
ENVIRONMENTAL ASSESSMENT FOR BRAC 05 REALIGNMENT AT FORT DETRICK, MD



March 2007

prepared for
Fort Detrick, MD

Prepared by
U.S. Army Corps of Engineers
Mobile District
P.O. Box 2288
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FINDING OF NO SIGNIFICANT IMPACT

BRAC 05 REALIGNMENT AT FORT DETRICK, MARYLAND

On May 13, 2005, the Secretary of Defense recommended that certain realignment actions occur at Fort Detrick, Maryland. After review of the Secretary of Defense's recommendations, the Defense Base Closure and Realignment Commission ("BRAC Commission") submitted its final recommendations to the President on September 8, 2005. These recommendations were approved by the President on September 23, 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.

The U.S. Army Corps of Engineers, Mobile District, has prepared an Environmental Assessment (EA) which identifies, documents, and evaluates environmental effects of the BRAC Commission's recommended realignment of Fort Detrick in Frederick County, Maryland. The EA has been developed in accordance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and implementing regulations issued by the President's Council on Environmental Quality (CEQ)¹. The 2006 Base Realignment Closure Manual for Compliance with the National Environmental Policy Act was used for guidance in preparing the EA. The purpose of the EA is to inform decision makers and the public of the likely environmental consequences of the proposed action and alternatives.

1.0 PROPOSED ACTION

The proposed action is to implement the BRAC Commission's recommendation, as mandated by BRAC law, Public Law 101-510, by constructing new facilities to accommodate the personnel and functions of organizations realigning and relocating to Fort Detrick. The following highlights the BRAC Commission recommendation for Fort Detrick, which are included as part of BRAC law, as quoted²:

- Relocate Medical Biological Defense Research of the Walter Reed Army Institute of Research (Forest Glen Annex) and Naval Medical Research Center (Forest Glen Annex) to Fort Detrick, Maryland, and consolidate it with the US Army Medical Research Institute of Infectious Diseases.
- Realign 12300 Washington Avenue, Rockville, Maryland, by relocating the Medical Biological Defense Research sub-function to the U.S. Army Medical Research Institute of Infectious Diseases, Fort Detrick, Maryland.
- Realign Potomac Annex, Washington, D.C., by relocating Naval Bureau of Medicine, Code M2, headquarters-level planning, investment portfolio management and program and regulatory oversight of DoD Biomedical Science and Technology programs and Food and Drug Administration (FDA)-regulated medical product development within the biomedical research, development, and acquisition (RDA) function to a new Joint Biomedical Research, Development and Acquisition Management Center at Fort Detrick, Maryland.

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.

² Defense Base Closure and Realignment Commission. 8 September 2005. *Final Report to the President*.

- Realign 64 Thomas Johnson Drive, Frederick, Maryland, by relocating the Joint Program Executive Office for Chemical Biological Defense, Joint Project Manager for Chemical Biological Medical Systems headquarters-level planning, investment portfolio management and program and regulatory oversight of DoD Biomedical Science and Technology programs and FDA-regulated medical product development within the RDA function to a new Joint Biomedical Research, Development and Acquisition Management Center at Fort Detrick, Maryland.
- Close the Flair Memorial Armed Forces Reserve Center and its organizational maintenance shop in Frederick, MD, and relocate US Army Reserve and US Marine Corps Reserve units to a new consolidated Armed Forces Reserve Center and organizational maintenance support facility on Fort Detrick, MD³.

To implement these recommendations, the following new facilities, as defined in existing DD Form 1391s, are proposed for construction:

Medical Biological Defense Research Laboratory: A Medical Bio-Defense Research Laboratory and air-conditioned warehouse support space would be constructed to provide facilities for consolidated defense research laboratory, animal holding capability and administrative space to support BRAC-05 re-stationing actions at Fort Detrick. The laboratory would contain approximately 85,000 SF, and the laboratory storage would contain 4,000 SF. These facilities would provide additional research laboratory, laboratory support, vivarium, vivarium support, and administrative space. Approximately 122 personnel would be added to the daily workforce of Fort Detrick. The new building would meet biosafety level (BSL) 3 requirements.

Joint Bio-Medical RDA Management Center of Excellence: A Bio-medical RDA Management Center would be constructed to provide administrative and operational space for activities to be relocated to Fort Detrick, MD. The building would be a new permanent multi-story administrative facility and contain 22,660 SF. Approximately 103 personnel would be added to the daily workforce of Fort Detrick. Buildings 817, 818, 820, and leased trailer 823 would be demolished (approximately 23,850 SF). The project also includes 30,000 SF of paving, utility relocations, storm drainage, site improvements and information systems.

