, an increase of 5.7 percent over the 2006-2007 school year (MCPS, 2007).

Family Support, Shops and Services, and Recreation. WRAMC has a Medical Family Assistance Center that coordinates resources and acts as a point of contact for patients and their family members. Shops and service stores on FGA include a barber shop, beauty shop, Commissary, CDC, post office, laundry and dry cleaning, PX, Class VI (alcoholic beverages) store, 4Seasons store, military clothing and sales store, deli, and service station. On-post morale and recreation facilities include a community center which offers various arts and crafts workshops, fitness center, two softball fields, multipurpose court for basketball and volleyball, Ireland Drive Trail for hiking, and picnic area. In addition, FGA has access to WRAMC's facilities, recreational services, and support services (WRAMC, 2007a). The ROI also has an abundance of shops, restaurants, services (e.g., banks, travel agencies, auto repair shops, and dry cleaners), entertainment, and recreational opportunities.

4.10.1.3 Environmental Justice

Environmental justice addresses race, ethnicity, and the poverty status of populations within the ROI. On February 11, 1994, President Clinton issued EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.* The order is designed to focus the attention of federal agencies on the human health and environmental conditions in minority and low-income communities. Environmental justice analyses are performed to identify potential disproportionately high and adverse effects from proposed actions and to identify alternatives that might mitigate these effects.

Minority populations are identified as Black or African American and not of Hispanic origin; American Indian and Alaska Native; Asian; Native Hawaiian and other Pacific Islander; Hispanic; persons of some other race; and persons of two or more races. Minority populations should be identified where either the minority population of the affected area exceeds 50 percent or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997). As of 2005, 67.9 percent of the ROI population was white, and 32.1 percent was of a minority population (16.4 percent black; 0.3 percent American Indian or Alaskan Native; 13.2 percent Asian; 0.1 percent Native Hawaiian and other Pacific Islander; and 2.1 percent of two or more races). Almost 14 percent of the ROI population is of Hispanic or Latino origin (persons of Hispanic origin may be of any race, and so are included in applicable race categories) (U.S. Census Bureau, 2007).

Poverty thresholds as established by the Census Bureau are used to identify low-income populations (CEQ 1997). Poverty status is reported as the number of persons or families with income below a defined threshold level. For 2005, the Census Bureau defines the poverty level as $9, 973 of annual income, or less, for an individual and $19, 971 of annual income, or less, for a family of four. As of 2005, 4.5 percent of ROI residents were classified as living in poverty, below the 8.2 percent poverty rate for the state of Maryland. The national poverty rate was 13.3

percent (U.S. Census Bureau Housing and Household Economic Statistics Division, 2005; U.S. Census Bureau, 2005).

4.10.1.4 Protection of Children

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (April 21, 1997), seeks to protect children from disproportionately incurring environmental health risks or safety risks. Community facilities associated with the presence of children at FGA include a day care center, Commissary, PX, recreation facilities, and the Fisher House, which is a short-term residence. All of the above mentioned facilities are located in the northern section of FGA. The Linden Lane gate is located adjacent to the Fisher House and the day care center. FGA is a gated facility with security checkpoints for public access (USACE, 2003).

4.10.2 Environmental Consequences

4.10.2.1 Preferred Alternative

Short-term minor beneficial and adverse effects and long-term minor beneficial effects on socioeconomics resources would be expected under the Preferred Alternative.

4.10.2.1.1 Land Use Plan Update

Economic Development. Short- and long-term minor beneficial economic effects would be expected. A revised land use plan would allow FGA to accommodate the construction of new facilities and the expansion of its workforce that would occur under the BRAC action. The land use plan update would aggregate land use categories allowing for development (or redevelopment) of FGA land. The construction or renovation of facilities on the land would generate short-term construction employment, income, and spending for the purchase of construction materials. In the long-term, operation of the new facilities would result in an increase in the numbers of maintenance, administrative, and professional personnel working at FGA.

Sociological Environment. Long-term minor beneficial and adverse effects would be expected. The land use plan update would result in the loss of some areas designated as Open Space under the existing land use plan in the southern portion of FGA. The land would be converted into a Research and Development land use. In addition, acreage in the northern portion of FGA designated as Recreation or Open Space under the existing land use plan would be aggregated into a Community Facilities land use designation, allowing for a proposed parking garage to be built on a softball field. However, FGA employees would benefit from the proposed new CDC in this same Community Facilities land use area, and from the expanded emergency services facility in the southern portion of FGA.

4.10.2.1.2 Short-Range Component and BRAC Actions

Economic Development

Methodology. The economic effects of implementing the Preferred Alternative were estimated using the Economic Impact Forecast System (EIFS) model, a computer-based economic tool that calculates multipliers to estimate the direct and indirect effects resulting from a given action. Changes in spending and employment from the construction and renovation of facilities on FGA under the proposed BRAC action represent the direct effects of the action. From the input data and calculated multipliers, the model estimated ROI changes in sales volume, income, employment, and population, accounting for the direct and indirect effects of the action.

For purposes of this analysis, a change is considered significant if it falls outside the historical range of ROI economic variation. To determine the historical range of economic variation, the EIFS model calculates a rational threshold value (RTV) profile for the ROI. This analytical process uses historical data for the ROI and calculates fluctuations in sales volume, income, employment, and population patterns. The positive and negative historical extremes for the ROI become the thresholds of significance (i.e., the RTVs) for social and economic change. If the estimated effect of an action falls above the positive RTV or below the negative RTV, the effect is considered to be significant. Appendix B discusses this methodology in more detail and presents the model input and output tables developed for this analysis.

EIFS Model Results. Short- and long-term minor beneficial effects would be expected. The expenditures associated with renovation and construction of facilities on FGA would generate jobs in the construction industry and short-term increases in local spending and income. The economic benefits from construction would be short-term, lasting only for the duration of the renovation and construction period. The Preferred Alternative would also result in long-term minor beneficial economic effects. The Preferred Alternative would increase the number of personnel assigned to FGA. These new jobs would generate income and spending in the ROI. The increase in sales volume, income, and employment would fall within historical fluctuations (i.e., within the RTV range) and be considered minor (Table 4-11 and Appendix B).

Table 4-11
EIFS model output—SRC

Indicator	Projected change	Percent change	RTV range
Direct Sales Volume	$96,478,980		
Induced Sales Volume	$156,295,900		
Total Sales Volume	$252,774,900	0. 51%	-5.49% to 12.59%
Direct Income	$25,692,980		
Induced Income	$34,010,480		
Total Income	$59,703,460	0.18%	-4.19% to 12.60%
Direct Employment	522		
Induced Employment	692		
Total Employment	1,215	0.22%	-3.54% to 3.56%
Local Population	0	0.00%	-1.21% to 2.28%

Sociological Environment

Housing. No effects would be expected. The Preferred Alternative action would not increase ROI population or create a demand for housing. The employees that would be transferred to FGA under the Preferred Alternative already reside in the region and would be expected to commute from their current residences to the FGA. Therefore, the Preferred Alternative would not affect the housing market.

Law Enforcement, Fire Protection, Medical Services. Long-term minor beneficial effects would be expected. The Preferred Alternative would result in about 220 additional full-time personnel working at FGA during normal weekday business hours. As part of the SRC, the FGA emergency facility would be expanded. The existing FGA fire station would be expanded to 7,500 SF to accommodate a 10-person staff. A new MP station would be in the same location and

would accommodate a 20-person staff. This would allow FGA emergency services to maintain their levels of service following construction and operation of the SRC and BRAC actions.

No effects would be expected on medical services. The Preferred Alternative would not change the regional population. The personnel affected by the Preferred Alternative already reside in the region; therefore, the action would not affect demand for medical services.

Schools. No effects would be expected. The employees that would be transferred to FGA under the Preferred Alternative already reside in the region and would be expected to commute from their current residences to the FGA. Dependents of these employees would remain enrolled in their current schools; therefore, there would be no affect on schools.

Family Support, Shops, Services, and Recreation. Short-term minor adverse and long-term minor beneficial effects would be expected. The Preferred Alternative would increase the number of full-time on-post personnel working at FGA. This would increase demand for FGA services, such as the PX, Commissary, and other dining, service, and recreational facilities. Levels of service could decrease, causing customers to have longer wait times or to return at other times, until additional personnel are hired or facilities are expanded to meet the increased demand, as needed. In addition, construction activities and the temporary parking area could temporarily impair use of a portion of the Ireland Drive Trail.

Long-term minor beneficial effects would be expected from the proposed new CDC. FGA employees would benefit from having a child-care facility at their workplace.

Environmental Justice

No effects would be expected. Implementing the Preferred Alternative SRC would not result in disproportionate adverse environmental or health effects on low-income or minority populations.

Protection of Children

No effects would be expected. Implementing the Preferred Alternative SRC would not result in disproportionate adverse environmental or health or safety risks to children.

4.10.2.1.3 Long-Range Component

Economic Development

EIFS Model Results. Short- and long-term minor beneficial economic effects would be expected. The expenditures associated with renovation and construction of facilities on FGA would generate jobs in the construction industry and increases in local spending and income during the LRC period between 2012 and 2026. The economic benefits from construction would be short-term, lasting for the duration of the renovation and construction projects. The projected changes in sales volume, income, and employment would fall within historical fluctuations (i.e., within the RTV range) and be considered minor (Table 4-12 and Appendix B). It is probable that long-term part-and full-time permanent jobs would be created at FGA under the LRC; however, at this time no LRC employment projections have been made.

Table 4-12
EIFS model output—LRC

Indicator	Projected change	Percent change	RTV range
Direct Sales Volume	$10,327,300		
Induced Sales Volume	$16,730,220		
Total Sales Volume	$27,057,520	0.05%	-5.49% to 12.59%
Direct Income	$2,247,253		
Induced Income	$3,640,549		
Total Income	$5,887,802	0.02%	-4.19% to 12.60%
Direct Employment	46		
Induced Employment	74		
Total Employment	120	0.02%	-3.54% to 3.56%
Local Population	0	0.00%	-1.21% to 2.28%

Sociological Environment

Housing. No effects would be expected. The Preferred Alternative LRC would not increase the ROI population or create a demand for housing. Given the size of the regional labor force, it is anticipated that any jobs created during the LRC would be filled by persons that already reside in the region and that these workers would commute from their current residences to FGA. Therefore, the Preferred Alternative would not affect the housing market.

Law Enforcement, Fire Protection, Medical Services. No effects would be expected. Emergency services expanded under the SRC would be expected to be able to accommodate projected future requirements at FGA.

Schools. No effects would be expected. The Preferred Alternative LRC would not increase the ROI population. It is anticipated that any jobs created during the LRC would be filled by persons that already reside in the region, and dependents of these employees would remain enrolled in their current schools. Therefore, there would be no effect on schools.

Family Support, Shops, Services, and Recreation. Short-term minor adverse effects could occur. As with the SRC, the Preferred Alternative LRC could increase the number of personnel working on FGA. This would increase demand for FGA services and facilities. Levels of service could decrease, causing customers to have longer wait times or to return at other times, until additional personnel are hired or facilities are expanded to meet the increased demand, as needed.

Environmental Justice

No effects would be expected. Implementing the Preferred Alternative LRC would not result in disproportionate adverse environmental or health effects on low-income or minority populations.

Protection of Children

No effects would be expected. Implementing the Preferred Alternative LRC would not result in disproportionate adverse environmental or health or safety risks to children.

4.10.2.1.4 Transportation Management Plan

Short-term minor beneficial economic effects would be expected. Construction of parking facilities as recommended in the TMP would result in minor, short-term economic benefits,

which are included in the SRC and LRC economic analysis (see Sections 4.10.2.1.2 and 4.10.2.1.3 above). The TMP would not affect other socioeconomic resources, including environmental justice and protection of children.

4.10.2.2 No Action Alternative

No effects would be expected on the economic or sociological environment.

4.10.3 BMPs/Mitigation Measures

Apart from general BMPs listed in Table 4-20 in Section 4.15, no mitigation measures to socioeconomics would be required with the implementation of the Preferred Alternative.

4.11 TRANSPORTATION

This section describes the existing highway and transit subsystems on and near the post, the effects associated with the alternatives, and potential mitigation measures, if required.

4.11.1 Affected Environment

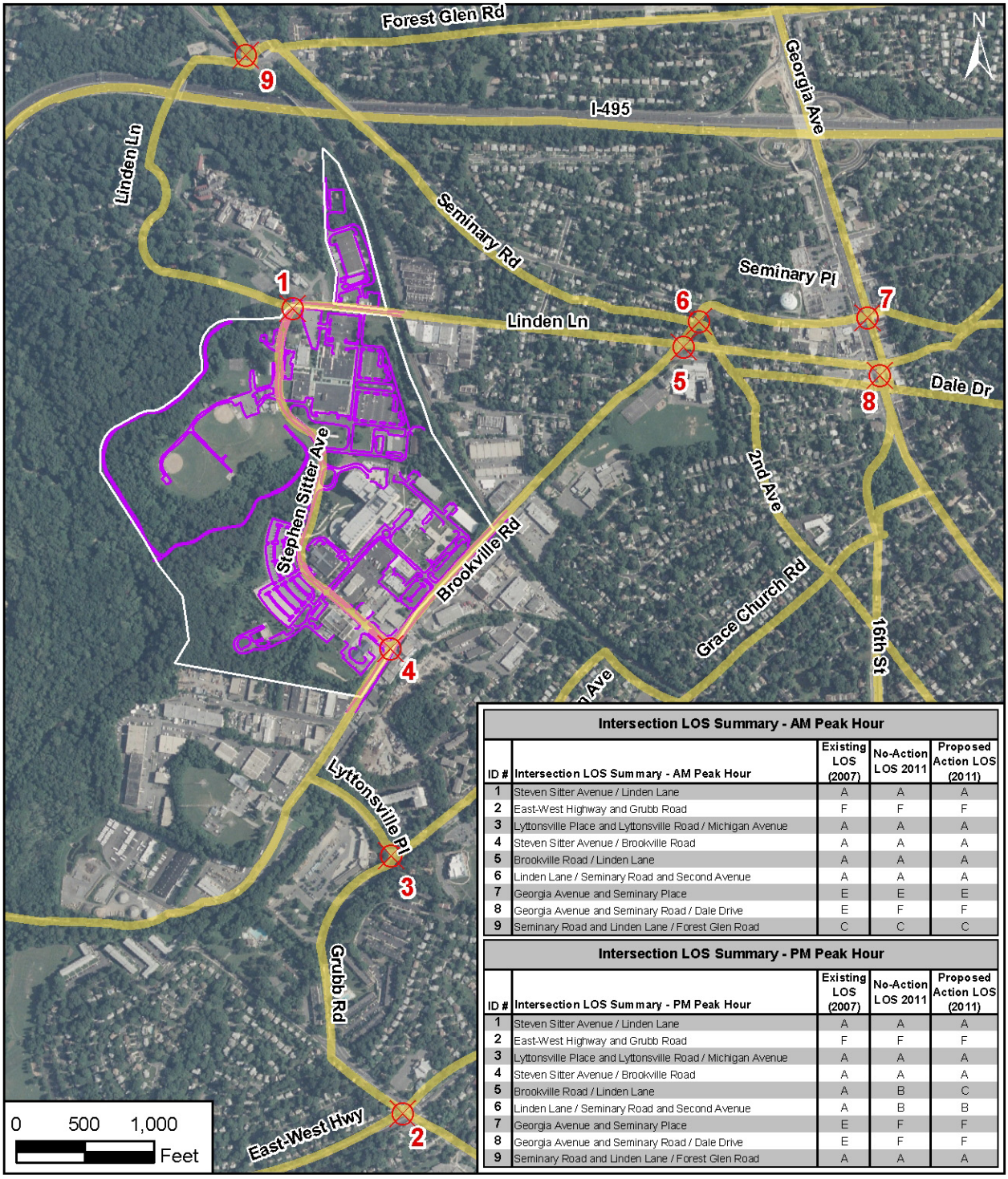
4.11.1.1 Roadways and Traffic

On-post Roads. Roadways throughout FGA provide access to all areas, as well as connections to off-post transportation networks. These roads are classified into three levels: primary, secondary, or tertiary. Primary roads include installation roads and streets that serve as the main distribution arteries for all traffic originating outside, and within, the installation and those that provide access to, through, and between various functional areas. Secondary roadways include all installation roadways and streets that supplement primary roadways by providing access to, between, and within the various functional areas (Figure 4-2).

Four key intersections are located on the installation. These intersections are Brookville Road/Stephen Sitter Avenue; Brookville Road/Research Drive; Linden Lane/Smith Drive; and Linden Lane/Stephen Sitter Avenue. The intersection of Brookville Road and Stephen Sitter Avenue is adjacent to the main gate, is the key access control point (ACP) for the installation from the east, and is open 24 hours a day. The intersection of Linden Lane and Stephen Sitter Avenue is adjacent to the second ACP on the installation, provides access to the installation's warehouse and salt storage areas, and is open from 6 AM until 6 PM.

Traffic circulation can be divided into two distinct areas: the Community Center Area, accessed primarily from the Linden Lane ACP, and the Research and Development Area, accessed primarily from the Brookville Road ACP. Stephen Sitter Avenue links these two areas of the installation. This two-lane roadway extends between Brookville Road and Linden Lane. Roads in the Community Center Area include Forney Road, Holland Road, and Commissary Way. Roads in the Research and Development Area include Robert Grant Avenue, Research Drive, and Road A.

Off-post Highways and Roads. Interstate 495 (I-495), the Capital Beltway, is the only freeway or expressway facility located near FGA. I-495 is a 64-mile closed loop surrounding the nation's capital and provides connections to points north and south along the eastern seaboard via I-95,



Intersection LOS Summary - AM Peak Hour

ID #	Intersection LOS Summary - AM Peak Hour	Existing LOS (2007)	No-Action LOS 2011	Proposed Action LOS (2011)
1	Steven Sitter Avenue / Linden Lane	A	A	A
2	East-West Highway and Grubb Road	F	F	F
3	Lyttonsville Place and Lyttonsville Road / Michigan Avenue	A	A	A
4	Steven Sitter Avenue / Brookville Road	A	A	A
5	Brookville Road / Linden Lane	A	A	A
6	Linden Lane / Seminary Road and Second Avenue	A	A	A
7	Georgia Avenue and Seminary Place	E	E	E
8	Georgia Avenue and Seminary Road / Dale Drive	E	F	F
9	Seminary Road and Linden Lane / Forest Glen Road	C	C	C

Intersection LOS Summary - PM Peak Hour

ID #	Intersection LOS Summary - PM Peak Hour	Existing LOS (2007)	No-Action LOS 2011	Proposed Action LOS (2011)
1	Steven Sitter Avenue / Linden Lane	A	A	A
2	East-West Highway and Grubb Road	F	F	F
3	Lyttonsville Place and Lyttonsville Road / Michigan Avenue	A	A	A
4	Steven Sitter Avenue / Brookville Road	A	A	A
5	Brookville Road / Linden Lane	A	B	C
6	Linden Lane / Seminary Road and Second Avenue	A	B	B
7	Georgia Avenue and Seminary Place	E	F	F
8	Georgia Avenue and Seminary Road / Dale Drive	E	F	F
9	Seminary Road and Linden Lane / Forest Glen Road	A	A	A

Legend

Installation Boundary
Installation Road
Road Intersection
Major Road

Transportation Network

Sources: WRAMC Forest Glen Annex GIS, 2006; Maryland DNR GIS, 2006.

Figure 4-2

and connections to I-66 and I-270, which provide access to points west. In addition, I-295, U.S. Route 1, U.S. Route 15, U.S. Route 29, U.S. Route 50, U.S. Route 240 and U.S. Route 301 can be accessed from the Beltway.

There are three minor arterial access routes to FGA. The first route is from the west, via Linden Lane from Forest Glen Road, approximately three-quarters of a mile from the Georgia Avenue (MD 97) and I-495 interchange. The second access route is from the east, via Linden Lane from Seminary Road and Georgia Avenue. The final route is via Brookville Road, at the southeast boundary from Grubb Road and East-West Highway (MD 410) or Brookville Road from Seminary Road and Georgia Avenue.

Traffic. The network is generally able to serve the needs and mission of the installation. Level of Service (LOS) is a qualitative measure of the operating conditions of an intersection or other transportation facility. There are six LOS (A through F); LOS A represents the best operating conditions with no congestion, and LOS F is the worst with heavy congestion. Roadways and intersections with LOS E or F would have traffic conditions at or above capacity. Traffic patterns would be congested, unstable, and normally unacceptable to individuals attempting to access and use roadways and intersections with LOS E or F. All ACP and key intersections on the installation currently operate at LOS A (excellent traffic flow). Intersections along Georgia Avenue at Seminary Road/Dale Drive and Seminary Place, and on East-West Highway at Grubb Road operate at LOS E or F (high levels of congestion). All failing intersections are located at least 0.9 miles from the installation (Table 4-13).