Joint Reserve Center: An Armed Forces Reserve Center (AFRC) would be constructed to replace the PFC Flair Memorial AFRC located in Area B of Fort Detrick. Primary facilities would include an Organizational Maintenance Shop (OMS) and unit storage building. Buildings will be of permanent construction with HVAC systems, plumbing, mechanical systems, security systems, and electrical systems. The proposed AFRC would provide a 200-member capacity training facility that realigns Army Reserve, National Guard, and Marine Corps Reserve units. The new facility would provide administrative, educational, assembly, library, learning center, vault, weapons simulator, and physical fitness areas for three Army Reserve units and two Marine Corps Reserve units. The maintenance shop would provide work bays and maintenance administrative support. The project would also provide adequate parking space for all military and privately-owned vehicles. The proposed AFRC building would contain 58,647 SF; the maintenance shop 8,999 SF; and the unit storage 4,458 SF, for a total of 72,104 SF.

³ Although the BRAC Commission recommendation identified the Flair Memorial Armed Forced Reserve Center as located in Frederick, Maryland, it is physically located on Fort Detrick, a federal Army installation.

2.0 ALTERNATIVES CONSIDERED

Under the no-action alternative, Fort Detrick would not implement the proposed action. Although the President's Council on Environmental Quality (CEQ) regulations require consideration of the no-action alternative, implementation of the no-action alternative is not viable under BRAC law. Therefore, the no-action alternative was included in the analysis to serve as a baseline for comparison.

The Army considered and analyzed one other alternative, the realignment, or "preferred," alternative. Under the preferred alternative, all three projects will be constructed as described in the proposed action, adding approximately 183,100 square feet of built space. Siting of these projects will be consistent with the 2003 Installation Master Plan for Fort Detrick. All projects will be located within the Installation on Areas A and B.

Other alternatives were considered, but not analyzed. These included (1) use of existing facilities at Fort Detrick; (2) leasing existing space off post; and (3) new construction in locations other than those identified in the preferred alternative. These other alternatives were considered not feasible to implement the proposed action and were therefore dismissed from further analysis.

3.0 FACTORS CONSIDERED IN DETERMINING THAT AN ENVIRONMENTAL IMPACT STATEMENT IS NOT REQUIRED

The Environmental Assessment (EA), which is incorporated by reference into this Finding of No Significant Impact (FNSI), examined potential effects of the proposed action and no-action alternative on 13 resource areas and areas of environmental and socioeconomic concern: 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, hazardous and toxic substances, and human health and safety.

Implementation of the proposed realignment actions would not have any significant adverse effects or impacts on any of the environmental or related resource areas at Fort Detrick or to areas surrounding the Installation. Since none of the predicted effects of the proposed realignment actions would result in significant impacts, mitigation is not needed. Known potential effects resulting from implementing the proposed action on human health and the environment will not be significant. Therefore, implementation of the proposed action will not require the preparation of an Environmental Impact Statement (EIS). Preparation of a FNSI is appropriate.

4.0 CONCLUSION

Based on the EA, it has been determined that implementation of the proposed action will have no significant direct, indirect, or cumulative adverse effects on the quality of human health and the environment. Because no significant environmental impacts will result from implementation of the proposed action, an EIS is not required and will not be prepared.

Comments received during the public comment period were considered in the decision-making process; however, changes to the EA were determined to be unnecessary.

5.0 PUBLIC COMMENT

Interested parties were invited to review and comment on the EA and draft FNSI from 25 January 2007 to 23 February 2007. Two (2) sets of comments from private citizens were received during this period. The main points raised by the comments were:

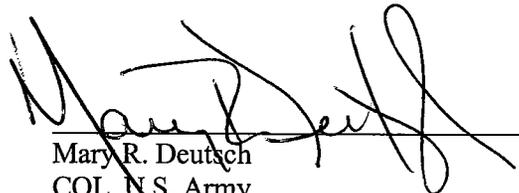
1. Water supply: According to the commenter, impacts to drinking water supply from the Monocacy River would be significant.
2. Segmentation of impacts from the BRAC actions in the EA: According to the commenter, impacts from the implementation of BRAC Realignment at Fort Detrick would be environmentally significant and an EIS would be necessary as a result.

Fort Detrick receives its drinking water from the Monocacy River. Drinking water demand for the BRAC Realignment projects evaluated by this EA adds approximately one percent to total demand. In addition, the EA examined the increase in drinking water demand of other new projects at Fort Detrick, including the new U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) facilities. When added to existing demand, the demand of these new projects did not exceed the water supply and treatment capacity. The existing drinking water capacity of Fort Detrick is adequate to support all NEPA-approved projects (including BRAC Realignment projects) and was described in detail in the USAMRIID EIS. That analysis of Fort Detrick's drinking water capacity was incorporated by reference in the BRAC EA. Therefore, significant cumulative impacts to drinking water are not expected.

The EA analysis considered and described the impacts that would be expected from implementing the proposed action, as well as cumulative impacts from past, present, and reasonably foreseeable future projects, including the proposed construction and operation of new USAMRIID facilities. The cumulative impacts of all NEPA-approved projects were described in detail in the USAMRIID EIS and were incorporated by reference in the BRAC EA. The impacts detailed in these documents did not collectively exceed significance thresholds for all resources. Therefore, preparation of an EIS is not required.

19 April 2007

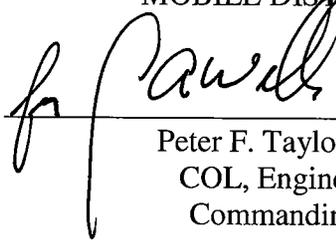
Date


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Fort Detrick, Maryland

**ENVIRONMENTAL ASSESSMENT
IMPLEMENTATION OF BRAC 05 REALIGNMENT AT
FORT DETRICK, MD**

Prepared by:

U.S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT

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Approved by:

FORT DETRICK, MD


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Commander

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ENVIRONMENTAL ASSESSMENT

LEAD AGENCY: United States Army Corps of Engineers, Mobile District

TITLE OF PROPOSED ACTION: Environmental Assessment for Implementation of BRAC 05 Realignment at Fort Detrick, Maryland

AFFECTED JURISDICTION: Frederick County, Maryland

PREPARED BY: United States Army Corps of Engineers, Mobile District

TECHNICAL ASSISTANCE FROM: The Louis Berger Group, Inc.

APPROVED BY: Colonel Mary R. Deutsch, Commander, U.S. Army Garrison, Fort Detrick, Maryland

ABSTRACT: On September 8, 2005, the Defense Base Closure and Realignment Commission (“BRAC Commission”) recommended that certain realignment actions occur at Fort Detrick, Maryland. These recommendations were approved by the President on September 23, 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.

To enable implementation of the BRAC recommendations, the Army proposes to provide necessary facilities to support the changes in force structure at Fort Detrick. This environmental assessment (EA) analyzes and documents environmental effects associated with the Army’s proposed action at Fort Detrick—an installation receiving realigned missions.

None of the predicted effects of the proposed action would result in significant impacts at Fort Detrick. Moreover, mitigation would not be necessary to offset impacts. Therefore, preparation of an Environmental Impact Statement (EIS) is not required and a Finding of No Significant Impact (FNSI) will be finalized in accordance with the National Environmental Policy Act (NEPA).

REVIEW PERIOD: Interested parties are invited to review and comment on the EA and draft FNSI within 30 days of publication. Comments and requests for copies of the EA and draft FNSI should be addressed to the Public Affairs Office at 301-619-2018.

The EA and draft FNSI are available for review on the World Wide Web at:
http://www.hqda.army.mil/acsim/brac/env_ea_review.htm or
<http://www.detrick.army.mil/usag/ipo/em/ea.cfm> and at the following libraries:

The EA and draft FNSI are available for review at the following libraries:

C. Burr Artz Public Library
110 East Patrick Street
Frederick, MD 21701

Fort Detrick Post Library
1520 Freedman Drive
Suite 300 / Room 143
Frederick, MD 21702

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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

On May 13, 2005, the Secretary of Defense recommended that certain realignment actions occur at Fort Detrick, Maryland. After review of the Secretary of Defense's recommendations, the Defense Base Closure and Realignment Commission ("BRAC Commission") submitted its final recommendations to the President on September 8, 2005. These recommendations were approved by the President on September 23, 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.