Table 4-13
Existing (2007) intersection LOS summary

Intersection	Existing LOS AM peak period	Existing LOS PM peak period
Steven Sitter Avenue / Brookville Road	A	A
Steven Sitter Avenue / Linden Lane	A	A
Brookville Road / Linden Lane	A	A
Linden Lane / Seminary Road and Second Avenue	A	A
Georgia Avenue and Seminary Road / Dale Drive	C	C
Georgia Avenue and Seminary Place	C	C
Lyttonsville Place and Lyttonsville Road / Michigan Avenue	A	A
East-West Highway and Grubb Road	A	A
Seminary Road and Linden Lane / Forest Glen Road	C	A

Source: PBS&J, 2008.

Access Control Points. When the WRAIR moved from the WRAMC Main Section to FGA in 1992, a MOU was developed between the National Capital Planning Commission (NCPC), the Montgomery County Planning Board (MCPB), and WRAMC limiting ACP traffic to 415 vehicles entering FGA during the AM peak hour and 506 of vehicles exiting FGA during the PM peak hour. After the MOU, initial traffic counts exceeded these limitations. However, following the events of September 11, 2001, security measures were implemented such that the general public is no longer allowed to travel through the post. Subsequently, the traffic volume during both AM and PM peak periods fell below the specified limits.

Existing average AM peak-hour volume entering the installation is 336 vehicles. Existing average PM peak-hour volume exiting the installation is 457 vehicles. These include trips made by installation employees; visitors to the installation's administrative, laboratory, Commissary, PX,

and CDC facilities; service and delivery vehicles; and public transit vehicles. Trips are currently below the 1992 MOU thresholds.

Parking. There are a total of 1,577 parking spaces at FGA, of which 510 are administratively designated and restricted to users of the PX and Commissary facilities, CDC, and Fisher House; 37 are reserved; and 12 are handicapped spaces. The remaining 1,018 parking spaces are available for installation employees and visitors. Compared to the current installation personnel count of 1,680 persons, the resulting ratio of parking spaces to employees is 1,018:1,680 or 1:1.65. This falls within existing NCPC parking ratios for federal facilities in the National Capital Region (NCR), that apply to facilities greater than 2,000 feet from a Metrorail of one parking space per every 1.5 to 2.0 employees (1:1.5 – 1:2.0) (NCPC, 2004).

4.11.1.2 Public Transit, Air and Rail Transportation

Public Transit. The area surrounding the Forest Glen Annex contains an extensive array of public transit services. These include regional commuter railroad services operated by the Maryland Department of Transportation; the regional Metrorail system operated by the Washington Metropolitan Area Transit Authority (WMATA); and fixed-route/fixed-schedule bus services operated by the Maryland Transit Administration, WMATA and the Montgomery County government.

The closest Metrorail Stations to FGA are the Forest Glen and Silver Spring Metro Stations on the WMATA Red Line. The Forest Glen Station is located at the intersection of Georgia Avenue and Forest Glen Road approximately one mile northeast of FGA. Passengers may transfer from the Silver Spring Metro Station to the Montgomery County operated Ride-on Bus Routes #2 and #4 to the installation. In addition, DoD shuttle buses provides direct service between WRAMC Main Section and FGA every hour and 15 minutes from 5 AM to 8 PM Monday through Friday.

Air Transportation. The Washington, DC, metro area is a major air travel hub. Scheduled commercial service is available at Washington's Ronald Reagan National Airport, Dulles International Airport, and Thurgood Marshall Baltimore-Washington International Airport. Major air carriers service both international and domestic routes from these airports. In addition, military air access is available at Andrews Air Force Base, Tipton Army Airfield, Fort Meade, Maryland, and at Davison Army Airfield, Fort Belvoir, Virginia.

Rail Transportation. FGA is in the vicinity of the Northeast Corridor high-speed rail line. Intercity passenger service is available at Union Station in downtown Washington, DC; the Beltway Station at I-95 and U.S. 50. Freight yards are located in northeast Washington, DC, and Alexandria, Virginia. The CSX Railroad, the Norfolk Southern Railroad, and AMTRAK provide rail service to the area.

4.11.1.3 Existing FGA Transportation Management Plan

The 1992 MOU outlined principal components of the existing FGA TMP. These components include staggered work hours, transit and vanpool discounts, reserved carpool/vanpool spaces, free shuttle service to the Metrorail, emergency rides for carpoolers and transit users; and the construction of bus shelters. These components have been implemented to varying degrees. If these basic traffic measures fail to operate as required and/or the trip limitation goal is not maintained, the MOU requires FGA implement additional back-up measures such as more frequent shuttle services, possible light-rail station, and telecommuting initiatives. WRAMC's

Assistant Chief of Staff of Support Services Administration is the designated transportation coordinator to promote and administer the TMP (PBS&J, 2008).

4.11.2 Environmental Consequences

4.11.2.1 Preferred Alternative

Short- and long-term minor adverse effects on traffic would be expected. Short-term traffic effects would be due to additional construction vehicles and traffic delays near construction sites. Long-term effects to on-post, off-post, and gate traffic would be due to minor increases in the number of vehicle trips and traffic volumes associated with the Preferred Alternative.

4.11.2.1.1 Land Use Plan Update

The planning activities associated with the land use plan update would not generate any traffic or have any effect on transportation services on or off-post. Therefore, updating the land use plan designations would have no effect on transportation resources. A detailed analysis is presented in the next sections on implementation and potential effects associated with the SRC, LRC, and TMP activities.

4.11.2.1.2 Short-Range Component and BRAC Actions

On-post and Off-post Traffic. Short-term traffic effects on post would be due to additional construction vehicles and traffic delays near construction sites. These effects would be temporary in nature and would end with the construction phase. The local on-post and off-post road infrastructure would be sufficient to support any increase in construction vehicle traffic. In addition, road closures or detours to accommodate utility system work would be expected, creating short-term traffic delays. In addition, road cuts to accommodate utility construction and installation would be anticipated and could create additional short-term traffic delays and utility outages. Wear and tear on installation roads would be increased due to their use by construction vehicles and may require an increase in maintenance activities to prevent road failure.

The number of personnel at FGA would increase from 1,680 to 1,900 with implementation of the SRC, constituting a net increase of approximately 220 personnel. Adverse effects to traffic would occur due to additional vehicles at the ACP and on-post and off-post intersections. The installation roadways would service the majority of the traffic generated by the additional personnel. LOS was determined at intersections on and around FGA for the year 2011 with and without the implementation of the SRC (Tables 4-14 and 4-15). All ACP and the adjacent intersections would operate at LOS A or B under both the Preferred and No Action Alternatives. All intersections except one would have the same LOS with implementation of the Preferred Alternative when compared to the No Action Alternative. The intersection of Lyttonsville Place and Lyttonsville Road/Michigan Avenue would operate at a LOS B in the P.M. peak period under the No Action Alternative. This would drop to a LOS C under the Preferred Alternative.

Access Control Points. Estimated 2011 AM peak hour entering volume of 484 vehicles (336 existing plus 148 new) would be 69 vehicles above the defined MOU threshold of 415 vehicles. Estimated 2011 PM peak hour exiting volume of 612 vehicles (457 existing plus 155 new) would be 106 vehicles above the 1992 MOU threshold of 506 vehicles. Although estimated traffic volume would be slightly greater than those agreed to in the MOU, the installation's gate traffic would operate at an acceptable LOS (Table 4-14 and Table 4-15) (PBS&J, 2008).

Table 4-14
Year 2011 intersection LOS summary – AM peak hour

Intersection	Existing LOS (2007)	No Action LOS (2011)	Preferred Alternative LOS (2011)
Steven Sitter Avenue / Brookville Road	A	A	A
Steven Sitter Avenue / Linden Lane	A	A	A
Brookville Road / Linden Lane	A	A	A
Linden Lane / Seminary Road and Second Avenue	A	A	A
Georgia Avenue and Seminary Road / Dale Drive	C	D	D
Georgia Avenue and Seminary Place	C	C	C
Lyttonsville Place and Lyttonsville Road / Michigan Avenue	A	A	A
East-West Highway and Grubb Road	A	B	B
Seminary Road and Linden Lane / Forest Glen Road	C	C	C

Source: PBS&J, 2008.

Table 4-15
Year 2011 intersection LOS summary – PM peak hour

Intersection	Existing LOS (2007)	No Action LOS (2011)	Preferred Alternative LOS (2011)
Steven Sitter Avenue / Brookville Road	A	B	B
Steven Sitter Avenue / Linden Lane	A	A	A
Brookville Road / Linden Lane	A	D	D
Linden Lane / Seminary Road and Second Avenue	A	C	C
Georgia Avenue and Seminary Road / Dale Drive	C	F	F
Georgia Avenue and Seminary Place	C	E	E
Lyttonsville Place and Lyttonsville Road / Michigan Avenue	A	B	C
East-West Highway and Grubb Road	A	C	C
Seminary Road and Linden Lane / Forest Glen Road	A	B	C

Source: PBS&J, 2008.

Parking. A total of 1,159 parking spaces would be available for installation employees at FGA under the SRC (PBS&J, 2008). Compared to the installation personnel of 1,900 persons, the resulting ratio of parking spaces to employees is 1,159:1,900, or 1:1.64. This falls inside the NCPC currently adopted parking ratios for federal facilities in the NCR (NCPC, 2004). The ACPs and their adjacent intersections would operate at LOS A or B under both the Preferred and No Action Alternatives. The effects of limiting the number of parking spaces would improve the already acceptable traffic conditions.

Air, Rail, and Bus Transportation. The SRC activities would have negligible impact to public transit, rail access, or air traffic at or near the installation.

4.11.2.1.3 Long-Range Component

On-post and Off-post Traffic. Long-term traffic effects on post would be due to additional construction vehicles and traffic delays near construction sites. These effects be similar to those

outlined under the SRC (Section 4.11.2.1.2), yet would occur during the years of construction for the LRC projects.

As with the SRC, the traffic effects would occur due to additional vehicles at the ACPs and on-post and off-post intersections. The installation roadways would service the majority of the traffic generated by the additional personnel. LOS was determined at intersections on and around FGA for the year 2026 with and without the implementation of the LRC (Tables 4-16 and 4-17). The ACPs and their adjacent intersections would operate at LOS A or B under both the Preferred and No Action Alternatives. All other intersections except two would have the same LOS with the implementation of the Preferred Alternative when compared to the No Action Alternative. The intersection of Brookville Road and Steven Sitter Avenue would be expected to have a LOS A under the No Action Alternative and LOS B under the Preferred Alternative. The intersection of Georgia Avenue and Seminary Road would be expected to have a LOS E under the No Action Alternative and LOS F under the Preferred Alternative. This constitutes a minor adverse effect.

Table 4-16
Year 2026 intersection LOS summary – A.M. peak hour

Intersection	Existing LOS (2007)	No Action LOS (2026)	Preferred Alternative LOS (2026)
Steven Sitter Avenue / Brookville Road	A	A	B
Steven Sitter Avenue / Linden Lane	A	A	A
Brookville Road / Linden Lane	A	B	B
Linden Lane / Seminary Road and Second Avenue	A	A	A
Georgia Avenue and Seminary Road / Dale Drive	C	E	F
Georgia Avenue and Seminary Place	C	D	D
Lyttonsville Place and Lyttonsville Road / Michigan Avenue	A	A	A
East-West Highway and Grubb Road	A	C	C
Seminary Road and Linden Lane / Forest Glen Road	C	E	E

Source: PBS&J, 2008.

Table 4-17
Year 2026 intersection LOS summary – P.M. peak hour

Intersection	Existing LOS (2007)	No Action LOS (2026)	Preferred Alternative LOS (2026)
Steven Sitter Avenue / Brookville Road	A	A	A
Steven Sitter Avenue / Linden Lane	A	A	A
Brookville Road / Linden Lane	A	B	C
Linden Lane / Seminary Road and Second Avenue	A	B	B
Georgia Avenue and Seminary Road / Dale Drive	C	D	D
Georgia Avenue and Seminary Place	C	D	D
Lyttonsville Place and Lyttonsville Road / Michigan Avenue	A	A	A
East-West Highway and Grubb Road	A	B	B
Seminary Road and Linden Lane / Forest Glen Road	A	A	A

Source: PBS&J, 2008.

Access Control Points. Estimated 2026 AM peak hour entering volume of 595 vehicles (336 existing plus 259 new) would be 180 vehicles above the defined MOU threshold of 415 vehicles. Estimated 2026 PM peak hour exiting volume of 723 vehicles (457 existing plus 266 new) would be 217 vehicles above the 1992 MOU threshold of 506 vehicles. Although the estimated traffic volume would be slightly greater than those agreed to in the MOU, the installation's gate traffic would operate at an acceptable LOS (Table 4-16 and Table 4-17) (PBS&J, 2008).

Parking. Under the LRC there would be are a total of 1,341 parking spaces available for installation employees at FGA (PBS&J, 2008). The projected installation personnel count of 2,200 persons under the LRC would result in a parking spaces-to-employees ratio of 1,341:2,200 or 1:1.64. This falls intside the NCPC currently adopted parking ratios for federal facilities in the NCR (NCPC, 2004). The ACPs and their adjacent intersections would operate at LOS A or B under both the No Action and the Preferred Alternatives. The effects of limiting the number of parking spaces would improve the already acceptable traffic conditions.

Air, Rail, and Bus Transportation. The SRC activities would have negligible impact to public transit, rail access, or air traffic at or near the installation.

4.11.2.1.4 Transportation Management Plan

The largest contributor to traffic congestion is the single occupancy vehicle (SOV). Implementing the Preferred Alternative would result in additional personnel reporting to FGA every day as SOV trips. The TMP includes strategies to encourage installation personnel to change their travel modes, trip timing, frequency, length, and travel routes. The goal of the TMP is to encourage alternative commuting modes to reduce traffic congestion and the demand for parking spaces. Although the overall adverse effects from implementation of the Preferred Alternative would be minor, the BMPs outlined in the TMP could be implemented to reduce further any realized impacts. The following is a list of some of the potential programs outlined in the TMP that FGA could adopt:

- *Employee Transportation Coordinator (ETC).* The Army could appoint an ETC whose principal function would be to develop and manage the TMP. They would be knowledgeable of principles, practices, and methods of transportation demand management and would oversee implementation and marketing of the TMP.

- *Ridesharing (Carpooling and Vanpooling).* Help establish carpools and vanpools by matching up employees with similar residential locations and schedules.

- *Mass Transit.* Encourage the use of public heavy rail, commuter rail, local bus, and commuter express bus services for those employees within the District and the adjacent counties of Virginia and Maryland.

- *Guaranteed Ride Home Program.* Offer a convenient and reliable method of transportation during extended work hours or to respond to a personal emergency situation. The Guaranteed Ride Home Program is already in place and functioning on the regional level.

- *Commuter Center*. Establish a centralized point of information on available commuter options and a means of disseminating information to employees and employers.

- *Variable Work Hours.* Work schedules allowing employees to set their own work time around a core period in which all employees must be present for work.

- *Parking Management.* Limit the number and location of available parking spaces and increasing the price for their use, causing drivers to seek alternate methods of transportation.

The effectiveness of the TMP to reduce traffic congestion would depend on several factors, including the amount of resources applied and the receptiveness of FGA personnel towards efforts to reduce commuting in SOVs. Regardless, its implementation at any level would have a net benefit to transportation resources at FGA.

4.11.2.2 No Action Alternative

Under the No Action Alternative, normal background traffic growth would be expected. No effects to transportation resources, no change to the road networks, or increase in traffic volume due to the Preferred Alternative would occur. Under the No Action Alternative, the ACPs and their adjacent intersections would operate at LOS A (see Tables 4-14 and 4-15).

The estimated 2026 No Action Alternative AM peak hour entering volume of 405 vehicles (336 existing plus 70 new) would be 10 vehicles below the defined MOU threshold of 415 vehicles. The estimated No Action Alternative 2026 PM peak hour exiting volume of 552 vehicles (457 existing plus 95 new) would be 46 vehicles above the 1992 MOU threshold of 506 vehicles. Although estimated PM peak hour traffic volumes would be slightly greater than those agreed to in the MOU, the installation's gate traffic would operate at an acceptable LOS (Tables 4-16 and 4-17) (PBS&J, 2008).

4.11.3 BMPs/Mitigation Measures

Implementing the Preferred Alternative would result in only minor adverse effects to traffic and the transportation system. Therefore, no mitigation measures with respect to transportation would be required. Although effects from the Preferred Alternative would be minor, the following BMPs would be implemented during construction to reduce adverse impacts to traffic:

- All construction vehicles would be equipped with backing alarms, two-way radios, and slow moving vehicle signs when appropriate
- Construction vehicle traffic would be routed and scheduled as to minimize conflicts with other traffic
- Construction staging areas would be strategically sited in locations that would help minimize traffic impacts.

The following BMPs would be implemented to help control the peak period gate volumes such that they would not exceed the levels outlined in the 1992 MOU:

- As the BRAC-mandated development takes place, the amount of peak hour traffic entering and exiting the installation would be monitored to observe how closely the actual traffic volumes are to the estimated volumes.
- The currently active installation employee travel demand reduction program would be continued and expanded in order to minimize the amount of actual site-generated traffic volume growth per the TMP as discussed in Section 4.11.2.1.4.

4.12 UTILITIES

4.12.1 Affected Environment

FGA area is serviced by all utility systems including, natural gas, electricity, potable water, sanitary sewage collection and treatment, and communications.

Potable Water Supply. The Washington Suburban Sanitary Commission (WSSC) provides potable water to FGA. Water is supplied from two WSSC Patuxent River reservoirs. Potable water is treated using sedimentation, filtration, disinfection, and pH adjustment. A secondary source of potable water is from the Robert R. Morse Filtration Plant supplied by the northwest branch of the Anacostia River and part of the Patuxent River. Total water consumption for 2006 was 105.7 millions of gallons per year (mgy) (PBS&J, 2007). There are no water storage facilities at FGA.

Sanitary Sewage Collection and Treatment. The sanitary sewer system for the Community Center complex currently uses a force main pump-over into the southern sanitary sewer trunk main system. There is also a pump system at Building 156. The southern portion of FGA consists of 6- and 9-inch lateral lines that discharge into the 9-inch WSSC main traversing the southern portion of the installation and eventually connects a 10-inch WSSC main. The sanitary sewage system was modified and a segment of the 4-inch cast iron force main, from Building 509 to manhole 66, was converted to operate as a storm sewer (PBS&J, 2007).

Sanitary sewage from FGA is discharged to the WSSC's Rock Creek sewer interceptor, which in turn, connects to the District of Columbia's sewage system. No flow records are kept and no contractual agreements limiting the wastewater discharged from the installation to the District of Columbia's sewage system (Woolpert, 2003).

Sanitary sewer service for Buildings 154 and 156 has been rerouted to intercept the Community Center collection system. The existing sewer connection to the NPSHD has been severed (PBS&J, 2008).

In accordance with Section 402 of the Clean Water Act (CWA), FGA has a NPDES Phase I permit for stormwater associated with industrial activities.

Industrial Discharge. In addition to the NPDES permit, FGA also has two discharge permits. The first is a stormwater discharge permit associated with industrial activities which allows runoff from the motor pool area. The second is a "General Permit for Discharges from Tanks, Pipes, and other Liquid Containment Structures at Facilities other than Oil Terminals" which allows FGA to flush the fire hydrants periodically, in accordance with the permit conditions and the WRAMC Flushing Plan (PBS&J, 2008).

Natural Gas. Washington Gas provides natural gas to FGA and owns the gas distribution system at the post. All buildings are individually metered for natural gas consumption. The current natural gas distribution system and capacity appears to be adequate to support the needs of the current population of FGA.

There are two heating plants located in the Research and Development Area (plant in Building 500) and the Community Center complex (plant in Building 163) that serve FGA. These systems are not inter-connected. The capacity of these heating systems is adequate to serve only the

existing buildings that are connected to them. This is also true of the individual heating systems in Buildings 506, 508, 511, 602, and 606. Steam is used at FGA for heating, cooking, sterilizing, and production of hot water for domestic and laboratory use (Woolpert, 2003).

Electricity. Electricity is purchased from the Potomac Electric Power Company (PEPCO). There are three 13.2 kV, three-phase overhead circuits (numbers 14263, 14264, and 14265) that traverse the FGA from north to south. There are four principal areas served by these three PEPCO circuits: Building 178, the Community Center Complex; the Research Area; and the industrial and motor pool area. Based on information provided in the 2003 Master Plan update, the distribution network and electric supply equipment are in good condition. During 2006, electric consumption for FGA totaled 69,850,000 kilowatt hours (kwh) (PBS&J, 2007). The distribution system at Forest Glen is owned by the post. Government-owned emergency generating equipment is available for essential operation during a power failure (Woolpert, 2003).

Communications. Telephone services for Forest Glen are provided by Verizon. WRAMC owns the cable communications plant, but Verizon is contracted to conduct maintenance activities. Telephone service is distributed through underground ducts and overhead lines (Woolpert, 2003).

Solid Waste. Municipal solid waste (MSW)- is collected by a contractor and hauled off-post to the Montgomery County landfill in Laytonsville, Maryland (Woolpert, 2003). Approximately 55 tons per year of MSW are generated annually. FGA has a recycling program.

4.12.2 Environmental Consequences

4.12.2.1 Preferred Alternative

Short- and long-term minor adverse and beneficial effects on utilities would be expected from the Preferred Alternative.