The following are the BRAC Commission recommendations for Fort Detrick: Relocate the Medical Biological Defense Research of the Walter Reed Army Institute of Research (Forest Glen Annex) and Naval Medical Research Center (Forest Glen Annex) to Fort Detrick, Maryland, and consolidate it with the US Army Medical Research Institute of Infectious Diseases. Realign 12300 Washington Avenue, Rockville, Maryland, by relocating the Medical Biological Defense Research sub-function to the U.S. Army Medical Research Institute of Infectious Diseases, Fort Detrick, Maryland. Realign Potomac Annex, Washington, D.C., by relocating Naval Bureau of Medicine, Code M2, headquarters-level planning, investment portfolio management and program and regulatory oversight of DoD Biomedical Science and Technology programs and FDA-regulated medical product development within the biomedical RDA function to a new Joint Biomedical Research, Development and Acquisition Management Center at Fort Detrick, Maryland. Realign 64 Thomas Johnson Drive, Frederick, Maryland, by relocating the Joint Program Executive Office for Chemical Biological Defense, Joint Project Manager for Chemical Biological Medical Systems headquarters-level planning, investment portfolio management and program and regulatory oversight of DoD Biomedical Science and Technology programs and FDA-regulated medical product development within the RDA function to a new Joint Biomedical Research, Development and Acquisition Management Center at Fort Detrick, Maryland. Close the Flair Memorial Armed Forces Reserve Center and its organizational maintenance shop in Frederick, MD, and relocate US Army Reserve and US Marine Corps Reserve units to a new consolidated Armed Forces Reserve Center and organizational maintenance support facility on Fort Detrick, MD.

To enable implementation of these recommendations, the Army proposes to provide facilities necessary to support the changes in force structure. This EA analyzes and documents environmental effects associated with the Army's proposed action at Fort Detrick – an installation receiving realigned missions.

A project to recapitalize U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) has been underway since well prior to the BRAC Commission's announcement. An Environmental Impact Statement (EIS) is currently being finalized by the Garrison and USAMRIID. As a result, there is some unavoidable overlap between the USAMRIID FEIS and this BRAC EA. This BRAC EA has been printed on recycled paper.

ES.2 BACKGROUND AND SETTING

Fort Detrick is situated in central Maryland approximately 45 miles west of Baltimore and 45 miles northwest of Washington, D.C. Interstate 70 (I-70), Interstate 270 (I-270) and U.S. Route 15 are the three major routes which provide access to the Installation. Fort Detrick encompasses 1,212 acres divided into four separate parcels of land identified as Areas A, B, and C (two parcels), which include 69 acres in Area A owned and operated by the National Cancer Institute (NCI) – Frederick (USAG, 2003). For the purposes of this EA, the Installation is defined as 1,143 acres of Army-owned land in Areas A, B, and C

at Fort Detrick, while Fort Detrick is defined as the entire 1,212 acres. The Installation is located in the northwest portion in the City of Frederick, Frederick County, Maryland.

ES.3 PROPOSED ACTION

The overall purpose of the proposed actions is to implement the Commission's recommendations as mandated by BRAC legislation (PL 101-510). The proposed action involves constructing new facilities to accommodate the 225 personnel and functions of 5 organizations realigning and relocating to Fort Detrick, which includes, but may not be limited to:

- Relocate Medical Biological Defense Research of the Walter Reed Army Institute of Research (Forest Glen Annex) and Naval Medical Research Center (Forest Glen Annex) to Fort Detrick, MD, and consolidate it with U.S. Army Medical Research Institute of Infectious Diseases.
- Realign 12300 Washington Ave, Rockville, MD, by relocating the Medical Biological Defense Research sub-function to the U.S. Army Medical Research Institute of Infectious Diseases, Fort Detrick, MD.
- Realign Potomac Annex, Washington, DC, by relocating Naval Bureau of Medicine, Code M2, headquarters-level planning, investment portfolio management and program and regulatory oversight of DoD Biomedical Science and Technology programs and Food and Drug Administration (FDA)-regulated medical product development within the biomedical RDA function to a new Joint Biomedical Research, Development and Acquisition Management Center at Fort Detrick, MD.
- Realign 64 Thomas Johnson Drive, Frederick, MD, by relocating the Joint Program Executive Office for Chemical Biological Defense, Joint Project Manager for Chemical Biological Medical Systems headquarters-level planning, investment portfolio management and program and regulatory oversight of DoD Biomedical Science and Technology programs and FDA-regulated medical product development within the RDA function to a new Joint Biomedical RDA Management Center at Fort Detrick, MD.
- Close the Flair Memorial Armed Forces Reserve Center and its organizational maintenance shop in Frederick, MD, and relocate U.S. Army Reserve and U.S. Marine Corps Reserve units to a new consolidated Armed Forces Reserve Center and organizational support facility on Fort Detrick, MD.