4.12.2.1.1 Land Use Plan Update

Long-term minor beneficial effects on utilities would be expected as a result of implementing the Preferred Alternative land use plan. The land use plan provides for the orderly development of FGA in a way that supports the evolution of their mission. Research and Development, Maintenance, Supply and Storage, Community Facilities and Recreation land use areas would be consolidated under the three categories of Research and Development, Community Facilities, and Industrial. Utility infrastructure would be expected to be updated in concurrence with growth anticipated under the land use plan update. This should ultimately result in more harmonious systems that are easily adaptable for future growth.

4.12.2.1.2 Short-Range Component and BRAC Actions

The SRC at FGA would involve more than 270,000 SF of new construction and renovation. Short-term minor adverse effects would be expected from service interruptions during construction while new and renovated facilities are being hooked up to existing utilities systems. The proposed new occupancies and renovation of functions of the existing facilities would have utility loads less than or similar to existing ones.

The utility systems in the new buildings would be more efficient, offsetting some of the additional demand on utilities expected from the SRC and BRAC actions. Existing system distribution lines and system capacities for potable water, sanitary sewer, natural gas, electricity, and communications are adequate to accommodate additional demand as a result of the SRC and

BRAC actions. The heating distribution system is only capable of accommodating the buildings that are currently connected to the heating plants. The heating plants and distribution system would require expansion for additional buildings (PBS&J, 2008).

Long-term minor adverse effects on landfill capacity would be expected. Estimates of the quantity of C&D waste that would be generated by the SRC and BRAC action are presented in Table 4-18. Per requirements stipulated in an Assistant Chief of Staff for Installation Management (ACSIM) memorandum, February 6, 2006, a minimum of 50 percent of the estimated 8,152 tons of CDD would be diverted from landfills. As a result of this sustainable management of waste in military construction, renovation, and demolition activities, approximately 4,076 tons of CDD would be disposed of in various landfill sites in the area.

The annual average quantity of C&D debris from the BRAC action, using a 6-year time frame (2008-2013) during which all construction and renovation would occur would be approximately 680 tons per year, or 57 tons per month.

While the additional C&D debris would consume some landfill capacity, local and regional landfills have the capacity to accommodate the additional waste generated as a result of the BRAC action (Woolpert, 2003).

Table 4-18
Estimated construction and demolition debris from SRC facility construction and renovation

Action	Debris (lb/sf)	Subtotal Square Feet	Subtotal Pounds	Subtotal Tons
Renovation	20	38,000	760,000	380
Demolition	115	127,000	14,605,000	7,303
Construction	4	232,000	938,000	469
Gross total		**397,000**	**16,303,000**	**8,152**
Amount recycled (50 percent)			8,151,500	4,076
Net total CDD generated			**8,151,500**	**4,076**

Source: USEPA, 1998.

4.12.2.1.3 Long-Range Component

The LRC at FGA would involve roughly 250,000 SF of new construction. Short- and long-term effects that would occur under the LRC would be similar to effects under the SRC. Short-term minor adverse effects would be expected from service interruptions during construction while new and renovated facilities are being hooked up to existing utilities systems and the heating plants and distribution system would require expansion for the additional buildings. A long-term beneficial effect would be expected as the utility systems in the new buildings would be more efficient, offsetting some of the additional demand on utilities expected from the LRC. Aside from the heating plants, the existing systems would have adequate capacity to accommodate the additional demand as a result of the LRC.

Some segments of the current systems will need to be replaced within the next 20 years due to the age of the existing systems. This would need to be done regardless of the implementation of the

Preferred Alternative. These upgrades will be coordinated with the LRC during the utility system expansion and relocation that would be required for the proposed facilities. By updating the utility system in concurrence with the LRC time and money would be saved and a more harmonious and adaptable system should result.

Long-term minor adverse effects on landfill capacity would be expected. Estimates of the quantity of C&D waste that would be generated by the LRC are presented in Table 4-19. A minimum of 50 percent of the estimated 7,000 tons of CDD would be diverted from landfills over the duration of the LRC. As a result of this sustainable management of waste in military construction, renovation, and demolition activities, approximately 3,500 tons of CDD would be disposed of in various landfill sites in the area. While the additional C&D debris would consume some landfill capacity, local and regional landfills have the capacity to accommodate the additional waste generated as a result of the BRAC action (Woolpert, 2003).

Table 4-19
Estimated construction and demolition debris from LRC facility construction and renovation

Action	Debris (lb/sf)	Subtotal Square Feet	Subtotal Pounds	Subtotal Tons
Renovation	20	0	0	0
Demolition	115	113,000	13,000,000	6,500
Construction	4	250,000	1,000,000	5,00
Gross total		363,000	14,000,000	7,000
Amount recycled (50 percent)			7,000,000	3,500
Net total CDD generated			**3,500,000**	**3,500**

Source: USEPA, 1998.

4.12.2.1.4 Transportation Management Plan

Aside from some short-term minor adverse effects due to service interruptions during construction of road improvements, negligible effects on utilities would be expected from the implementation of the TMP.

4.12.2.2 No Action Alternative

No effects would be expected.

4.12.3 BMPs/Mitigation Measures

Apart from general BMPs listed in Table 4-20 in Section 4.15, no mitigation measures to utilities would be required with the implementation of the Preferred Alternative.

4.13 HAZARDOUS AND TOXIC SUBSTANCES

Specific environmental statutes and regulations govern hazardous material and hazardous waste management activities at WRAMC's FGA. For the purpose of this analysis, the terms hazardous waste, hazardous materials, and toxic substances include those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), or the Toxic Substances Control Act

(TSCA). In general, they include substances that, because of their quantity, concentration, or physical, chemical, or toxic characteristics, may present substantial danger to public health or welfare or the environment when released into the environment. Numerous maintenance activities, such as vehicle operation and maintenance and grounds maintenance, require the use and storage of regulated and non-regulated hazardous materials. Examples of hazardous wastes generated at FGA include radiological materials, solvents, paints, strong acids and bases, preservatives, heavy metals, sharps and other materials associated with laboratory operations and building maintenance. Regulated medical wastes are also generated within FGA.

Storage and disposal of hazardous wastes on FGA are addressed in the Hazardous Waste Management Plan (WRAMC, 1995) and partially addressed in the Spill Prevention, Control, and Countermeasures Plan (SPCC) (WRAMC, 2001). The Garrison Commander and the Garrison Environmental Office (GEO) are responsible for overseeing the hazardous waste program on FGA.

The hazardous substances and hazardous materials or related issues evaluated in this EA include the following:

- Petroleum Constituents
- Hazardous Waste
- Solid Waste
- Asbestos-containing materials (ACMs)
- Lead-based paint (LBP)
- Polychlorinated biphenyls (PCBs)
- Pesticides
- Regulated Medical Waste
- Radioactive Material
- Radon.

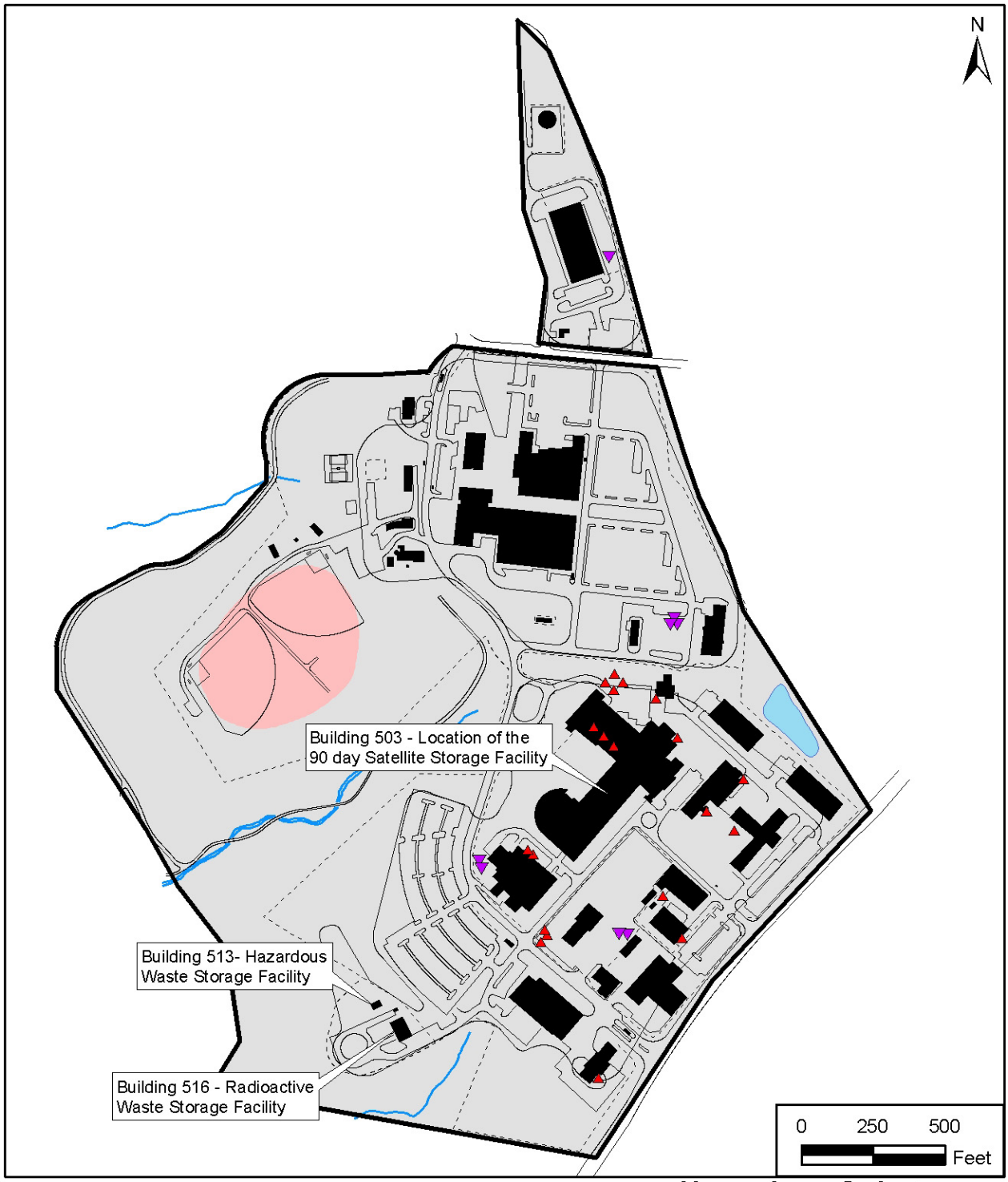
WRAMC has an active environmental program that maintains compliance specific to each of these hazardous substances and hazardous materials at FGA. A summary of the regulatory requirements and the specifics of each program are discussed herein. Figure 4-3 illustrates the locations of the various sites associated with hazardous substances and hazardous materials at FGA.

4.13.1 Affected Environment

4.13.1.1 Petroleum Constituents

The WRAMC SPCC and Installation Spill Contingency Plan (ISCP) (USACE, 2001) establishes responsibilities, duties, procedures, and resources to be used to contain and clean up accidental discharges of petroleum, oils, and lubricants as well as hazardous materials and hazardous wastes. The WRAMC GEO is responsible for coordinating and implementing the SPCC and ISCP. The WRAMC Fire Department is designated as the first responder to spill incidents.

FGA follows the ISCP for the handling of any spills or chemical emergencies on-post. Whenever there is a reported spill, the FGA Fire Department located responds (along with the environmental engineer from the WRAMC Main Section), evaluates the situation, and when appropriate, calls



Legend

- Aboveground Storage Tank
- Underground Storage Tank
- Former Landfill Site

Sources: WRAMC Forest Glen Annex GIS, 2006; Maryland DNR GIS, 2006.

Hazardous Substances and Hazardous Materials

Figure 4-3

the Montgomery County Hazardous Materials (HAZMAT) Team of the Montgomery County Division of Emergency Management, Fire and Rescue Services. The installation then follows the advice of the HAZMAT Team to have the problem corrected. Montgomery County personnel make required notifications after they take control of the spill scene (PBS&J, 2008).

There are 8 underground storage tanks (USTs) and 16 aboveground storage tanks (ASTs) located at FGA. All ASTs are inspected quarterly by the activity responsible for the AST. An inspection form is completed every quarter and submitted to WRAMC GEO. All but one UST at FGA has automatic tank gauging (ATG) system to monitor petroleum product levels and notify the users if a release occurs. All USTs undergo leak detection testing in accordance with federal, state, and Army regulations. The combination of these ATGs, leak detection testing, along with routine inspections and inspection before and after delivery of petroleum products ensures uncontrolled releases don't go unnoticed.

A petroleum release site, known as WRAMC-05, is adjacent to Building 500 near the intersection of Brookeville Road and Talbot Avenue. In May 1988, a thin film of oil was observed in the groundwater in an excavation 25 feet west of the north corner of Building 512, which is about 100 feet southwest of Building 500 (USACHPPM, 1988). In June 1988 a 50,000 gallon UST, located near Building 500, failed a tightness test (WRAMC, 2007b).

Ten monitoring wells were installed in June 1989, and the concentrations of groundwater contamination were found to be minimal. In December 1992, a 12,000-gallon UST, located near Building 500, was removed. Roughly 5,000 gallons of free product were pumped from the excavation. Ten monitoring wells were installed in December 1992 and February 1993. Two 50,000-gallon USTs located near Building 500 were later removed in January 1993. A bailing program was initiated in November 1993, and a pump and treat system was installed in March 1994 (WRAMC, 2007b).

In 1999, two of the monitoring wells were converted to recovery wells. In 2001, two more monitoring wells were installed across the street from the site to determine whether the fuel oil was migrating. One of the monitoring wells contained at least six inches of free product. In April 2002, the active pumping system was shut off based on the Groundwater Extraction and Treatment Effectiveness Review (GWETER), because only limited quantities could be recovered from the saprolite. Three monitoring wells were installed to attempt to further delineate the plume. Free product is currently being recovered by absorbent material suspended in 11 wells. In addition, a detergent assisted vacuum Enhanced Fluid Recovery (EFR) system has been periodically used in the six wells that have regularly contained significant free product (WRAMC, 2007b).

4.13.1.2 Hazardous Waste and Hazardous Materials

Health care activities, medical research programs, and facilities/public works personnel at FGA use hazardous materials resulting in the generation of hazardous waste. Both the hazardous materials management program and the HW management program are managed by the WRAMC GEO. Hazardous materials storage and use issues, such as chemical compatibility in storage, and handling of hazardous materials, is covered under WRAMC's hazard communication program (HAZCOM), and that program is overseen by the WRAMC Safety Office and the individual tenant's (e.g. WRAIR) Safety Officer. Typical hazardous materials used at FGA include solvents, paints, strong acids and bases, preservatives, heavy metals, and other materials associated with laboratory research and building maintenance. The use, storage, and disposal of hazardous

materials and hazardous waste are carried out in accordance with all federal, state, local, Army, and WRAMC regulations, including the WRAMC Hazardous Materials Management Plan (HMMP) and the WRAMC Hazardous Waste Management Plan (HWMP). The quantity and location of all hazardous material is tracked at the FGA using the Hazardous Substance Management System (HSMS). The HSMS database is managed centrally on WRAMC Main Section by the WRAMC GEO (PBS&J, 2008).

Once a material is no longer needed for its intended purpose, it may become a hazardous waste if it meets the definitions outlined in 40 CFR 261. Hazardous waste generated at the FGA are subject to accumulation rules as stipulated in COMAR 26.13.05.E(3) which allows satellite accumulation areas (SAAs). The SAA at FGA is in Building 503. In addition, Building 503 is also a "less-than-90-day storage" area, called a hazardous waste storage bunker. Hazardous waste is transported from the SAA to this bunker before being transported off-site by the Defense Reutilization and Marketing Office (DRMO). WRAMC does not maintain a RCRA permit, nor is it a permitted Treatment Storage and Disposal facility (TSDF) for hazardous waste (Delp, 2007).

Building 178 was historically used to receive and store corrosive and flammable materials, compressed-gas cylinders, medical supplies, furniture, and miscellaneous materials for WRAMC. The warehouse had separate rooms for segregating materials that were corrosive (including phenol, acids, ammonia, and chloroform) and flammable (including alcohol, xylenes, paints, and stains). The warehouse also received tanks of compressed gases, including oxygen, carbon dioxide, helium, argon, and acetylene; the tanks were segregated according to flammability.

4.13.1.3 Solid Waste

A private contractor collects general solid waste from FGA for off-post disposal. WRAMC maintains an Integrated Solid Waste Management Plan (ISWMP) that outlines FGA's solid waste management policies. FGA operates a recycling program in accordance with 40 CFR 246, AR 200-1, AR 420-429, and WRAMC Regulation 420-2.

Solid waste that is non-hazardous and not regulated medical waste (RMW) is managed in accordance with the ISWMP and all federal, local, state, and Army regulations. WRAMC does not possess a solid waste permit for FGA. Therefore, all municipal-type solid waste generated at the FGA is collected and transported off-site by a licensed solid waste contractor for disposal in local landfill sites or incinerators. In accordance with AR 200-1, WRAMC has pollution prevention (P2) and recycling programs aimed at decreasing the volume of solid waste generated by the activities and tenants at FGA. These programs include chemical substitution and diversion of certain recyclable materials from the solid waste stream. Examples of materials that are collected for recycling at the FGA are white and colored office paper, newspaper, aluminum, cardboard, plastic, and glass. WRAMC is constantly increasing its P2 and recycling efforts (PBS&J, 2008).

Several former solid waste management units (SWMUs) were identified at FGA, particularly in the southern portion of the property (STV Group, 1994), and they are presently inactive. No issues with leachate or groundwater levels within 15 feet of the surface were noted and no groundwater sampling was recommended for the sites.

A former landfill is located under the athletic fields in the western portion of the property. A site investigation of the former landfill was performed in 2004. The site investigation indicated that several low level organic and metal analytes were detected in the shallow groundwater above MDE remediation standards. Significant levels of radiological isotopes were not detected in the soil or groundwater samples collected during the investigation (Tetra Tech, 2004).

4.13.1.4 Asbestos-Containing Materials (ACMs)

There is currently a program in place to manage ACM and the installation periodically surveys for the presence of ACM hazards. The current approach to ACM is to manage the material in place as long as there is no imminent health hazard or disturbance of the material planned.

DoD policy states that, unless ACM poses a threat to human health at the time of transfer, property containing ACM will be conveyed "as is" (Woolpert, 2003). The Army will be responsible for removing, sealing, or otherwise rendering safe any ACM that poses a threat to human health at the time of transfer, unless an agreement is reached that the transferee will take responsibility for such action, or unless the structure is to be demolished or renovated in compliance with applicable regulations. Information about the presence and condition of ACM will be provided to the transferee of the property at the time of transfer.

Demolition or renovation of buildings can disturb and potentially release ACM. Before the new owners can begin any demolition, asbestos must be removed by a qualified, licensed contractor, under applicable state and federal regulations. Before the new owners can renovate, they must determine if the ACM will be disturbed or affected by the renovations and then must take appropriate actions to protect human health and the environment under appropriate state and federal regulations.

In response to the dangers posed by materials containing asbestos, federal laws were passed in the 1980s. The Asbestos Hazard Emergency Reauthorization Act (AHERA) of 1987 was among the first, and it addressed the asbestos in public school facilities. AHERA set forth qualifications for inspection and analysis, analytical requirements, and acceptable response actions.

EPA and Occupational Safety and Health Administration (OSHA) regulate the remediation of asbestos-containing materials. Emissions of asbestos fiber into the ambient air are regulated by EPA in accordance with Section 112 of the CAA of 1970, which established the National Emissions Standards for Hazardous Air Pollutants (NESHAPs). These clean air standards, along with TSCA regulations concerning asbestos abatement, regulate demolition or rehabilitation of buildings with ACM.

Due to the age of some buildings at the FGA, some ACM is present. Asbestos surveys have been completed of buildings at FGA to determine the condition of remaining ACM (e.g. friable or non-friable). Site-specific ACM abatement projects take place on an as-needed basis, particularly during renovation projects. WRAMC uses licensed asbestos abatement contractors to conduct the abatement and disposal activities (PBS&J, 2008).

4.13.1.5 Lead-Based Paint

Requirements similar to those for ACM apply to LBP. For structures constructed before 1978, any hazards associated with LBP may be required to be abated by the federal government. Demolition or renovation of buildings can disturb and potentially release LBP as dust or debris. Appropriate actions to protect human health and the environment are taken under appropriate state and federal regulations, including the proper disposal of construction or demolition debris containing LBP (Woolpert, 2003).

WRAMC has not conducted a installation-wide survey at FGA to identify the location of all LBP. A complete survey of buildings only applies to residential buildings and is thus not required at

FGA. In accordance with AR 420-70, WRAMC's policy is to assume that paint in all buildings constructed prior to 1978 contain LBP and should be managed appropriately (PBS&J, 2008).

4.13.1.6 PCBs

Because of their resilience to heat and electricity, PCBs were added to electrical equipment dielectric fluid to stabilize transformers, capacitors and other electrical equipment. Unfortunately, resilience of PCBs also makes them persistent in the environment where they bio-accumulate in organisms, and become concentrated in the food chain. Increasing concern about the long-term effect of these persistent carcinogenic and mutagenic chemicals on human health and the environment resulted in the ban of their manufacture, sale, and distribution under TSCA.

A total PCB transformer removal program has been implemented at FGA (Woolpert, 2003). Out-of-service transformers are drained at the service site and the fluid disposed of by a licensed hazardous waste disposal contractor. There are still PCBs located on-site in the ballasts of the fluorescent lights. These are removed from the installation as renovations and updating dictate.

PCBs have historically been used at FGA in items including transformers and light ballasts. FGA historically had approximately 20 PCB-containing transformers. WRAMC notified EPA in 1995 that all PCB-containing materials (including transformers) were removed from FGA, with the exception of PCB-containing fluorescent light ballasts. As light fixtures are changed, they are replaced with non-PCB containing ballasts are then collected and disposed of in accordance with all applicable regulations (PBS&J, 2008).

4.13.1.7 Pesticides

Pesticides have been used at FGA since its inception. FGA has employed a pesticide management program for many years. Herbicides are also used by road and grounds maintenance crews to control weeds and invasive floral species. The storage and application of all pesticides and herbicides at FGA are performed in accordance both the Army's Integrated Pest Management (IPM) techniques and Pesticide Management Plan for WRAMC. IPM is intended to reduce the use of pesticides and is in accordance with the Army's Pollution Prevention Program.

4.13.1.8 Regulated Medical Waste

FGA activities and tenants RMW while conducting healthcare and medical research functions. RMW is also known as special medical waste (SMW) by the state of Maryland. RMW/SMW is solid waste generated during diagnosis, treatment, or immunization of animals or human beings which is capable of causing disease, or which, if not handled properly, poses a risk to individuals or a community. There are many categories of RMW, including liquid blood, plasma, and other derivatives, whether dried, dripping, or free flowing, as well as pathological wastes. WRAIR is the primary generator of such wastes at FGA, and handles RMW in accordance with all applicable federal, state, Army Medical Command (MEDCOM), and Army regulations. A licensed RMW contractor regularly collects RMW from FGA generation points and removes the waste from the site to an approved facility. This contract is managed by WRAMC GEO (PBS&J, 2008).

4.13.1.9 Radioactive Materials

Radioactive materials are used at FGA for healthcare and medical research purposes. Management of the use, storage, and disposal of radioactive substances is overseen by the WRAMC Health Physics Office (HPO). Use of radioactive materials is subject to conditions in WRAMC's license with the federal Nuclear Regulatory Commission (NRC). Activities and

tenants at FGA use both low-level beta and gamma emitters. Currently, WRAIR is the only generator of radioactive waste at FGA, although radioactive waste generated at the WRAMC Main Section is also stored at FGA. When the radioactive material becomes waste and is no longer needed, it is disposed of in accordance with all applicable regulations and NRC permit requirements. Radioactive waste material with a half-life less than 120 days is stored in Building 516, a former Diamond Ordnance Reactor Facility (DORF) to allow the radioactivity to decay to background levels. The WRAMC HPO then surveys the material to ensure proper decay and disposes of the waste appropriately as municipal solid waste, non-hazardous liquid waste, hazardous waste or RMW based on the characteristics of the remaining waste. If the half-life of the radioactive waste is greater than 120 days, the waste is stored in drums with vermiculite as a safety precaution and removed from FGA for disposal by a licensed radioactive waste hauler facilitated by Rock Island Army Arsenal. The waste is then transported to a licensed radioactive waste disposal facility (PBS&J, 2008).

WRAMC's license with the NRC allows storage of radioactive waste in Building 516. These license requirements state the Building 516 must have controlled access and proper radiation safety postings and radiation exposure monitoring. If NRC and Army Regulation Authorization (ARA) operations cease at Building 516, then the U.S. Army Research Laboratory (ARL) must ensure that proper access control, radiation safety postings, and radiation exposure monitoring is continued (PBS&J, 2008).

4.13.1.10 Radon

Radon gas is a naturally occurring, colorless, odorless, radioactive gas produced by the decay of naturally radioactive material (e.g., potassium, uranium) found in underlying bedrock. Atmospheric radon is diluted to insignificant levels, but when concentrated in enclosed areas, radon could pose human health risks. The radon potential at the FGA is moderate (USGS, 1995). A moderate radon potential means that approximately one-half of the homes and buildings in the area have more than 4 picoCuries per liter (pCi/l) of air of radon. A value of 4 pCi/l has been defined by EPA as the health-based limit for radon exposure in air.

4.13.2 Environmental Consequences

4.13.2.1 Preferred Alternative

Short-term negligible adverse and long-term minor adverse and beneficial effects would be expected to hazardous and toxic materials as a result of implementation of the BRAC action and RPMP.

4.13.2.1.1 Land Use Plan Update

Long-term minor adverse and beneficial effects would be expected to hazardous and toxic materials as a result of the land use plan update. Construction of additional facilities would result in long-term minor adverse effects as the various tenant agencies that occupy the new space would also need to comply with applicable laws and regulations relating to the use, storage and disposal of hazardous substances, materials and wastes, medical wastes, and radioactive wastes. The tenants in the additional space could also generate additional waste, such as medical or low-level radiological waste related to medical facility operations, which may also be considered a minor adverse effect. Long-term minor beneficial effects would be expected related to ACM and LBP present in existing buildings if such buildings were demolished or renovated.

4.13.2.1 Short-Range Component and BRAC Actions

Petroleum. Long-term minor adverse effects would result from an increase in storage capacity requirements for petroleum. Any construction of new storage facilities to handle storage requirements from SRC and BRAC actions would be done in accordance with applicable laws regarding construction materials, leak protection, monitoring, and spill containment. Long-term minor beneficial effects would result from the remediation of petroleum release sites.

The 500-gallon diesel AST located at Building 609 may be impacted by the renovation and parking lot proposed with the emergency services facility expansion project (SRC-8). If affected, tank closing and removal should be performed in accordance with federal, state, local, and Army regulations to address the potential release to the environment.

The proposed DoD Veterinary Pathology Facility (SRC-3) is sited in the vicinity of petroleum release site WRAMC-05. Any disturbance to the subsurface in this area may result in worker exposure to this release site. This potential exposure can be mitigated by further characterizing the impacted area through sampling and analysis and employing a Health and Safety Program including qualified industrial hygienists and a Health and Safety Plan (HSP). Additional investigation could identify if residual impacted soils exists and where they are located so that plans and cost estimates to excavate and remove the impacted soils can be developed.

Hazardous Substances and Hazardous Materials. Long-term minor adverse effects would result from an increase in the use of hazardous materials. Additional potentially hazardous materials that could be found on-post during BRAC- and RPMP-related construction and operational activities include paints, thinners, asphalt, and fuel and motor oils for vehicles and equipment. An increase in the volume of these wastes generated and the amount of storage required would be anticipated.

Short-term negligible adverse effects could result from an increase in spills associated with the use of hazardous materials. Established controls such as spill containment, emergency response and clean-up procedures would limit the impact of spills.

No effects would be expected from hazardous waste disposal. The current hazardous waste disposal procedures would continue with implementation of the Preferred Alternative. All hazardous wastes would be managed in accordance with the federal and state regulations.

Solid Waste. No effects would be expected from solid waste disposal. The installation has established procedures for managing and disposing of solid wastes. The current solid waste disposal procedures would continue with implementation of the Preferred Alternative.

The parking lot proposed at the FGA athletic fields would be located on a former landfill. Any disturbance to the subsurface in this area could result in worker exposure at this site. This potential exposure can be mitigated by further characterizing the impacted area through sampling and analysis and employing a Health and Safety Program including qualified industrial hygienists and a HSP. Additional investigation could identify if residual impacted soils exists and where they are located so that plans and cost estimates to excavate and remove the impacted soils can be developed.

Construction of SCR-4, SRC-5, and SRC-8 could disturb the SWMUs in the vicinity of these projects. Any disturbance to the subsurface in this area may result in worker exposure. This potential exposure would be mitigated in the same manner discussed above.

Generation and disposal of C&D debris is discussed in Section 4.12.2.1.2.

Asbestos. Long-term minor beneficial effects would be expected related to ACM present in existing buildings if such buildings were demolished or renovated to accommodate incoming BRAC activities. ACM would be handled in a manner consistent with applicable rules and regulations including NESHAP regulations, and thus no environmental or health effects from the removal, handling, and disposal of these materials would be expected during demolition, renovation, or construction activities.

The potential for effects of special hazards such as ACM would be evaluated and addressed as specified in the appropriate regulatory requirements. Demolition that involves ACM would be evaluated for compliance with the OSHA standard in 29 CFR 1926.62 and EPA, state, federal, and Army regulations. Measures to control airborne asbestos would be implemented. All construction debris that contains ACM above regulatory limits would be disposed of at licensed disposal facilities in accordance with applicable laws.

Lead-Based Paint. Long-term minor beneficial effects would be expected related to LBP present in existing buildings if such buildings were demolished or renovated to accommodate incoming BRAC activities. LBP would be handled in a manner consistent with applicable rules and regulations and thus no environmental or health effects from the removal, handling, and disposal of these materials would be expected during demolition, renovation, or construction activities.

The potential for effects of special hazards such as LBP would be evaluated and addressed as specified in the appropriate regulatory requirements. Demolition that involves LBP would be evaluated for compliance with the OSHA standard in 29 CFR 1926.62 and EPA, state, federal, and Army regulations. Measures to control airborne lead dust would be implemented.

PCBs. No effects would be expected. Numerous pole and pad mounted transformers are located within the Preferred Alternative. Over the years, FGA has sampled, tested, and removed, many of the PCB containing electrical components. However, due to the size, complexity, and age of the electrical infrastructure at FGA, the possibility of encountering PCB-containing electrical equipment still exists. All transformers would likely require additional sampling to determine PCB content before decommissioning and disposal.

Pesticides. No effects from pesticides would be expected at the Preferred Alternative. A pesticide survey is recommended prior to commencing construction at project sites, and, any identified contaminated media above regulatory limits would be addressed in accordance with the applicable regulatory requirements.

Regulated medical waste. Long-term minor adverse effects would be expected from construction of the WRAIR laboratory (SRC-1), medial research Laboratory (SRC-2), and DOD Veterinary Pathology Facility (SRC-3). An increase in the amount of regulated medical waste at FGA would be expected during operation of these facilities. The organizations that occupy these facilities would be required to comply with all regulated medical waste regulations.

Radioactive Material. Long-term minor adverse effects would be expected. The expansion of FGA operations would likely result in an increase in the amount of radioactive material generated at FGA as a result of SRC project development. The various tenant agencies that occupy the new medical research space would be required to comply with all radioactive material regulations.

Radon. Long-term minor indirect adverse effect would be expected. However, the increase in tenants may require additional study of how radon levels should be addressed during construction and excavation activities. If radon levels exceeding federal standards are found, mitigation measures could be incorporated into project design. However, no immediate site preparation activities would likely be required.

4.13.2.1.3 Long-Range Component

Petroleum. Long-term minor adverse effects would result from an increase in storage capacity requirements for petroleum. Any construction of new storage facilities to handle storage requirements from long range component would be done in accordance with applicable laws regarding construction materials, leak protection, monitoring, and spill containment. Long-term minor beneficial effects would result from the remediation of petroleum release sites.

The 200-gallon diesel AST (Tank 4AF6) near Building 500 may be impacted by the the proposed laboratory facility (LRC-6). This project and associated parking footprint is also proposed in the vicinity of the petroleum release site WRAMC-05. Effects and risk minimization measures would be similar to those discussed in Section 4.13.2.1.2.

Additional ASTs/USTs may be impacted by the proposed LRC parking footprints. These include a 385-gallon diesel AST to the west of Building 512 and a 500-gallon diesel AST to the southeast of Building 508. In addition, Two 10,000-gallon gasoline USTs to the northwest of Building 603 may be impacted by the proposed ACP (LRC-3), and a 300-gallon gasoline UST to the southwest of Building 506 may be impacted by the proposed DoD Veterinary Pathology Facility (LRC-5). If affected, the closing and removal should be performed in accordance with federal, state, local, and Army regulations to address the potential release to the environment.

Hazardous Substances and Hazardous Materials. Effects would be similar to those discussed in Section 4.13.2.1.2.

Solid Waste. Construction of LRC-4 and the associated parking lot could disturb SWMUs in this area. Any disturbance to the subsurface in this area may result in worker exposure. This potential exposure would be mitigated in the same manner discussed in Section 4.13.2.1.2.

Asbestos. Effects would be similar to those discussed in Section 4.13.2.1.2.

Lead-Based Paint. Effects would be similar to those discussed in Section 4.13.2.1.2.

PCBs. Effects would be similar to those discussed in Section 4.13.2.1.2.

Pesticides. Effects would be similar to those discussed in Section 4.13.2.1.2.

Regulated medical waste. Long-term minor adverse effects would be expected from the LRC-4 proposed DoD Tissue Repository Expansion (LRC-4), DoD Veterinary Pathology Facility (LRC-5), and new laboratory facility (LRC-6). Operational activities at these facilities would likely result in an increase in the amount of regulated medical waste generated at FGAThe organizations that occupy these facilities would be required to comply with all regulated medical waste regulations.

Radioactive Material. Effects would be similar to those discussed in Section 4.13.2.1.2.

Radon. Effects would be similar to those discussed in Section 4.13.2.1.2.

4.13.2.1.4 Transportation Management Plan

Implementation of the TMP would result in construction of additional parking areas, road calming measures, and ACPs. This construction could also result in environmental and health risks to construction workers.

4.12.2.2 No Action Alternative

No effects would be expected.

4.13.3 BMPs/Mitigation Measures

Environmental and health risks are controlled by implementing existing programs, policies, regulations, and standard operating procedures (SOPs). Measures to reduce the risk of harm to humans and the environment from hazardous substances and hazardous materials would be included in these requirements. Apart from these measures and general BMPs are listed in Table 4-20 in Section 4.15, no mitigation measures for hazardous and toxic materials would be required with implementation of the Preferred Alternative.

4.14 CUMULATIVE EFFECTS

Cumulative effects are defined by CEQ in 40 CFR 1508.7 as the "impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions."

Short- and long-term adverse cumulative effects could occur as a result of other on- or off-post projects, such as renovation of Building 606 (AFIP Tissue Repository) on FGA and redevelopment of the NPSHD into a neighborhood of historic condominiums, townhouses courtyard, and single-family homes. While no specific concurrent projects have been identified, any such projects could contribute to collective impacts on soil erosion, water quality, air quality, traffic, and noise. The effects of construction projects, however, would generally be short-lived and confined to a small area surrounding the projects. Additionally, FGA would adhere to laws and regulations pertaining to the protection of all resource areas, including soils, stormwater runoff, endangered species, and air quality when conducting any construction project. No substantial cumulative effects, therefore, would be expected to result from projects undertaken concurrently with the projects identified in this EA. Cumulative impact issues for some resource areas are presented below.

Land use and air space. The buildable areas of FGA along with the private land bordering the installation are largely developed, leaving little room for expansion. The surrounding areas include developed commercial and industrial land use to the south and southeast, parkland to the west, and historic residential areas to the north and northeast. There is some development occurring in the NPSHD, but it is in line with current land use goals. Therefore, implementation of the Preferred Alternative would not contribute to adverse cumulative land use impacts.

Air quality. Effects on air quality would be primarily due to the use of heavy construction equipment for ground clearing and facility construction and renovation. Other construction and development projects would, of course, occur within the region, and all of the projects would produce some measurable amounts of air pollutants. The state of Maryland takes into account the

effects of all past, present, and reasonably foreseeable projects in the region and associated emissions during the development of their State Implementation Plan (SIP) of the CAA. Estimated emissions generated by the Preferred Alternative would conform to the SIP. Therefore, implementation of the Preferred Alternative would not contribute to adverse cumulative air quality impacts.

Water resources. Short- and long-term minor adverse effects on surface waters would be expected. Construction activities of both BRAC and non-BRAC actions would increase soil disturbance and potentially soil erosion, and total suspended solids could thus be increased in nearby waters. Also, leakage from construction equipment could increase petroleum hydrocarbon pollution in surface waters. Short term adverse effects on groundwater could occur. Increased waterborne pollutants (e.g., dissolved solids, petroleum hydrocarbons, sediment) resulting from demolition, renovation, and construction activities could be transported into the groundwater system. No effects on floodplains would be expected to occur from known proposed projects.

Transportation. Long-term minor adverse effects would be expected. The size and scope of the changes in the transportation systems associated with the Preferred Alternative would be extremely small when compared to other planned transportation related projects in the area. As a result, the traffic impacts would not contribute appreciably to cumulative effects.

Utilities. As stated in Section 4.12.2.1, the utility systems in place would be able to accommodate the proposed renovation and construction activities at FGA, however, segments of the systems themselves would be displaced by the proposed development included in the master plan update; these systems would need to be modified. In addition, development of the proposed labs and administration facilities would require significant redesign and expansion of the existing utility systems in the southern part of the facility. Minor modifications would also be needed to the utility systems in the northern part of the facility due to proposed development (PBS&J, 2008).

4.15 MITIGATION SUMMARY

Section 1508.20 of the Council on Environmental Quality's implementing regulations for NEPA define mitigation to include (a) Avoiding the impact altogether by not taking a certain action or parts of an action, (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment, (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and (e) Compensating for the impact by replacing or providing substitute resources or environments.

Mitigation actions for the proposed BRAC projects at FGA would be undertaken largely in accordance with existing regulations and policies. Such regulatory or policy driven actions to reduce, avoid, or compensate for adverse effects would include, for example, following all applicable laws and regulations for handling all hazardous materials and wastes; implementing state-approved, best management practices for stormwater control during construction; designing facilities according to the principles of low-impact development; recycling construction debris where possible; and revegetating disturbed sites. Sound engineering practices and best management practices, current and future, would be used to the maximum extent practicable to mitigate any adverse environmental impacts. Related BMPs for each of the resource areas are presented in Table 4-20.

Table 4-20
Summary of BMPs and possible mitigation measures

Resource Area	BMPs
Land Use	• Follow DoD AT/FP standards during site design. • Incorporate low impact development (LID) principles into site layout.
Aesthetics and Visual Resources	• Landscape sites with native vegetation.
Air Quality	• Use water or chemicals for dust control when demolishing existing buildings or structures, construction operations, grading roads, or clearing land. • Apply water or suitable chemicals on dirt roads, materials stockpiles, and other surfaces that could create airborne dust. • Pave roadways and maintain them in a clean condition. • Install and use hoods, fans, and fabric filters to enclose and vent the handling of dusty material, including the implementation of adequate containment methods during sandblasting or other similar operations. • Cover open equipment used to convey materials likely to create air pollutants. • Promptly remove spilled or tracked dirt from streets. • Sequence construction activities in a manner that would avoid multiple projects using heavy construction equipment on the same day.
Noise	• Limit construction activities to daylight hours on business days. • Use sound-dampening construction equipment and materials to attenuate noise. • Maintain vegetative buffers for noise attenuation.
Geology and Soils	• Use state-approved BMPs to reduce soil erosion and sedimentation. • Adhere to SWPPPs and any plans or guidance, as appropriate, per the installation's NPDES Phase I permit.
Water Resources	• Implement BMPs to control surface erosion and runoff (e.g., silt fencing, hay bales). • Construct temporary construction sediment retention ponds as required. • Reseed and revegetate areas following construction activities to minimize effects. • Use LID practices where possible. • Follow protocols outlined in state sediment and erosion control guidelines. • Implement site-specific SWPPP in accordance with the installation's stormwater program.
Biological Resources	• Limit disturbed areas to the footprint plus a minimal amount of adjacent construction staging area. • Revegetate disturbed areas with native, indigenous vegetation. • Plant native trees and drought-tolerant vegetation near open spaces and around stormwater management structures. • Limit land disturbance on each land parcel to no more than what is necessary for the desired use or development.
Cultural Resources	• Implement stop work procedures to allow for documentation of findings if previously unknown archaeological resources are discovered during construction activities.

Table 4-20 *(continued)*
Summary of BMPs and possible mitigation measures

Resource Area	BMPs
Socioeconomic Resources	• Secure construction vehicles and equipment when not in use. • Place barriers and "No Trespassing" signs around construction sites where practicable.
Transportation	• Continue and expand the currently active installation employee travel demand reduction program to minimize the amount of actual site generated traffic volume growth per the TMP. • Equip construction vehicles with backing alarms, two-way radios, and slow moving vehicle signs when appropriate. • Route and schedule construction vehicle traffic to minimize conflicts with other traffic. • Strategically locate construction material staging areas to minimize traffic impacts. • As the BRAC mandated development takes place, monitor the amount of peak hour traffic entering and exiting the installation.
Utilities	*Potable water* • Train staff and contractors on water conservation measures. • Install water-efficient control devices, such as low-flow showerheads, faucets, and toilets, in all new facilities. *Energy* • Install energy-efficient interior and exterior lighting fixtures and controls in all new units. All new units would be built to EnergyStar energy efficiency standards. • Promote energy conservation and reduced utility consumption through the utility program developed by the Army. *Solid waste disposal and recycling* • Train staff and contractors on materials eligible for recycling municipal solid waste. • Recycle construction and demolition debris to the maximum extent feasible. • Recycle municipal solid waste collected from office locations.
Hazardous and Toxic Substances	• Implement measures to control airborne asbestos. • Evaluate and dispose of demolition materials in accordance with applicable local, state, and federal regulations at the time of demolition. • Store all hazardous material in accordance with regulations and implement a Hazard Communication Program that will include training personnel in proper handling of hazardous materials. • Document all hazardous material to be used and maintain copies of Material Safety Data Sheets (MSDS). • Ensure hazardous wastes are removed and properly disposed of in accordance with applicable local, state, and federal regulations. • Establish smoking areas and prohibit open flames near flammable material.