The site-specific BRAC-related projects are defined by existing Department of Defense Form 1391s. The DD Form 1391 is used by the Department of Defense to submit requirements and justifications in support of funding requests for military construction to Congress. The following presents the proposed action, or BRAC-related projects assessed in this EA.

Medical Biological Defense Research Laboratory (Project #64273).

A Medical Bio-Defense Research Laboratory and air conditioned warehouse support space would be constructed to provide facilities for consolidated defense research laboratory, animal holding capability and administrative space to support BRAC-05 re-stationing actions at Fort Detrick. This project would establish the Joint Center of Excellence for Biological Defense Research in accordance with BRAC-05 recommendations.

The medical biological defense research and supporting functions currently being conducted at Forest Glen Annex, Maryland, and in leased space within the National Capital Area would be

relocated to Fort Detrick. The laboratory would contain approximately 85,000 SF, and the laboratory storage would contain 4,000 SF. These facilities would provide additional research laboratory, laboratory support, vivarium, vivarium support, and administrative space. Approximately 122 personnel would be added to the daily workforce of Fort Detrick. The new building would meet biosafety level (BSL) 3 requirements.

However, there is uncertainty regarding the potential construction of the new Medical Bio-Defense Research Laboratory. In the event that this new Medical Bio-Defense Research Laboratory is not constructed, the organizations that would have occupied this facility may be located in the remaining space of existing USAMRIID building #1425 or other USAMRIID facilities. This EA assumes construction of the new Medical Bio-Defense Research Laboratory. This will ensure that any impacts associated with implementation of this project can be adequately identified and analyzed as a portion of the BRAC EA required by NEPA. If a determination is made that the new Medical Bio-Defense Research Laboratory will not be constructed, subsequent NEPA documents that tier off of this EA will be prepared in the form of an EA or a Record of Environmental Consideration

Joint Bio-Medical RDA Management Center of Excellence (Project # 64275).

In accordance with the recommendations of BRAC-05, a Joint Bio-medical RDA Management Center would be constructed to provide administrative and operational space for activities to be relocated to Fort Detrick, MD. Related medical administrative activities are currently located at various locations within Maryland and Washington, DC.

The building would be a new permanent multi-story administrative facility and contain 22,660 SF. Approximately 103 personnel would be added to the daily workforce of Fort Detrick. Buildings 817, 818, 820, and leased trailer 823 would be demolished (approximately 23,850 SF). The project also includes 30,000 SF of paving, utility relocations, storm drainage, site improvements and information systems.

Joint Reserve Center (Project #64931).

As part of the BRAC-05 recommendations, an Armed Forces Reserve Center (AFRC) would be constructed to replace the PFC Flair Memorial AFRC located in Area B of Fort Detrick. Primary facilities would include an Organizational Maintenance Shop (OMS) and unit storage building. Buildings will be of permanent construction with HVAC systems, plumbing, mechanical systems, security systems, and electrical systems. The current AFRC is 51 years old and cannot meet the Reserve component training or maintenance requirements for the assigned units. Built in 1956, the PFC Flair Memorial AFRC is 15,589 SF in size and provides a 100-member training facility. The PFC Flair Memorial AFRC, which consists of a training buildings and an OMS, would be closed and all Army Reserve and Marine Corps Reserve units would be relocated to the new consolidated AFRC and OMS on Fort Detrick, Maryland.

This proposed AFRC would provide a 200-member capacity training facility that realigns Army Reserve, National Guard, and Marine Corps Reserve units. The new facility would provide administrative, educational, assembly, library, learning center, vault, weapons simulator, and physical fitness areas for three Army Reserve units and two Marine Corps Reserve units. The maintenance shop would provide work bays and maintenance administrative support. The project would also provide adequate parking space for all military and privately-owned vehicles. The proposed AFRC building would contain 58,647 SF; the maintenance shop 8,999 SF; and the unit storage 4,458 SF, for a total of 72,104 SF.

Existing buildings could be either demolished or reused for other purposes in the future. In the event that such actions occur, subsequent NEPA documents that tier off this EA will be prepared.

ES.4 REALIGNMENT PROCESS

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. This BRAC EA examines the environmental impact from efforts that will take place within the 6-year BRAC implementation window.

ES.5 ALTERNATIVES

No Action Alternative

CEQ regulations require inclusion of the No Action Alternative. The No Actions Alternative would be to continue the missions at Fort Detrick as they are currently being performed. Because the BRAC law mandates realignment actions to occur at the Installation, the No Action Alternative is not possible. Nevertheless, the No Action Alternative serves as a baseline against other alternatives can be measured.