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SECTION 5.0
CONCLUSIONS

This EA has been prepared to evaluate the potential effects on the natural and human environment from activities associated with implementation of the BRAC Commission's recommendations and master planning activities pertaining to FGA. The EA has examined the Army's preferred alternative (BRAC realignment and implementation of the RPMP update) and the No Action Alternative.

The EA has evaluated potential effects on land use, aesthetic and visual resources, air quality, noise, geology and soils, water resources, biological resources, cultural resources, socioeconomics (including environmental justice and protection of children), transportation, utilities, and hazardous and toxic substances.

Evaluation of the Preferred Alternative, identified as the Army's preferred alternative, indicates that the physical and socioeconomic environments at FGA and in the ROI would not be significantly affected. The predicted consequences on resource areas are briefly described below. Table 5-1 provides a summary and comparison of the consequences of the Preferred Alternative versus the No Action Alternative.

5.1 SUMMARY OF CONSEQUENCES

5.1.1 Preferred Alternative

5.1.1.1 Land Use and Airspace

Long-term minor adverse and beneficial effects on land use would be expected. The proposed land use designations in the RPMP simplify and consolidate the existing land use categories in that they recognize broader actual compatibility between adjacent land uses on the installation. The more broadly defined categories provide Army planners at FGA with greater flexibility for future development and reduce land use compatibility issues. To facilitate assessment of land use impacts under the SRC and LRC, a comparison of the impact of the proposed SRC projects on land use was made between FGA's existing land use plan and the proposed land use plan. While approximately 48 percent of the acreage impacted by the SRC and BRAC actions and 41 percent of the LRC actions would convert areas from pervious to impervious, the projects generally fall within compatible land use designations under the proposed land use plan. No effects on airspace would be expected.

5.1.1.2 Aesthetics and Visual Resources

Short- and long-term minor adverse and beneficial effects would be expected. The short-term adverse effects would be from the increase of construction activities, which are inherently aesthetically displeasing. In the long term, new buildings built on previously undeveloped land adjacent to current development would cause a minor adverse effect, while renovated facilities would be expected to improve the area's overall aesthetic and visual appeal. The land use plan under the LRC would have a beneficial effect by consolidating the Industrial land use areas on the installation, a land use that generally has a moderate to low aesthetic integrity, into the southwest corner of the installation. The area north of Linden Lane, which is currently zoned as an Industrial-type land use and is adjacent to the historic district, would eventually change to Community Facilities land use under the LRC land use plan. The Industrial land use category

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Table 5-1
Summary of potential environmental and socioeconomic consequences

	Environmental and Socioeconomic Consequences	
Resource Area	**Preferred Alternative**	**No Action Alternative**
Land Use and Airspace	Long-term minor adverse and beneficial	No effects
Aesthetics and Visual Resources	Short- and long-term minor adverse and beneficial	No effects
Air Quality	Short- and long-term minor adverse	No effects
Noise	Short-term negligible to minor adverse	No effects
Geology and Soils		
Geology/Topography	Short-term long-term negligible to minor adverse	No effects
Soils	Short-term long-term negligible to minor adverse	No effects
Prime Farmland	No effects	No effects
Water Resources		
Surface Water and Groundwater	Short- and long-term negligible to minor adverse	No effects
Floodplains, Coastal Zone	No effects	No effects
Biological Resources		
Vegetation	Long-term minor adverse	No effects
Wildlife	Short- and long-term negligible to minor adverse	No effects
Threatened and Endangered Species	No effects	No effects
Wetlands	No effects	No effects
Cultural Resources	Long-term beneficial	No effects
Socioeconomics		
Economic Development	Short- and long-term beneficial	No effects
Housing	No effects	No effects
Law Enforcement, Fire Protection, and Medical Services	Short-term minor adverse	No effects
Schools	No effects	No effects
Family Support, Social Services, Shops, Services, and Recreation	Short-term minor adverse	No effects
Environmental Justice	No effects	No effects
Protection of Children	No effects	No effects
Transportation	Short-term and long-term minor adverse	No effects
Utilities	Short- and long-term minor adverse and long-term beneficial	No effects

(continued)

Table 5-1 *(continued)*
Summary of potential environmental and socioeconomic consequences

	Environmental and Socioeconomic Consequences	
Resource Area	**Preferred Alternative**	**No Action Alternative**
Hazardous and Toxic Substances		
Petroleum	Long-term minor adverse and beneficial	No effects
Hazardous and Toxic Substances	Short-term negligible adverse and long-term minor adverse	No effects
Solid Waste	No effects	No effects
Asbestos	Long-term minor beneficial	No effects
Lead-Based Paint	Long-term minor beneficial	No effects
PCBs	No effects	No effects
Pesticides	No effects	No effects
Regulated Medical Waste	Long-term minor adverse	No effects
Radioactive Material	Long-term minor adverse	No effects
Radon	Long-term minor adverse	No effects

would be consolidated in the southern portion of the installation and would be farther from the historic districts than at present.

5.1.1.3 Air Quality

Short- and long-term minor adverse effects on air quality would be expected. Emissions associated with construction and operation of facilities and traffic, however, would not exceed *de minimis* (of minimum importance) thresholds, be "regionally significant," contribute to a violation of any federal, state, or local air regulation, or contribute to a violation of the installation's air operating permit. All permitting of stationary sources and construction would be accomplished in full compliance with Maryland regulatory requirements at the time of construction. No activities outlined in the TMP would generate any additional direct or indirect air emissions.

5.1.1.4 Noise

Short-term negligible to minor effects on the noise environment would be expected. A short-term increase in on-post noise would result from the use of heavy construction equipment. With use of BMPs, all on- and off-installation areas would be compatible with the expected changes to the noise environment.

5.1.1.5 Geology and Soils

Short and long-term negligible to minor adverse effects would be expected. The changes in land use designations from the 2003 FGA master plan to the proposed land use plan update could allow more changes in topography. The new land use designations include areas that are that are considered environmentally sensitive, although these environmental constraints (e.g. wetlands) would retain their protected status and potential development would continue to be limited in some of these areas. Effects to soils from construction activities would be associated with the increased potential for erosion and sedimentation resulting from excavation, grading, removal of vegetation, exposure of soil during construction, and loss of soil productivity and stability. No effects on prime farmland or soils of statewide importance would be expected.

5.1.1.6 Water Resources

Short- and long-term negligible to minor adverse effects on surface waters and groundwaters would be expected. Construction activities of both BRAC and non-BRAC actions would increase soil disturbance and potentially soil erosion, and total suspended solids could thus be increased in nearby waters. Also, leakage from construction equipment could increase petroleum hydrocarbon pollution in surface waters. Waterborne contaminants contributed by construction activities could be transported into the groundwater system. No effects on floodplains would be expected to result. There are no 100-year floodplains within the proposed impact areas.

5.1.1.7 Biological Resources

Short- and long-term negligible to minor adverse effects on vegetation and wildlife would be expected. Although areas previously designated as Open Space, which included buffer zones and wetlands, under the existing land use plan have been redesignated as land use categories that would permit development under the proposed land use plan, these environmentally sensitive areas within the new land use categories would remain protected under existing environmental regulations regardless of their land use designation. Construction activities would cause the loss of small areas of native and non-native vegetation, but disturbed areas would be revegetated with native species. Construction activities on undeveloped land would also cause losses of habitat. There would be no effects on threatened, endangered, or other species of concern, or wetlands. All known habitats for sensitive species would be avoided, and no wetlands are located in the proposed construction footprints.

5.1.1.8 Cultural Resources

No effects on cultural resources would be expected on cultural resources would be expected from implementation of the SRC, LRC, and TMP, and long-term beneficial effects would be expected from the land use plan update. Under the LRC land use plan, the portion of FGA north of Linden Lane would be redesignated Community Facilities from Industrial, which would generally result in land uses more compatible with the NPSHD. The potential for impacts on unknown cultural and historical resources is always present, but adherence to policies and guidelines in FGA's ICRMP and consultation with the SHPO would be conducted as necessary to avoid potential adverse effects.

5.1.1.9 Socioeconomics

Short-and long-term beneficial effects on economic development would be expected as well as short-term minor adverse effects on law enforcement, fire protection, medical services, family support, social services, shops, services, and recreation. The expenditures associated with renovation and construction of facilities on FGA would increase sales volume, employment, and income in the ROI. Short-term minor adverse effects on all services would be expected from an increased demand for and reduced availability of services in the ROI. In the long-term, services could adapt to the demands of the increased population base. No adverse effects on environmental justice or protection of children would be expected, as implementation of the RPMP at FGA would not create disproportionately high or adverse human health or environmental effects on minority of low-income populations in the ROI, or incur environmental health risks or safety risks on children.

5.1.1.10 Transportation

Short- and long-term minor adverse effects on transportation would be expected due to the Preferred Alternative. Short-term traffic effects would be due to additional construction vehicles and traffic delays near construction sites. Long-term effects to on-post, off-post, and gate traffic would be due to minor increases in the number of vehicle trips and traffic volumes associated with the Preferred Alternative.

5.1.1.11 Utilities

Short- and long-term minor adverse and beneficial effects on utilities would be expected. Utility infrastructure would be expected to be updated in concurrence with growth anticipated under the land use plan update. This should ultimately result in more harmonious systems that are easily adaptable for future growth. Service interruptions during construction would occur while new and renovated facilities are being hooked up to existing utilities systems. Long-term minor adverse effects would occur from an increase in generation of C&D debris, which would contribute to a reduction in local off-post landfill capacities.

5.1.1.12 Hazardous and Toxic Substances

Short-term negligible adverse and long-term minor adverse and beneficial effects would be expected. Implementation of the RPMP and facility construction and renovations would adhere to federal, state, local, and Army regulations for the removal and disposal of hazardous materials, and new facilities would minimize the generation and use of such materials. Remediation of existing contaminated sites would result in a beneficial effect. All materials handling, storage, and disposal would be in accordance with applicable laws and regulations.

5.1.1.13 Cumulative Effects

Short- and long-term minor adverse cumulative effects would be expected. These would involve increased erosion and runoff effects caused by possible construction activities during implementation of the RPMP. These cumulative effects would be minor and only present during the construction phase of the project. In addition, long-term minor adverse effects would be expected from increases in traffic due to the proposed action and other actions in the vicinity.

5.1.2 No Action Alternative

No effects on any of the resource areas considered in the EA would be expected to result from implementation of the No Action Alternative.

5.2 CONCLUSIONS

Based on the analysis performed in this EA, implementation of the Preferred Alternative would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment. Preparation of an Environmental Impact Statement is not required. Therefore, issuance of a FNSI would be appropriate.

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SECTION 9.0
ACRONYMS AND ABBREVIATIONS

ACM	asbestos containing material
ACP	Access Control Point
ACSIM	Assistant Chief of Staff for Installation Management
ACTUR	Automated Central Tumor Registry
AD	Agriculture Department (form)
ADNL	A-weighted Day-night Average Sound Level
AFIP	Armed Forces Institute of Pathology
ANSI	American National Standards Institute
AQCR	Air-Quality Control Region
AR	Army Regulation
ARA	Army Regulation Authorization
ARL	Army Research Laboratory
AST	aboveground storage tank
AT/FP	Anti Terrorism Force Protection
ATG	automatic tank gauging
bldg	building
BMP	best management practice
BRAC	Base Realignment and Closure
BTU	British Thermal Unit
C&D	construction and demolition
CAA	Clean Air Act
CDC	Child Development Center
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
cGMP	Clinical Good Manufacturing Practices
CO	carbon monoxide
COMAR	Code of Maryland Regulations
CONUS	continental U.S.
CWA	Clean Water Act
DA	Department of the Army
dB	decibel
dBA	A-weighted decibels
DC	District of Columbia
DD	Defense Department (form)
DEP	Department of Environmental Protection (Montgomery County, Maryland)
DNL	Day-night Average Sound Level
DoD	Department of Defense
DoDSR	Department of Defense Surveillance Activity
DoDVPR	Department of Defense Veterinary Pathology Residency
DORF	Diamond Ordinance Reactor Facility
DPW	Directorate of Public Works
EA	Environmental Assessment
EFR	Enhanced Fluid Recovery

EIFS	Economic Impact Forecast System
EO	Executive Orders
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ETC	Employee Transportation Coordinator
FEMA	Federal Emergency Management Agency
FGA	Forest Glen Annex
FICON	Federal Interagency Committee on Noise
FNSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
gal	gallon
GCR	General Conformity Rule
GNIS	Geographic Names Information System
GSA	General Services Administration
GWETER	Groundwater Extraction and Treatment Effectiveness Review
HAZCOM	Hazard Communication
HAZMAT	hazardous materials
HMMP	Hazardous Materials Management Plan
HPO	Health Physics Office
HQ	Headquarters
HVAC	heating, ventilation, and air conditioning
HW	hazardous waste
HWMP	Hazardous Waste Management Plan
Hz	hertz
ICRMP	Integrated Cultural Resources Management Plan
IPM	Integrated Pest Management
IRP	Installation Restoration Program
ISCP	Installation Spill Contingency Plan
ISWMP	Integrated Solid Waste Management Plan
kwh	kilowatts per hour
LBP	lead-based paint
L_{eq}	Equivalent Sound Level
LID	low-impact development
LOS	Level of Service
LRC	Long-Range Component
MCPB	Montgomery County Planning Board
MDE	Maryland Department of the Environment
MEDCOM	Army Medical Command
MGD	million gallons per day
mgy	million gallons per year
MOU	Memorandum of Understanding
MP	military police
MPO	Metropolitan Planning Organization
MSAT	Mobile Source Air Toxics
MSDS	Material Safety Data Sheets
msl	mean sea level
MSW	Municipal Solid Waste
MS4	municipal separate storm sewer system
MWCOG	Metropolitan Washington Council of Governments

NA	not applicable
NAAQS	National Ambient Air Quality Standards
NCPC	National Capital Planning Commission
NCR	National Capital Region
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NMRC	National Medical Residency Center
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPSHD	National Park Seminary Historic District
NRC	Nuclear Regulatory Commission
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NSR	New Source Review
O_3	ozone
OSHA	Occupational Safety and Health Administration
OTR	Ozone Transport Region
PCB	Polychlorinated Biphenyls
pCi/l	picoCuries per liter
PCPI	per capita personal income
PEPCO	Potomac Electric Power Company
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PN	Project Number
POL	petroleum, oil, and lubricants
POM	Program Objective Memorandum
ppm	parts per million
PSD	Prevention of Significant Deterioration
PX	Post Exchange
P2	pollution prevention
R&D	Research and Development
RCRA	Resource Conservation and Recovery Act
REC	Record of Environmental Consideration
RMW	regulated medical waste
ROD	Record of Decision
ROI	region of influence
RONA	Record of Non-applicability
RPMP	Real Property Master Plan
RTV	rational threshold value
SAA	satellite accumulation area
SF	square feet
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SMW	Special Medical Waste
SO_2	sulfur dioxide
SOP	standard operating procedure
SOV	single occupancy vehicle

SPCC	spill prevention, control, and counter measures
SRC	Short-Range Component
SWMU	solid waste management unit
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TMP	Transportation Management Plan
tpy	tons per year
TSCA	Toxic Substance Control Act
$\mu g/m^3$	micrograms per cubic meter
US	United States
USACE	U.S. Army Corps of Engineers
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
U.S.C.	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USLD	Ultra Low Sulfur Diesel
UST	underground storage tank
VFR	Visual flight rules
VMT	vehicle miles traveled
VOC	volatile organic compounds
WMATA	Washington Metropolitan Area Transit Authority
WRAIR	Walter Reed Army Institute of Research
WRAMC	Walter Reed Army Medical Center
WSSC	Washington Suburban Sanitary Commission

APPENDIX A
EMISSIONS CALCULATIONS

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A.1 EMISSIONS ESTIMATIONS AND METHODOLOGY

The Army has considered net emissions generated from all direct and indirect sources of air emission that are reasonably foreseeable. *Direct emissions* are emissions that are caused or initiated by a federal action and occur at the same time and place as the action. *Indirect emissions* are defined as reasonably foreseeable emissions that are caused by the action but might occur later in time and/or be farther removed in distance from the action itself, and that the federal agency can practicably control. More specifically, project-related direct emissions would result from the following:

- *Demolition and construction activities*: the use of non-road equipment (e.g., bulldozers, backhoes), worker vehicles, the use of volatile organic compound (VOC) paints, paving off-gasses, and fugitive particles from surface disturbances
- *Operational activities*: Small heating boilers not subject to major new source review, and the use of private motor vehicles

No direct or indirect emissions are associated with the land transfer activities associated with the federal action.

A.1.1 DEMOLITION AND CONSTRUCTION EMISSIONS

Demolition and construction emissions associated with the use of construction equipment (e.g., bulldozers, backhoes), worker vehicles, the use of VOC paints, paving off-gasses, and fugitive particles from surface disturbances are presented in Table A-1 for all the years of construction. This section also outlines all the calculations and assumptions made to derive these construction emission estimations.

A.1.1.1 Heavy Construction Equipment

Pollutant emissions resulting from activities associated with constructing the new buildings, parking facilities, and roadways were estimated. The typical demolition and construction would involve such activities as demolition of existing buildings or structures, utility installation, road construction, site clearing and grading, building construction, and asphalt paving.

Demolition and construction would involve the use of various non-road equipment, power generators, and trucks. Pieces of equipment to be used for building construction include, but are not limited to, backhoes, loaders, excavators, air compressors, chain saws, chipping machines, dozers, cranes, pavers, graders, rollers, and heavy trucks. Information regarding the number of pieces and types of construction equipment to be used on the project, the schedule for deployment of equipment (monthly and annually), and the approximate daily operating time (including power level or usage factor) were estimated for each individual construction project based on a schedule of construction activity.

Emissions from construction activities were estimated based on the projected construction activity schedule, the number of vehicles/pieces of equipment, and vehicle/equipment utilization rates. Emission factors for heavy-duty diesel equipment were obtained from EPA's *NONROAD2005 Emissions Model* (USEPA, 2004). The equipment and vehicle operation hours

Table A-1
Estimated construction emissions

	Construction emissions (tpy)				
Year	**CO**	**NO_x**	**$PM_{2.5}$**	**SO_2**	**VOC**
2008	0.2	0.5	0.1	0.1	0.0
2009	2.4	4.4	0.5	0.7	0.4
2010	3.8	6.2	0.6	1.0	0.7
2011	6.2	8.6	0.7	1.3	1.2
2012	0.9	1.2	0.1	0.2	0.2
2013	1.4	2.9	0.6	0.6	0.2
2008 Annual construction emissions	**CO**	**NO_x**	**$PM_{2.5}$**	**SO_2**	**VOC**
Heavy equipment emissions	0.2	0.5	0.0	0.1	0.0
Total	0.2	0.5	0.1	0.1	0.0
2009 Annual construction emissions	**CO**	**NO_x**	**$PM_{2.5}$**	**SO_2**	**VOC**
Heavy equipment emissions	1.8	4.4	0.3	0.7	0.3
Worker trip emissions	0.6	0.1	0.0	0.0	0.0
Architectural coating emissions	0.0	0.0	0.0	0.0	0.0
Fugitive dust emissions	0.0	0.0	0.2	0.0	0.0
Total	2.4	4.4	0.5	0.7	0.4
2010 Annual construction emissions	**CO**	**NO_x**	**$PM_{2.5}$**	**SO_2**	**VOC**
Heavy equipment emissions	2.5	6.1	0.4	1.0	0.5
Worker trip emissions	1.3	0.1	0.0	0.0	0.1
Architectural coating emissions	0.0	0.0	0.0	0.0	0.1
Fugitive Dust Emissions	0.0	0.0	0.2	0.0	0.0
Total	3.8	6.2	0.6	1.0	0.7
2011 Annual construction emissions	**CO**	**NO_x**	**$PM_{2.5}$**	**SO_2**	**VOC**
Heavy equipment emissions	3.2	8.4	0.7	1.3	0.7
Worker trip emissions	3.0	0.2	0.0	0.0	0.2
Architectural coating emissions	0.0	0.0	0.0	0.0	0.3
Total	6.2	8.6	0.7	1.3	1.2
2012 Annual construction emissions	**CO**	**NO_x**	**$PM_{2.5}$**	**SO_2**	**VOC**
Heavy equipment emissions	0.4	1.2	0.1	0.2	0.1
Worker trip emissions	0.4	0.0	0.0	0.0	0.0
Architectural coating emissions	0.0	0.0	0.0	0.0	0.0
Total	0.9	1.2	0.1	0.2	0.2
2013 Annual construction emissions	**CO**	**NO_x**	**$PM_{2.5}$**	**SO_2**	**VOC**
Heavy equipment emissions	1.2	2.9	0.4	0.6	0.2
Worker trip emissions	0.3	0.0	0.0	0.0	0.0
Fugitive dust emissions	0.0	0.0	0.2	0.0	0.0
Total	1.4	2.9	0.6	0.6	0.2

Note: Inconsistencies due to rounding may exist.

were estimated based on R.S.Means' *Building Cost Construction Data*, 64th annual edition (Waier, 2006), and field experience from similar projects.

Emission factors in grams of pollutant per hour were multiplied by the estimated running time to calculate total grams of pollutant from each piece of equipment. Finally, these total grams of pollutant were converted to tons of pollutant. The following formula was used to calculate hourly emissions from non-road engine sources, including cranes, backhoes, and the like:

$$M_i = (N \times EF_i) \times AI$$

where: M_i = mass of emissions of i^{th} pollutant during inventory period
N = source population (units)

EF_i = average emissions of i^{th} pollutant per unit of use (e.g., grams per hour)
AI = anti-idling factor (0.98).

The total annual emissions levels are summarized in Table A-2.

Table A-2
Estimated annual emissions from construction and demolition equipment

Year	CO	NO_x	$PM_{2.5}$	SO_2	VOC
2008	0.2	0.5	0.0	0.1	0.0
2009	1.8	4.4	0.3	0.7	0.3
2010	2.5	6.1	0.4	1.0	0.5
2011	3.2	8.4	0.7	1.3	0.7
2012	0.4	1.2	0.1	0.2	0.1
2013	1.2	2.9	0.4	0.6	0.2

Sources: USEPA, 2004; SQAQMD, 1993.

A.1.1.2 Construction Worker Vehicle Operations

Emissions due to construction worker vehicle use were included in the analysis. Emission factors for motor vehicles were conservatively calculated using the EPA *MOBILE6.2*. MWCOG provided *MOBILE6.2* input files applicable to the project during the years of interest. These emission factors were then multiplied by the vehicle operational hours to determine motor vehicle emissions. The analysis assumed conservatively that the worker's vehicle would drive 30 miles per day on post at an average speed of 35 miles per hour. The total annual emissions levels are summarized in Table A-3.

Table A-3
Estimated annual emissions from construction worker vehicles

Year	CO	NO_x	$PM_{2.5}$	SO_2	VOC
2008	0.0	0.0	0.0	0.0	0.0
2009	0.6	0.1	0.0	0.0	0.1
2010	1.3	0.1	0.0	0.0	0.1
2011	3.0	0.2	0.0	0.0	0.2
2012	0.4	0.0	0.0	0.0	0.0
2013	0.3	0.0	0.0	0.0	0.0

Sources: USEPA, 2002; SQAQMD, 1993.

A.1.1.3 Emissions from Architectural Coatings

Emission factors relating emissions to total square footage to be built were used to estimate VOC emissions from architectural coating activities – primarily painting activities. For office space, the area to be painted was assumed to be approximately twice the heated area of the facility, and the dry film thickness was assumed to be three millimeters (mm). The following formula was used to calculate emissions from the painting of the facilities:

$$E = [(F \times G) / 1000] \times H$$

where: E = emissions of VOCs from architectural coatings
F = pounds of VOC emissions per gallon
G = total area to be coated (heated area x 2)
H = paint coverage.

A sample calculation for architectural coating VOC emissions during construction of an example facility is provided below:

Heated area = 100,000 ft^2

E = [(0.83 [lb/gallon] / 400 [ft^2/gallon] x [(100,000 [ft^2] x 2)]]/2,000 [lb/ton]
= 0.208 tons

The total annual emissions levels are summarized in Table A-4. In addition, estimated emissions from the potential demolition and construction are presented in Attachment 1.

Table A-4
Annual VOC emissions from architectural coatings

Year	Annual VOC Emissions (tpy)
2009	0.0
2010	0.1
2011	0.3

Source: SQAQMD, 1993.

A.1.1.4 Asphalt Curing Emissions

Asphalt paving would generate emissions from (1) asphalt curing, (2) operation of onsite paving equipment, and (3) operation of motor vehicles, including paving material delivery trucks and worker commuting vehicles. Because the emissions resulting from the operation of onsite paving equipment, trucks, and vehicles were included in the previous section, only asphalt curing-related emissions are discussed in this section. Asphalt curing-related VOC emissions were calculated based on the amount of paving anticipated for the onsite parking lot and new roadways. The following assumption was used in VOC emission calculations for asphalt curing (SQAQMD 1993):

E = area paved x 2.62 lb VOC/acre

A sample calculation is provided below:

Paved area = 100 acres

E = 100 acres x 2.62 lb VOC/acre/2000 lb/ton
= 0.131 ton

Due to the minimal paving anticipated negligible off gas emissions are anticipated.

A.1.1.5 Surface Disturbance

The quantity of dust emissions from construction operations is proportional to the area of land being worked and to the level of construction activity. The following assumptions were used in

$PM_{2.5}$ emission calculations for fugitive dust emissions (AP-42 Section 13.2.3 (USEPA, 1995); USEPA, 2005).

E = open area x EF x PM_{10}/TSP x $PM_{2.5}/PM_{10}$ x capture fraction

where: open area = number of acres open
EF = 80 lb TSP/acre
PM_{10}/TSP = 0.45 lb PM_{10}/lb TSP
TSP = total suspended particulates
$PM_{2.5}/PM_{10}$ = 0.15 lb $PM_{2.5}$/lb PM_{10}
capture fraction = 0.5

A sample calculation is provided below:

Disturbed area = 100 acres

E = 100 ac x 80 lb TSP /acre x 0.45 lb PM_{10}/lb TSP x 0.15 lb $PM_{2.5}$/ lb PM_{10}
x 2000 lb/ton

= 1.35 tons

The total annual emissions levels are summarized in Table A-5.

Table A-5
Annual $PM_{2.5}$ emissions from surface disturbance

Year	Annual $PM_{2.5}$ emissions (tpy)
2008	0.0
2009	0.2
2010	0.2
2013	0.2

Sources: AP-42 Section 13.2.3 (USEPA, 1995), USEPA 2005.

A.1.2 OPERATIONAL EMISSIONS

Operational emissions occur as a result of the operation of the new facilities. The remaining direct and indirect emissions due to heating boilers and commuter vehicles constitute a small net increase in emissions when compared to the no-action (no-build) scenario. The total annual operational emissions levels are summarized in Table A-6.

Table A-6
Estimated net operating emissions

	CO	NO_x	$PM_{2.5}$	SO_2	VOC
Heating and Cooling	0.3	0.3	0.0	0.0	0.0
Employee commuting	15.1	1.1	0.0	0.0	1.1
Total	15.4	1.5	0.1	0.0	1.2

A.1.2.1 Heating Boiler Emissions

Each building is assumed to be adequately heated, with heating values based on the U.S. Department of Energy's *Consumption and Gross Energy Intensity by Census Region for Sum of Major Fuels, Commercial Buildings Energy Consumption Survey* (DOE, 1999). It is expected that building boiler emissions from each building would occur after the completion of the project. The total annual emissions levels are summarized in Table A-7.

Table A-7
Estimated heating and cooling emissions

Heated Area	Fuel Used [cubic feet]	CO	NO_x	$PM_{2.5}$	SO_2	VOC
219000	6964200	0.29	0.35	0.03	0.00	0.02

Sources: AP-42 Section 1.4 and DOE 1999.

A.1.2.2 Employee Commuting Vehicular Emissions

Emission factors for motor vehicles were conservatively calculated for commuter vehicles (modeled as light-duty gasoline vehicles and light-duty gasoline trucks such as sport utility vehicles [SUVs]) using the EPA *MOBILE6.2* mobile source emission factor model. Metropolitan Washington Council of Governments provided the most current input parameters containing the current planning assumptions for the region. A sample calculation for the annual emission rate for NO_x from new employee vehicles from a sample project is presented below:

Additional employees = 150
Number of trips per day = 2
Number of days per year = 250
Average vehicle commute distance = 35 miles
MOBILE6.2 emission factor = 0.3 grams/mile

Annual emission level = 150 x 2 trips/day x 250 days/yr x 35 miles/trip
x 0.3 grams/mile x 0.0000011 tons/gram
= 0.87 tpy

The estimated net annual vehicular emissions are presented Table A-8.

Table A-8
Estimated employee commuting emissions

Number of Employees	Average Commute	CO	NO_x	$PM_{2.5}$	SO_2	VOC
220	30	15.06	1.12	0.04	0.01	1.15

Sources: USEPA, 2002.

ATTACHMENT 1 EMISSIONS CALCULATIONS

Table A-A-1
Project areas and durations

Project name	Year	Duration [days]	Clearing area [acres]	Building area [ft^2]	Landscaping [acres]	Paving [acres]
Child Development Center(CDC) (2008), Clearing and Grading	2008	365	0.69	0	0	0
Child Development Center(CDC) (2009), Building Construction	2009	365	0	15000	0	0
WRAIR Medical Research Laboratory (B) (2009), Clearing and Grading	2009	365	4.6	0	0	0
DoD Veterinary Pathology Facility (B) (2009), Clearing and Grading	2009	365	0.23	0	0	0
DoD Veterinary Pathology Facility (B) (2009), Building Construction	2009	365	0	5000	0	0
WRAIR Medical Research Laboratory (B) (2010), Building Construction	2010	365	0	50000	0	0
National Museum of Health and Medicine (B) (2010), Clearing and Grading	2010	365	1.84	0	0	0
AFIP DoD Tissue Repository (B) (2010), Clearing and Grading	2010	365	0.23	0	0	0
New Medical Research Laboratory (2010), Clearing and Grading	2010	365	0.37	0	0	0
Administration and Storage Facility (2010), Clearing and Grading	2010	365	2.3	0	0	0
WRAIR Medical Research Laboratory (B) (2011), Building Construction	2011	365	0	50000	0	0
National Museum of Health and Medicine (B) (2011), Building Construction	2011	365	0	20000	0	0
AFIP DoD Tissue Repository (B) (2011), Building Construction	2011	365	0	5000	0	0
New Medical Research Laboratory (2011), Building Construction	2011	365	0	8000	0	0
Administration and Storage Facility (2011), Building Construction	2011	365	0	50000	0	0
National Museum of Health and Medicine (B) (2012), Building Construction	2012	365	0	20000	0	0
Three new parking lots (2013), Clearing and Grading	2013	365	6.33	0	0	0
Three new parking lots (2013), Paving	2013	30	0	0	0	6.33
Emergency Facility Expansion (2013), Clearing and Grading	2016	365	0.99	0	0	0
Emergency Facility Expansion (2013), Building Construction	2017	365	0	21500	0	0

Table A-A-2
Annual equipment use

Equipment type	2008	2009	2010	2011	2012	2013	Total hours
Trimmers/Edgers/Brush Cutter	0	322	805	2141	322	0	3590
Lawn mowers	0	184	460	1224	184	0	2052
Lawn & Garden Tractors	0	0	0	0	0	84	84
Generator Sets	0	368	920	2447	368	48	4151
Air Compressors	0	0	0	0	0	167	167
Pavers	111	778	763	0	0	1018	2670
Plate Compactors	0	644	1610	4283	644	0	7181
Rollers	0	644	1610	4283	644	0	7181
Scrapers	111	778	763	0	0	1018	2670
Cement & Mortar Mixers	111	1422	2373	4283	644	1102	9934
Cranes	111	1422	2373	4283	644	1018	9851
Graders	111	778	763	0	0	1018	2670
Off-highway Trucks	0	322	805	2141	322	0	3590
Tractors/Loaders/Backhoes	0	184	460	1224	184	0	2052
Crawler Tractor/Dozers	0	0	0	0	0	84	84

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Table A-A-3
Heavy equipment emissions

Project	CO [tons]	NO_X tons]	PM_{10} [tons]	$PM_{2.5}$ [tons]	SO_2 [tons]	VOC [tons]
Child Development Center(CDC) (2008), Clearing and Grading	0.18	0.45	0.03	0.03	0.07	0.03
Child Development Center(CDC) (2009), Building Construction	0.40	1.07	0.07	0.07	0.15	0.09
WRAIR Medical Research Laboratory (B) (2009), Clearing and Grading	1.15	2.82	0.20	0.20	0.47	0.19
DoD Veterinary Pathology Facility (B) (2009), Clearing and Grading	0.06	0.14	0.01	0.01	0.02	0.01
DoD Veterinary Pathology Facility (B) (2009), Building Construction	0.13	0.36	0.02	0.02	0.05	0.03
WRAIR Medical Research Laboratory (B) (2010), Building Construction	1.31	3.40	0.24	0.24	0.49	0.28
National Museum of Health and Medicine (B) (2010), Clearing and Grading	0.45	1.06	0.08	0.08	0.19	0.07
AFIP DoD Tissue Repository (B) (2010), Clearing and Grading	0.06	0.13	0.01	0.01	0.02	0.01
New Medical Research Laboratory (2010), Clearing and Grading	0.09	0.21	0.02	0.02	0.04	0.01
Administration and Storage Facility (2010), Clearing and Grading	0.56	1.33	0.10	0.10	0.24	0.09
WRAIR Medical Research Laboratory (B) (2011), Building Construction	1.21	3.15	0.28	0.27	0.48	0.27
National Museum of Health and Medicine (B) (2011), Building Construction	0.48	1.26	0.11	0.11	0.19	0.11
AFIP DoD Tissue Repository (B) (2011), Building Construction	0.12	0.32	0.03	0.03	0.05	0.03
New Medical Research Laboratory (2011), Building Construction	0.19	0.50	0.04	0.04	0.08	0.04

Administration and Storage Facility (2011), Building Construction	1.21	3.15	0.28	0.27	0.48	0.27
National Museum of Health and Medicine (B) (2012), Building Construction	0.44	1.16	0.13	0.12	0.19	0.10
Three new parking lots (2013), Clearing and Grading	1.10	2.76	0.42	0.41	0.59	0.21
Three new parking lots (2013), Paving	0.05	0.13	0.02	0.02	0.03	0.01
Emergency Facility Expansion (2013), Clearing and Grading	0.00	0.00	0.00	0.00	0.00	0.00
Emergency Facility Expansion (2013), Building Construction	0.00	0.00	0.00	0.00	0.00	0.00
Total Non-Road	9.19	23.41	2.10	2.04	3.82	1.86

Source: USEPA, 2004 and SQAQMD, 1993.

1

Table A-A-4
Worker trip emissions (tons)

Project	Trips	Distance [miles]	Duration [days]	VMT[a]	EF[a] CO	CO	EF[a] NO_X	NO_X	EF[a] $PM_{2.5}$	$PM_{2.5}$	EF[a] SO_2	SO_2	EF[a] VOC	VOC
Child Development Center(CDC) (2008), Clearing and Grading	1	30	230	5951	4.05	0.03	0.32	0	0.01	0	0.01	0	0.29	0
Child Development Center(CDC) (2009), Building Construction	11	30	230	74520	4.05	0.33	0.32	0.03	0.01	0	0.01	0	0.29	0.02
WRAIR Medical Research Laboratory (B) (2009), Clearing and Grading	6	30	230	39675	4.05	0.18	0.32	0.01	0.01	0	0.01	0	0.29	0.01
DoD Veterinary Pathology Facility (B) (2009), Clearing and Grading	0	30	230	1984	4.05	0.01	0.32	0	0.01	0	0.01	0	0.29	0
DoD Veterinary Pathology Facility (B) (2009), Building Construction	4	30	230	24840	4.05	0.11	0.32	0.01	0.01	0	0.01	0	0.29	0.01
WRAIR Medical Research Laboratory (B) (2010), Building Construction	36	30	230	248400	4.05	1.11	0.32	0.09	0.01	0	0.01	0	0.29	0.08
National Museum of Health and Medicine (B) (2010), Clearing and Grading	2	30	230	15870	4.05	0.07	0.32	0.01	0.01	0	0.01	0	0.29	0.01
AFIP DoD Tissue Repository (B) (2010), Clearing and Grading	0	30	230	1984	4.05	0.01	0.32	0	0.01	0	0.01	0	0.29	0
New Medical Research Laboratory (2010), Clearing and Grading	0	30	230	3174	4.05	0.01	0.32	0	0.01	0	0.01	0	0.29	0
Administration and Storage Facility (2010), Clearing and Grading	3	30	230	19838	4.05	0.09	0.32	0.01	0.01	0	0.01	0	0.29	0.01
WRAIR Medical Research Laboratory (B) (2011), Building Construction	36	30	230	248400	4.05	1.11	0.32	0.09	0.01	0	0.01	0	0.29	0.08

National Museum of Health and Medicine (B) (2011), Building Construction	14	30	230	99360	4.05	0.44	0.32	0.03	0.01	0	0.01	0	0.29	0.03
AFIP DoD Tissue Repository (B) (2011), Building Construction	4	30	230	24840	4.05	0.11	0.32	0.01	0.01	0	0.01	0	0.29	0.01
New Medical Research Laboratory (2011), Building Construction	6	30	230	39744	4.05	0.18	0.32	0.01	0.01	0	0.01	0	0.29	0.01
Administration and Storage Facility (2011), Building Construction	36	30	230	248400	4.05	1.11	0.32	0.09	0.01	0	0.01	0	0.29	0.08
National Museum of Health and Medicine (B) (2012), Building Construction	14	30	230	99360	4.05	0.44	0.32	0.03	0.01	0	0.01	0	0.29	0.03
Three new parking lots (2013), Clearing and Grading	8	30	230	54553	4.05	0.24	0.32	0.02	0.01	0	0.01	0	0.29	0.02
Three new parking lots (2013), Paving	8	30	19	4484	4.05	0.02	0.32	0	0.01	0	0.01	0	0.29	0
Emergency Facility Expansion (2013), Clearing and Grading	1	30	230	8530	4.05	0.04	0.32	0	0.01	0	0.01	0	0.29	0
Emergency Facility Expansion (2013), Building Construction	15	30	230	106812	4.05	0.48	0.32	0.04	0.01	0	0.01	0	0.29	0.03

Source: USEPA, 2002 and SQAQMD, 1993.
[a] VMT = vehicle miles traveled; EF = emission factor

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Table A-A-5
Architectural coating emissions (Paint)

Project	Heated Area	Wall Surface	EF[a] VOC [lbs/1000 ft^2]	VOC [tons]
Child Development Center(CDC) (2009), Building Construction	15000	30000	55.5	0.03
DoD Veterinary Pathology Facility (B) (2009), Building Construction	5000	10000	55.5	0.01
WRAIR Medical Research Laboratory (B) (2010), Building Construction	50000	100000	55.5	0.1
WRAIR Medical Research Laboratory (B) (2011), Building Construction	50000	100000	55.5	0.1
National Museum of Health and Medicine (B) (2011), Building Construction	20000	40000	55.5	0.04
AFIP DoD Tissue Repository (B) (2011), Building Construction	5000	10000	55.5	0.01
New Medical Research Laboratory (2011), Building Construction	8000	16000	55.5	0.02
Administration and Storage Facility (2011), Building Construction	50000	100000	55.5	0.1
National Museum of Health and Medicine (B) (2012), Building Construction	20000	40000	55.5	0.04
Emergency Facility Expansion (2013), Building Construction	21500	43000	55.5	0.04
Total Architectural Coating Emissions				0.51

Source: SQAQMD, 1993.
[a] EF = emission factor

Table A-A-6
Fugitive dust emissions

Project	PM_{10}/ TSP[a]	$PM_{2.5}$/ PM_{10}	EF TSP[a] [lbs/acre/ day]	Capture Fraction	Duration of Grading [days]	Cleared Area [acres]	PM_{10} [tons]	$PM_{2.5}$ [tons]
Child Development Center(CDC) (2008), Clearing and Grading	0.45	0.15	80	0.5	230	0.69	0.14	0.02
WRAIR Medical Research Laboratory (B) (2009), Clearing and Grading	0.45	0.15	80	0.5	230	4.6	0.95	0.14
DoD Veterinary Pathology Facility (B) (2009), Clearing and Grading	0.45	0.15	80	0.5	230	0.23	0.05	0.01
National Museum of Health and Medicine (B) (2010), Clearing and Grading	0.45	0.15	80	0.5	230	1.84	0.38	0.06
AFIP DoD Tissue Repository (B) (2010), Clearing and Grading	0.45	0.15	80	0.5	230	0.23	0.05	0.01
New Medical Research Laboratory (2010), Clearing and Grading	0.45	0.15	80	0.5	230	0.37	0.08	0.01
Administration and Storage Facility (2010), Clearing and Grading	0.45	0.15	80	0.5	230	2.3	0.48	0.07
Three new parking lots (2013), Clearing and Grading	0.45	0.15	80	0.5	230	6.33	1.31	0.2
Emergency Facility Expansion (2013), Clearing and Grading	0.45	0.15	80	0.5	230	0.99	0.2	0.03
Total Fugitive Dust Emissions							3.64	0.55

Source: AP-42 Section 13.2.3 (USEPA, 1995) and USEPA, 2005.
[a] TSP = total suspended particulates; EF = emission factor

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APPENDIX A.2 DRAFT RECORD OF NON-APPLICABILITY (RONA) TO THE GENERAL CONFORMITY RULE

Draft Record of Non-Applicability (RONA) to the General Conformity Rule for the Implementation of Base Realignment and Closure Recommendations and Master Planning Activities Walter Reed Army Medical Center Forest Glen Annex, Maryland

July 14, 2008

Air emissions were estimated for the construction and operation of the proposed facilities outlined under the SRC for the Real Property Master Plan at the Walter Reed Army Medical Center Forest Glen Annex, Maryland. Emissions from land clearing and grading, construction of buildings, associated parking areas and structures, traffic control upgrades, stormwater systems and support utility upgrades, and landscaping were assessed. Operational emissions from commuter vehicles, and boilers were assessed. General Conformity under the Clean Air Act, Section 176 has been evaluated according to the requirements of 40 CFR 93.153, Subpart B. The requirements of this rule are not applicable because:

> The highest total annual direct and indirect emissions from this action have been estimated at 15.4 tons CO, 8.4 tons NO_x, 1.2 tons VOCs, 0.7 ton $PM_{2.5}$ and 1.3 tons SO_2 per year, which would be below the conformity threshold values of 50 tons VOCs and 100 tons for CO, SO_2, $PM_{2.5}$, and NO_x, and would not be *regionally significant.*

Supported documentation and emission estimates:

( ) Are Attached

(X) Appear in the NEPA Documentation

( ) Other (Not Necessary)

_____

Signature

APPENDIX B
ECONOMIC IMPACT FORECAST SYSTEM (EIFS) MODEL

SOCIOECONOMIC IMPACT ASSESSMENT

Socioeconomic impacts are linked through cause-and-effect relationships. Military installation payrolls and local procurement contribute to the economic base for the region of influence (ROI). In this regard, construction and renovation of facilities at FGA would have a multiplier effect on the local and regional economy. With the Preferred Alternative, direct jobs would be created, generating new income and increasing personal spending. This spending generally creates secondary jobs, increases business volume, and increases revenues for schools and other social services.

THE ECONOMIC IMPACT FORECAST SYSTEM

The U.S. Army, with the assistance of many academic and professional economists and regional scientists, developed EIFS to address the economic impacts of NEPA-requiring actions and to measure their significance. As a result of its designed applicability, and in the interest of uniformity, EIFS should be used in NEPA assessments for BRAC. The entire system is designed for the scrutiny of a populace affected by the actions being studied. The algorithms in EIFS are simple and easy to understand, but still have firm, defensible bases in regional economic theory.

EIFS was developed under a joint project of the U.S. Army Corps of Engineers, the U.S. Army Environmental Policy Institute, and the Computer and Information Science Department of Clark Atlanta University. EIFS is implemented as an on-line system supported by the U.S. Army Corps of Engineers, Mobile District. The system is available to anyone with an approved user-id and password. U.S. Army Corps of Engineers staff is available to assist with the use of EIFS.

The databases in EIFS are national in scope and cover the approximately 3,700 counties, parishes, and independent cities that are recognized as reporting units by federal agencies. EIFS allows the user to define an economic ROI by identifying the counties, parishes, or cities to be analyzed. Once the ROI is defined, the system aggregates the data, calculates multipliers and other variables used in the various models in EIFS, and prompts the user for forecast input data.

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 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. This technique is especially appropriate for estimating aggregate impacts and makes the economic base model ideal for the EA and EIS process.

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 model the data elements which describe the Army action: the change in expenditures, or dollar volume of the construction project(s); 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 these are entered into the EIFS model, a projection of changes in the local economy is provided. These are projected changes in 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 Preferred Alternative, 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 Preferred Alternative, which includes the sum of the direct and indirect wages and salaries, plus the income of the civilian and military personnel affected by the Preferred Alternative. Population is the increase or decrease in the local population as a result of the Preferred Alternative.

The BRAC action at FGA would require construction of new facilities and renovation of some existing facilities in the SRC and LRC. During the SRC, the current working estimate for the cost of renovation and construction of these facilities ($91,900,000) was entered into the EIFS model as the change in expenditures. These project costs were estimated based on proposed construction in Fiscal Year 2011 (PBS&J, 2008). FGA would have a net increase of 220 jobs under the SRC (see Section 2.3.3 of the EA); however, about 125 of these jobs are already in the ROI (Montgomery County) (PBS&J, 2007; 2008), so 95 (220 minus 125) was entered as the change in civilian employment. Per capita personal income (PCPI) for the ROI is about $59,950 and was entered into the EIFS model as the average income of affected civilian personnel.

The LRC anticipates subsequent expansion of facilities and construction of new facilities to address long-term mission changes to 2026. The current working estimate for the cost of construction and renovation ($113,600,000) was divided over the projected development period (2015 through 2026, or 11 years) and entered into the EIFS model as the change in expenditures ($10,327,300) (PBS&J, 2007; 2008).

THE SIGNIFICANCE OF SOCIOECONOMIC IMPACTS

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 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.

The following are the EIFS input and output data for construction and the RTV values for the ROI. These data form the basis for the socioeconomic impact analysis presented in Section 4.10.2 of the EA.

EIFS REPORT

PROJECT NAME

WRAMC FGA EA–SRC/BRAC

STUDY AREA

24031 Montgomery County, MD

FORECAST INPUT

Change in Local Expenditures	$91,900,000	
Net Regional Change in Civilian Employment	95	
Average Income of Affected Civilian	$59,950	
Percent Expected to Relocate	0	
Change in Military Employment	0	
Average Income of Affected Military	$0	
Percent of Military Living On-post	0	

FORECAST OUTPUT

Employment Multiplier	2.62	
Income Multiplier	2.62	
Sales Volume – Direct	$96,478,980	
Sales Volume – Induced	$156,295,900	
Sales Volume – Total	$252,774,900	0.51%
Income – Direct	$25,692,980	
Income – Induced	$34,010,480	
Income – Total (place of work)	$59,703,460	0.18%
Employment – Direct	4,522	
Employment – Induced	692	
Employment – Total	1,215	0.22%
Local Population	0	
Local Off-post Population	0	0.00%

RTV SUMMARY

	Sales Volume	Income	Employment	Population
Positive RTV	12.59%	12.6%	3.56%	2.28%
Negative RTV	-5.49%	-4.19%	-3.54%	-1.21%

EIFS REPORT

PROJECT NAME

WRAMC FGA EA–LRC

STUDY AREA

24031 Montgomery County, MD

FORECAST INPUT

Change in Local Expenditures	$10,327,300	
Change in Civilian Employment	0	
Average Income of Affected Civilian	$0	
Percent Expected to Relocate	0	
Change in Military Employment	0	
Average Income of Affected Military	$0	
Percent of Military Living On-post	0	

FORECAST OUTPUT

Employment Multiplier	2.62	
Income Multiplier	2.62	
Sales Volume – Direct	$10,327,300	
Sales Volume – Induced	$16,730,220	
Sales Volume – Total	$27,057,520	0.05%
Income – Direct	$2,247,253	
Income – Induced	$3,640,549	
Income – Total (place of work)	$5,887,802	0.02%
Employment – Direct	46	
Employment – Induced	74	
Employment – Total	120	0.02%
Local Population	0	
Local Off-post Population	0	0.00%

RTV SUMMARY

	Sales Volume	Income	Employment	Population
Positive RTV	12.59%	12.6%	3.56%	2.28%
Negative RTV	-5.49%	-4.19%	-3.54%	-1.21%

RTV DETAILED

SALES VOLUME

Year	Value	Adj_Value	Change	Deviation	%Deviation
1969	1719434	7513926	0	0	0
1970	1940855	8015731	501805	-47541	-0.59
1971	2167222	8582199	566468	17122	0.2
1972	2417179	9257795	675596	126250	1.36
1973	2733339	9867354	609558	60212	0.61
1974	2986593	9706427	-160926	-710272	-7.32
1975	3231069	9628586	-77842	-627188	-6.51
1976	3705280	10448889	820304	270958	2.59
1977	4096257	10814119	365230	-184116	-1.7
1978	4554295	11203566	389447	-159899	-1.43
1979	5129535	11336273	132707	-416639	-3.68
1980	5759113	11172680	-163593	-712939	-6.38
1981	6418482	11296528	123849	-425497	-3.77
1982	7044767	11694313	397785	-151561	-1.3
1983	7910385	12735720	1041407	492061	3.86
1984	9000360	13860554	1124834	575488	4.15
1985	9933559	14801003	940449	391103	2.64
1986	11005847	16068537	1267534	718188	4.47
1987	12265750	19011912	2943375	2394029	12.59
1988	13590557	18483158	-528754	-1078100	-5.83
1989	14797419	19088670	605512	56166	0.29
1990	15409326	18953471	-135199	-684545	-3.61
1991	15702891	18529411	-424061	-973407	-5.25
1992	16552098	18869391	339981	-209365	-1.11
1993	17395472	19308974	439583	-109763	-0.57
1994	18349253	19817194	508220	-41126	-0.21
1995	19265074	20228327	411133	-138213	-0.68
1996	19856907	20254045	25718	-523628	-2.59
1997	21127232	21127232	873187	323841	1.53
1998	22997122	22537180	1409948	860602	3.82
1999	24729051	23739888	1202708	653362	2.75
2000	26981721	25093001	1353112	803766	3.2

INCOME

Year	Value	Adj_Value	Change	Deviation	%Deviation
1969	3057521	13361366	0	0	0
1970	3475239	14352737	991371	191892	1.34
1971	3826152	15151562	798825	-654	0
1972	4164508	15950065	798503	-976	-0.01
1973	4589133	16566770	616704	-182775	-1.1
1974	5029357	16345410	-221359	-1020838	-6.25
1975	5465291	16286567	-58843	-858322	-5.27
1976	6051562	17065404	778837	-20642	-0.12
1977	6622929	17484533	419129	-380350	-2.18
1978	7301688	17962153	477620	-321859	-1.79
1979	8139822	17989007	26854	-772625	-4.29
1980	9140245	17732076	-256931	-1056410	-5.96
1981	10407421	18317061	584985	-214494	-1.17
1982	11383411	18896462	579401	-220078	-1.16
1983	12473825	20082858	1186397	386918	1.93
1984	14202188	21871369	1788511	989032	4.52
1985	15726532	23432533	1561164	761685	3.25
1986	17203062	25116471	1683938	884459	3.52
1987	19131276	29653477	4537006	3737527	12.6
1988	21319341	28994304	-659173	-1458652	-5.03
1989	23616612	30465429	1471125	671646	2.2
1990	24923326	30655691	190263	-609216	-1.99
1991	25874910	30532392	-123299	-922778	-3.02
1992	27112409	30908146	375753	-423726	-1.37
1993	28496946	31631610	723465	-76014	-0.24
1994	29867276	32256659	625049	-174430	-0.54
1995	31221248	32782309	525650	-273829	-0.84
1996	32542666	33193519	411210	-388269	-1.17
1997	33702721	33702721	509202	-290277	-0.86
1998	36703345	35969279	2266558	1467079	4.08
1999	38923484	37366544	1397265	597786	1.6
2000	41876010	38944690	1578146	778667	2

EMPLOYMENT

Year	Value	Change	Deviation	%Deviation
1969	224220	0	0	0
1970	235415	11195	-486	-0.21
1971	248100	12685	1004	0.4
1972	263906	15806	4125	1.56
1973	278677	14771	3090	1.11
1974	282849	4172	-7509	-2.65
1975	285799	2950	-8731	-3.05
1976	297266	11467	-214	-0.07
1977	309447	12181	500	0.16
1978	327792	18345	6664	2.03
1979	342092	14300	2619	0.77
1980	349952	7860	-3821	-1.09
1981	362071	12119	438	0.12
1982	367921	5850	-5831	-1.58
1983	387355	19434	7753	2
1984	412132	24777	13096	3.18
1985	437400	25268	13587	3.11
1986	458307	20907	9226	2.01
1987	487330	29023	17342	3.56
1988	511002	23672	11991	2.35
1989	518774	7772	-3909	-0.75
1990	517188	-1586	-13267	-2.57
1991	502326	-14862	-26543	-5.28
1992	498924	-3402	-15083	-3.02
1993	504251	5327	-6354	-1.26
1994	509120	4869	-6812	-1.34
1995	526404	17284	5603	1.06
1996	532652	6248	-5433	-1.02
1997	543553	10901	-780	-0.14
1998	559422	15869	4188	0.75
1999	576604	17182	5501	0.95
2000	598008	21404	9723	1.63

POPULATION

Year	Value	Change	Deviation	%Deviation
1969	510124	0	0	0
1970	524400	14276	2796	0.53
1971	534364	9964	-1516	-0.28
1972	552197	17833	6353	1.15
1973	559056	6859	-4621	-0.83
1974	564002	4946	-6534	-1.16
1975	577024	13022	1542	0.27
1976	579536	2512	-8968	-1.55
1977	580777	1241	-10239	-1.76
1978	584344	3567	-7913	-1.35
1979	581782	-2562	-14042	-2.41
1980	582053	271	-11209	-1.93
1981	592873	10820	-660	-0.11
1982	600479	7606	-3874	-0.65
1983	614213	13734	2254	0.37
1984	632915	18702	7222	1.14
1985	652945	20030	8550	1.31
1986	675784	22839	11359	1.68
1987	703273	27489	16009	2.28
1988	731351	28078	16598	2.27
1989	749638	18287	6807	0.91
1990	760296	10658	-822	-0.11
1991	770310	10014	-1466	-0.19
1992	781257	10947	-533	-0.07
1993	792474	11217	-263	-0.03
1994	800655	8181	-3299	-0.41
1995	809842	9187	-2293	-0.28
1996	819613	9771	-1709	-0.21
1997	835432	15819	4339	0.52
1998	847596	12164	684	0.08
1999	862350	14754	3274	0.38
2000	877491	15141	3661	0.42

****** End of Report ******

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APPENDIX C
AGENCY COORDINATION LETTERS

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DEPARTMENT OF THE ARMY
UNITED STATES ARMY GARRISON
WALTER REED ARMY MEDICAL CENTER
6900 GEORGIA AVENUE, NORTHWEST
WASHINGTON, DC 20307-5001

REPLY TO
ATTENTION OF

June 30, 2008

Base Realignment and Closure Office

Mr. John Wolfin
U.S. Fish and Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, Maryland 20910

SUBJECT: Preparation of an Environmental Assessment (EA) for proposed master planning and Base Realignment and Closure (BRAC) actions at the of Walter Reed Army Medical Center Forest Glen Annex in Silver Spring, Maryland

Dear Mr. Wolfin:

Walter Reed Army Medical Center (WRAMC) is writing to you to inform you of our undertaking to prepare an EA for proposed master planning and BRAC actions at the WRAMC Forest Glen Annex (FGA). The proposed action consists of updating FGA's master plan, which includes 1) updating the short-range component (SRC) of the master plan, which includes implementing BRAC actions, 2) updating the long-range component (LRC), and 3) updating the transportation management plan (TMP). Implementation of the master plan update at FGA would include renovation and construction of medical research, administrative, and ancillary facilities. Pursuant to requirements of the National Environmental Policy Act of 1969 (NEPA), the EA will assess the potential effects on environmental resources associated with implementing these actions at FGA. The SRC and BRAC actions cover development through the year 2011 and include update of the post's land use plan and addition of approximately 270,000 square feet (sf) of facilities (232,000 sf of new construction and 38,000 sf of renovated space) at FGA for a combination of laboratory, administrative, and warehouse/ storage use. This includes the construction of three new laboratory buildings, a Child Development Center, and the National Museum of Health and Medicine, as well as the renovation of two existing laboratories at FGA and expansion of the existing Emergency Facility. Furthermore, three new parking lots, one reconfigured parking lot, and the improvement of entry points at two locations are also proposed. The LRC, which identifies potential development between the years 2011 and 2026, identifies construction of two new laboratory facilities, expansion of another laboratory, a new administrative building, realignment of parking facilities, and entry point improvements. The TMP would implement a program to manage traffic during implementation of the projects identified in the master plan.

WRAMC consists of three geographically separate sections: one in the District of Columbia and two in Montgomery County, Maryland. This EA would cover the proposed action on FGA's approximately 127 as identified on the Kensington, Maryland, United States Geological Survey (USGS) 7.5-minute topographic quadrangle map. The latitude and longitude coordinates for the site location (center of site) are: 39°0'24.04"N and 77°31'18.20"W. Figure 1 (enclosed) shows the location of FGA, and Figures 2 and 3 show the locations of the proposed projects on FGA under the SRC and LRC of the master plan respectively. Table 1 lists the SRC projects identified on Figure 2, and Table 2 lists the LRC projects identified on Figure 3.

The proposed action would not involve any in-stream/in-water construction work, and storm water would be managed during construction and operation using accepted erosion/sedimentation control best management practices, approved storm water management plans, and applicable permits.

To assist with preparing the EA and compliance with Section 7 of the Endangered Species Act as well as NEPA and the Fish and Wildlife Coordination Act, we are requesting your assistance to identify any threatened, endangered, or other species of concern, wildlife refuges/management areas, essential fish habitat or other significant habitats, and other natural landscape features that may be directly or indirectly impacted by the construction and operation of the proposed action. In addition, any recommendations your agency may have regarding the mitigation of potential impacts to these sensitive resources would be extremely helpful.

Under the process established by NEPA, the EA will provide an opportunity for members of the public and private sectors to provide input concerning potential environmental issues associated with implementing the proposed action. Participation includes response to this letter, and comments that you or other interested parties or stakeholders may submit during the EA public review period planned for the Fall of 2008.

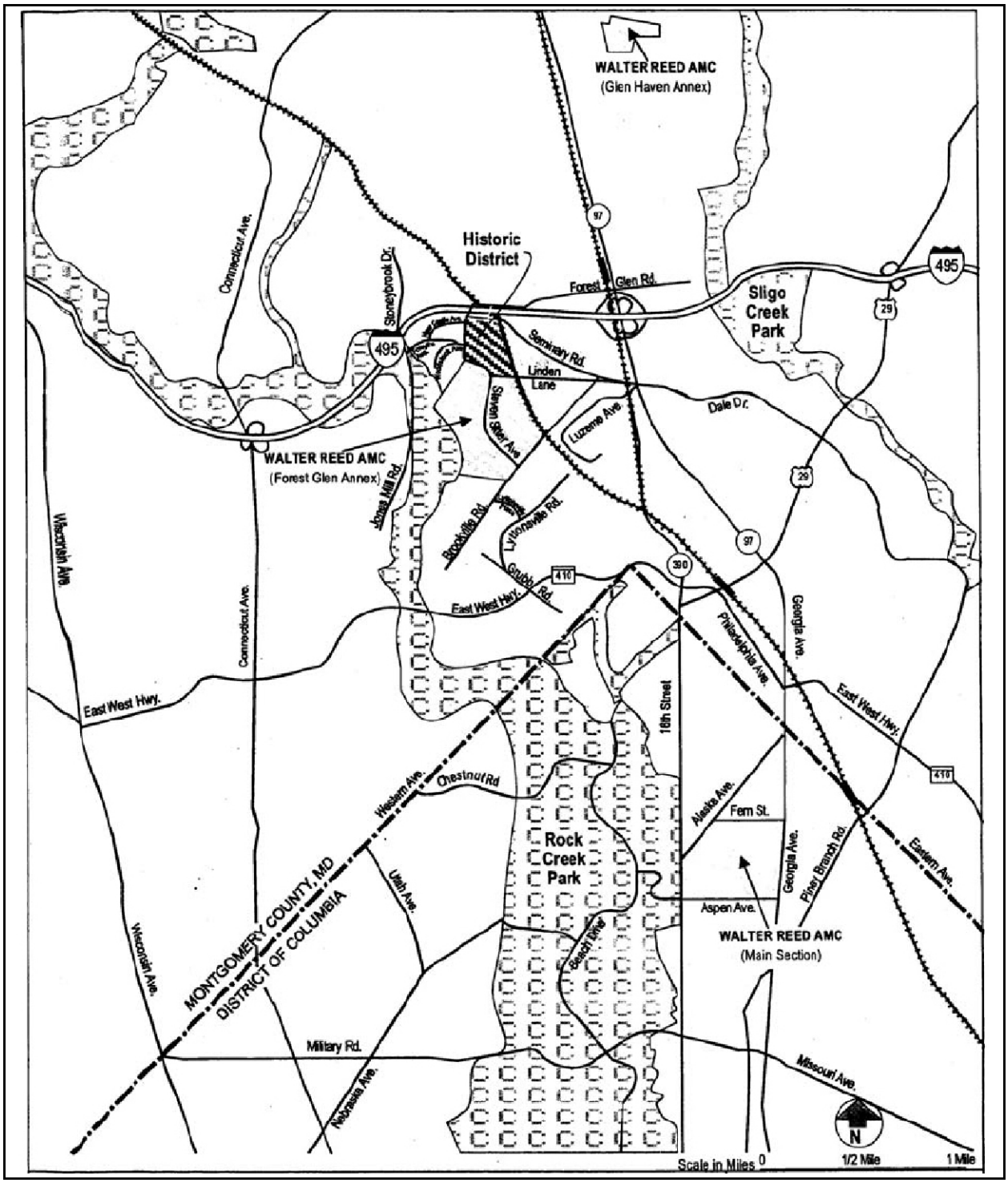
It is requested that your input be provided within 30 days of receipt of this letter if you are interested in this matter. We will continue to coordinate with your agency as this project goes forward. If you have any questions or require additional information, please call me at (202) 356-1012 extension 40554. Thank you for your cooperation.

Sincerely,

Anne H. Delp

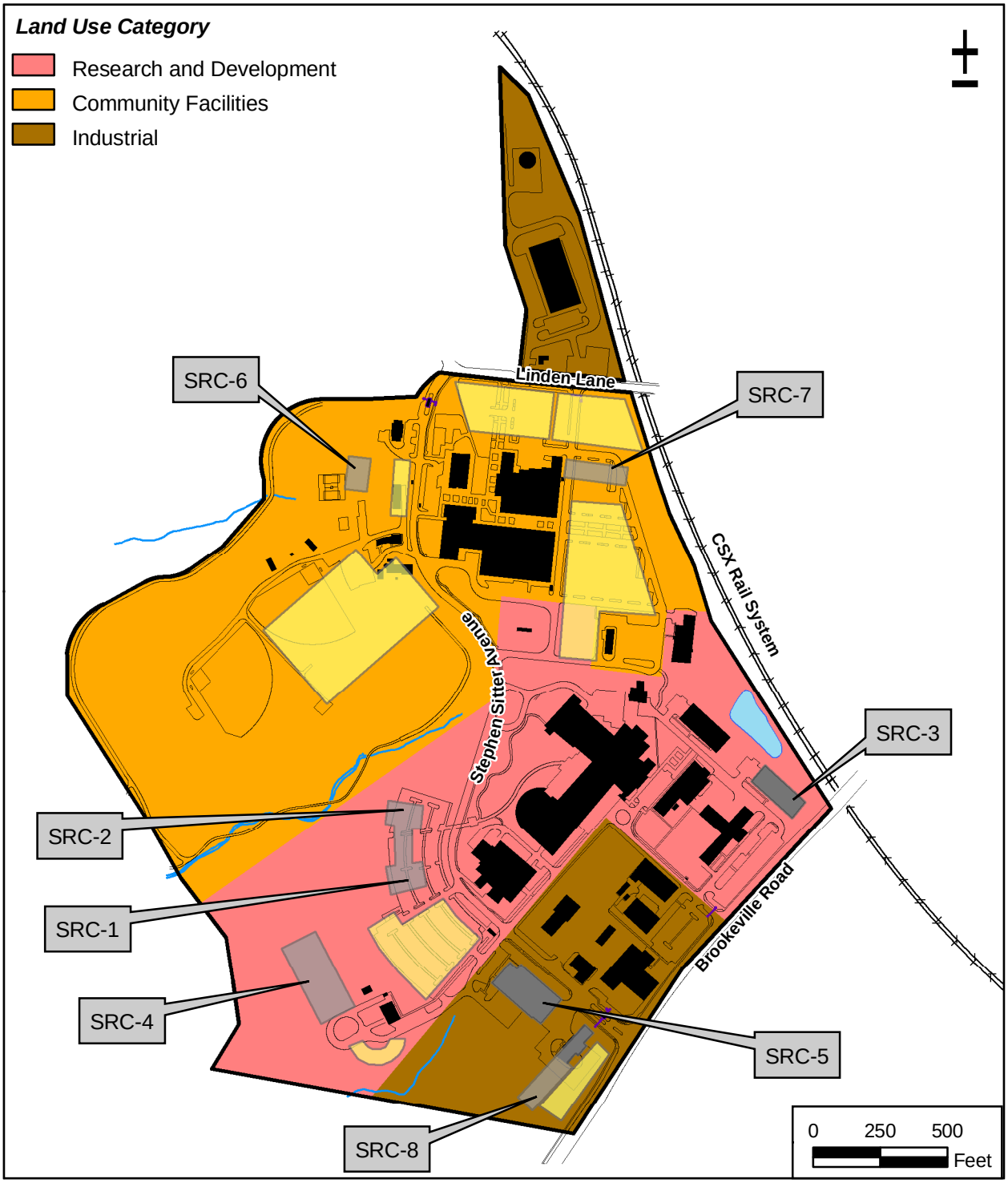
Anne H. Delp
BRAC Environmental Coordinator

Enclosures



Installation Location

Figure 1



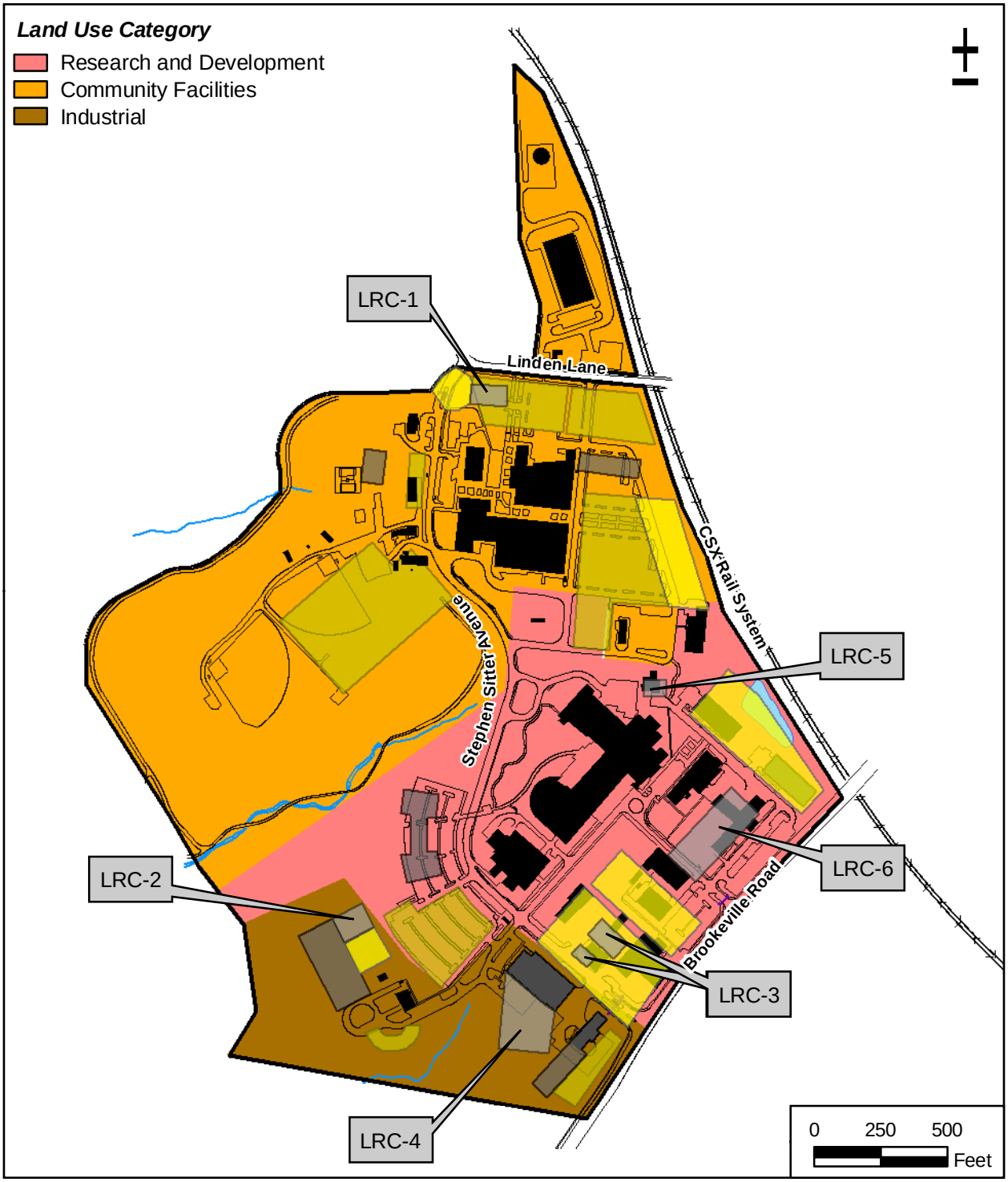
Legend

Proposed 2011 Land Use and SRC (BRAC) Projects

- Installation Boundary
- Proposed SRC (BRAC 2011) New Construction Projects
- Proposed SRC (BRAC 2011) Parking
- Proposed SRC (BRAC 2011) Renovation Projects

Source: WRAMC Forest Glen Annex GIS, 2006.

Figure 2



Legend

Proposed 2026 Land Use and LRC Projects

- Installation Boundary
- Proposed LRC (2026) New Construction Projects
- Proposed LRC (2026) Parking
- Proposed BRAC 2011 Projects
- Proposed BRAC 2011 Parking

Source: WRAMC Forest Glen Annex GIS, 2006.

Figure 3

Table 1. Proposed SRC facility projects

Map site ID	Project title	Size	Number of Staff	Comments
SRC-1	New WRAIR Medical Research Laboratory (BRAC)	100,000 SF	208	Construct new five-story laboratory facility (one floor would be for SRC-2).
SRC-2	New Medical Research Laboratory (Non-BRAC)	8,018 SF	31	Construct new one-story laboratory facility (see SRC-1).
SRC-3	DoD Veterinary Pathology Facility (BRAC)	5,000 SF	31	Renovate existing facility in Building 509.
SRC-4	Administration and Storage Facility (Non-BRAC)	50,000 SF	10	Construct new two-story warehouse facility and associated parking.
SRC-5	AFIP Tissue Repository (BRAC)	33,000 SF	36	Renovate existing facility in Building 606. Note: this action was covered under a Record of Environmental Consideration in Fall 2007 and is not further analyzed in this EA.
SRC-6	Child Development Center (CDC) (Non-BRAC)	13,020 SF	35	Construct new one-story facility for up to 124 children and associated parking.
SRC-7	National Museum of Health and Medicine (BRAC)	40,000 SF	25	Construct new two-story museum.
SRC-8	Emergency Services Facility Expansion (Non-BRAC)	21,500 SF	30	Expand existing fire station (7,500 SF two-story facility) and construct new military police (MP) station (14,000 SF) to replace those functions that will no longer be provided by WRAMC.
Parking	Construct three new parking lots and reconfigure one parking lot	523, 305, 305, and 510 spaces	–	Four separate locations.
Entry	Provide entry point improvements	Two locations	–	Canopies and additional vehicles barriers.
	Total	approx. 270,538 SF (232,538 SF new and 38,000 SF renovated)	220[a]	

[a] Reflects net increase in personnel, including those leaving FGA due to outgoing BRAC actions.

Notes: Facility sizes may change slightly as planning progresses. SF= square feet.

Table 2. Proposed LRC facility projects

Map site ID	Project title	Size	Comments
LRC-1	New Access Control Point (Linden Lane)	N/A	Planned for 2013. Existing post exchange and commissary parking lot (160 spaces) would be demolished to accommodate this project.
LRC-2	New Directorate of Public Works (DPW) Facility	30,000 SF	Consolidate DPW staff and equipment from Buildings 601, 602, 603, and 605 into new 20,000 SF building and 10,000 SF equipment storage facility and service/storage lot by 2015.
LRC-3	New Access Control Point (Brookville Road)	N/A	Planned for 2016. Existing motor pool lot would be demolished to accommodate this project.
LRC-4	DoD Tissue Repository Expansion	80,000 SF	Expand facility renovated under SRC-5 to two-story laboratory facility by 2023.
LRC-5	New DoD Veterinary Pathology Facility	5,000 SF	Construct new one-story laboratory facility to move staff from DoD Vet Lab (renovated under SRC-3) by 2024.
LRC-6	New Laboratory Facility	135,000 SF	Construct new three-story facility for 300 by 2025. Staff from Building 510 (15,300 SF) would be relocated to the new facility, and the remaining new space would be for new laboratories.
Parking	Construct three new parking lots and reconfigure one parking lot	523, 305, 305, and 510 spaces	Four separate locations.

Notes: Facility sizes may change as planning progresses. SF= square feet.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY GARRISON
WALTER REED ARMY MEDICAL CENTER
6900 GEORGIA AVENUE, NORTHWEST
WASHINGTON, DC 20307-5001

REPLY TO
ATTENTION OF

June 30, 2008

Base Realignment and Closure Office

Ms. Lori Byrne
MDNR Wildlife and Heritage Service
Tawes Office Building E-1
Annapolis, Maryland 21401

SUBJECT: Preparation of an Environmental Assessment (EA) for proposed master planning and Base Realignment and Closure (BRAC) actions at the of Walter Reed Army Medical Center Forest Glen Annex in Silver Spring, Maryland

Dear Ms. Byrne:

Walter Reed Army Medical Center (WRAMC) is writing to you to inform you of our undertaking to prepare an EA for proposed master planning and BRAC actions at the WRAMC Forest Glen Annex (FGA). The proposed action consists of updating FGA's master plan, which includes 1) updating the short-range component (SRC) of the master plan, which includes implementing BRAC actions, 2) updating the long-range component (LRC), and 3) updating the transportation management plan (TMP). Command and control of FGA would also transfer from WRAMC to Fort Detrick as a result of the BRAC Commission directing the closure of WRAMC. All mission activities on FGA would continue to be managed by Fort Detrick in accordance with all applicable environmental regulations. Implementation of the master plan update at FGA would include renovation and construction of medical research, administrative, and ancillary facilities. Pursuant to requirements of the National Environmental Policy Act of 1969 (NEPA), the EA will assess the potential effects on environmental resources associated with implementing these actions at FGA. The SRC and BRAC actions cover development through the year 2011 and include update of the post's land use plan and addition of approximately 270,000 square feet (sf) of facilities (232,000 sf of new construction and 38,000 sf of renovated space) at FGA for a combination of laboratory, administrative, and warehouse/ storage use. This includes the construction of three new laboratory buildings, a Child Development Center, and the National Museum of Health and Medicine, as well as the renovation of two existing laboratories at FGA and expansion of the existing Emergency Facility. Furthermore, three new parking lots, one reconfigured parking lot, and the improvement of entry points at two locations are also proposed. The LRC, which identifies potential development between the years 2011 and 2026, identifies construction of two new laboratory facilities, expansion of another laboratory, a new administrative building, realignment of parking facilities, and entry point improvements. The TMP would implement a program to manage traffic during implementation of the projects identified in the master plan.

WRAMC consists of three geographically separate sections: one in the District of Columbia and two in Montgomery County, Maryland. This EA would cover the proposed action on FGA's approximately 127 as identified on the Kensington, Maryland, United States Geological Survey (USGS) 7.5-minute topographic quadrangle map. The latitude and longitude coordinates for the site location (center of site) are: 39°0'24.04"N and 77°31'18.20"W. Figure 1 (enclosed) shows the location of FGA, and Figures 2 and 3 show the locations of the proposed projects on FGA under the SRC and LRC of the master plan respectively. Table 1 lists the SRC projects identified on Figure 2, and Table 2 lists the LRC projects identified on Figure 3.

The proposed action would not involve any in-stream/in-water construction work, and storm water would be managed during construction and operation using accepted erosion/sedimentation control best management practices, approved storm water management plans, and applicable permits.

To assist with preparing the EA and compliance with Section 7 of the Endangered Species Act as well as NEPA and the Fish and Wildlife Coordination Act, we are requesting your assistance to identify any threatened, endangered, or other species of concern, wildlife refuges/management areas, essential fish habitat or other significant habitats, and other natural landscape features that may be directly or indirectly impacted by the construction and operation of the proposed action. In addition, any recommendations your agency may have regarding the mitigation of potential impacts to these sensitive resources would be extremely helpful.

Under the process established by NEPA, the EA will provide an opportunity for members of the public and private sectors to provide input concerning potential environmental issues associated with implementing the proposed action. Participation includes response to this letter, and comments that you or other interested parties or stakeholders may submit during the EA public review period planned for the Fall of 2008.

It is requested that your input be provided within 30 days of receipt of this letter if you are interested in this matter. We will continue to coordinate with your agency as this project goes forward. If you have any questions or require additional information, please contact me at (202)782-7391 or Anne.Delp@us.army.mil. Thank you for your cooperation.

Sincerely,

Anne H. Delp

Anne H. Delp
BRAC Environmental Coordinator

Enclosures

DEPARTMENT OF THE ARMY
UNITED STATES ARMY GARRISON
WALTER REED ARMY MEDICAL CENTER
6900 GEORGIA AVENUE, NORTHWEST
WASHINGTON, DC 20307-5001

REPLY TO
ATTENTION OF

July 1, 2008

Base Realignment and Closure Office (Building 1)

Mr. J. Rodney Little
State Historic Preservation Officer
Maryland Historical Trust
100 Community Place, Third Floor
Crownsville, MD 21032-2023

SUBJECT: Initiation of the Section 106 process and preparation of an Environmental Assessment (EA) for proposed master planning and Base Realignment and Closure (BRAC) actions at the of Walter Reed Army Medical Center Forest Glen Annex in Silver Spring, Maryland

Dear Mr. Little:

Walter Reed Army Medical Center (WRAMC) is writing to you to formally initiate the National Historic Preservation Act (NHPA) Section 106 process and inform you of our undertaking to prepare an EA for proposed master planning and BRAC actions at the WRAMC Forest Glen Annex (FGA). The proposed action consists of updating FGA's master plan, which includes 1) updating the short-range component (SRC) of the master plan, which includes implementing BRAC actions, 2) updating the long-range component (LRC), and 3) updating the transportation management plan (TMP). Implementation of the master plan update at FGA would include renovation and construction of medical research, administrative, and ancillary facilities. Pursuant to requirements of the National Environmental Policy Act of 1969 (NEPA), the EA will assess the potential effects on environmental resources associated with implementing these actions at FGA. The SRC and BRAC actions cover development through the year 2011 and include update of the post's land use plan and addition of approximately 270,000 square feet (sf) of facilities (232,000 sf of new construction and 38,000 sf of renovated space) at FGA for a combination of laboratory, administrative, and warehouse/ storage use. This includes the construction of three new laboratory buildings, a Child Development Center, and the National Museum of Health and Medicine, as well as the renovation of two existing laboratories at FGA and expansion of the existing Emergency Facility. Furthermore, three new parking lots, one reconfigured parking lot, and the improvement of entry points at two locations are also proposed. The LRC, which identifies potential development between the years 2011 and 2026, identifies construction of two new laboratory facilities, expansion of another laboratory, a new administrative building, realignment of parking facilities, and entry point improvements. The TMP would implement a program to manage traffic during implementation of the projects identified in the master plan.

WRAMC consists of three geographically separate sections: one in the District of Columbia and two in Montgomery County, Maryland. This EA would cover the proposed action on FGA's approximately 127 as identified on the Kensington, Maryland, United States Geological Survey (USGS) 7.5-minute topographic quadrangle map. The latitude and longitude coordinates for the site location (center of site) are: 39°0'24.04"N and 77°31'18.20"W. Figure 1 (enclosed) shows the location of FGA, and Figures 2 and 3 show the locations of the proposed projects on FGA under the SRC and LRC of the master plan respectively. Table 1 lists the SRC projects identified on Figure 2, and Table 2 lists the LRC projects identified on Figure 3.

Under the process established by NEPA, the EA will provide an opportunity for members of the public and private sectors to provide input concerning potential environmental issues associated with implementing the proposed action. Participation includes response to this letter, and comments that you or other interested parties or stakeholders may submit during the EA public review period planned for the Fall of 2008.

No National Historic Landmarks, National Register-listed properties, or resources formally determined eligible for listing on the National Register are located on FGA (Walter Reed Forest Glen Annex Integrated Cultural Resources Management Plan (ICRMP), Goodwin & Associates, 2006).

The National Park Seminary is the only National Register-listed or formally determined eligible property located within ½ mile of FGA. In addition to the National Park Seminary, there are 15 historic properties on the Maryland Inventory of Historic Properties within ½ mile of FGA, but they are not eligible for listing on the National Register of Historic Places.

Implementation of the proposed action would not be expected to result in any adverse effects to cultural resources within the vicinity of FGA. Under Section 106, we are requesting your formal concurrence to this determination of no effect. If you concur, please sign below and return a copy of this letter within 30 days of receipt. If we do not receive comments or a signature from you within that time, we will assume concurrence with the Section 106 determination. You may return the letter via fax to (202)782-4306, Attn: Anne Delp.

Your prompt consideration and response are greatly appreciated. We will continue to coordinate with your agency as this project goes forward. If you have any questions or require additional information, please contact Anne Delp at (202)782-7391 or anne.delp@us.army.mil. Thank you for your cooperation.

Sincerely,

Nino Fleri

Nino Fleri
Director
WRAMC Department of Public Works

Enclosures

I have reviewed this project, Maryland Historic Trust (MHT) file number _____: FGA Master Plan and BRAC EA. I concur/do not concur with the finding of "No Historic Properties Affected".

_____

Mr. J. Rodney Little
State Historic Preservation Officer
Maryland Historical Trust

Please return this form to:

Ms. Anne Delp
BRAC Environmental Coordinator
WRAMC BRAC Office
ATTN: MCWR-BRAC
6900 Georgia Avenue NW
Washington, DC, 20307-5001
Email: Anne.Delp@us.army.mil
Fax: (202) 782-4306, Attn: Anne Delp