Under the No Action Alternative, Fort Detrick would not implement the proposed action. No units would relocate from other locations. Medical administrative activities currently located at various locations in Maryland and Washington, D.C. would not relocate to Fort Detrick. Medical biological defense research and supporting functions currently conducted at the Forest Glen Annex, Maryland and at leased space within the National Capital area would also not relocate to Fort Detrick. The current AFRC would continue to be utilized with Reserve units operating and training in facilities not properly configured to allow the most effective training to complete mission requirements. Fort Detrick would use its current inventory of facilities, though routine replacement or renovations actions could occur, through normal military maintenance and construction procedures, as circumstances independently warrant. The No Action Alternative is evaluated in detail in this EA.

Realignment (Preferred) Alternative

Fort Detrick has identified three major facilities projects required to support the proposed action. These projects involve new construction that would provide approximately 183,100 SF of built space. Siting of the new construction follows the *Installation Master Plan for Fort Detrick, Maryland* (USAG, 2003).

The Installation Master Plan for Fort Detrick seeks generally to collocate like uses and to separate incompatible uses, according to the Installation's 16 land use categories. Siting of the proposed BRAC facilities, which is also based on this principle, locates facilities in a way to support mission goals and objectives as efficiently and effectively as possible.

While variations of the present proposal for siting of facilities could be developed, the locations reflected in the Realignment (Preferred) Alternative reflect a sound comprehensive approach, already taken in developing the comprehensive Installation Master Plan (USAG, 2003) that limits environmental impacts while assuring efficient support to mission goals and objectives. Alternative siting of facilities would neither reduce impacts nor provide more efficient or effective support to mission goals and objectives. Therefore, alternative siting of facilities is not further evaluated in this EA.

ES.6 ENVIRONMENTAL CONSEQUENCES

Table ES-1 summarizes the potential impacts from the No Action and construction and operation of the Proposed Action, respectively. The analysis did not reveal any *significant* impacts on the natural or human environment that would occur if the Proposed Action was implemented.

Table ES-1. Summary of Effects of the No Action Alternative and the Realignment (Preferred) Alternative

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
Land Use			
<i>Regional Geographic Setting and Location</i>	No effect.	No effect.	No effect.
<i>Installation Land</i>	No effect.	Effects are not significant; all proposed projects occur within Fort Detrick boundary.	Effects are not significant; all proposed projects occur within Fort Detrick boundary.
<i>Surrounding Land</i>	No effect.	No effect.	No effect.
<i>Current and Future Development in the Region of Influence</i>	No effect.	Effects are not significant; all projects occur within Fort Detrick boundary; short-term construction requirements add financial capital to local and regional economy.	Effects are not significant; all projects occur within Fort Detrick boundary; increase in personnel living off-post adds financial capital to the local and regional economy.
Aesthetic and Visual Resources	No effect.	Effects are not significant.	Effects are not significant.
Air Quality			
<i>Ambient Air Quality Conditions</i>	No effect.	Effects are not significant - temporary emissions during construction do not exceed <i>de minimis</i> levels.	Effects are not significant- operational emissions do not exceed <i>de minimis</i> levels.
<i>Air Pollutant Emissions at Installation</i>	No effect.	Effects are not significant – emissions during construction are temporary.	Effects are not significant – Emissions do not exceed <i>de minimis</i> levels.
<i>Regional Air Pollutant Emissions Summary</i>	No effect.	Effects are not significant – Temporary emissions do not exceed ten percent of the allowable limits laid out by the SIP.	Effects are not significant – Emissions do not exceed ten percent of the allowable limits laid out by the SIP.
Noise	No effect.	Effects are not significant. Increased temporary noise from construction would not exceed applicable noise standards.	Effects are not significant. Long-term noise from increased vehicle use/traffic would not exceed applicable noise standards.
Geology and Soils			
<i>Geologic and Topographic Conditions</i>	No effect.	Effects are not significant; minor leveling and grading required.	No effect.
<i>Soils</i>	No effect.	Effects are not significant; majority of soils are already disturbed or modified.	No effect.
<i>Prime Farmland</i>	No effect.	No effect; no lands suitable for classification as prime farmland.	No effect; no lands suitable for classification as prime farmland.
Water Resources			

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Surface Water/Wetlands</i>	No effect.	Effects are not significant. Impacts due to erosion and sedimentation would be mitigated through an approved Sediment and Erosion Control Plan.	Effects are not significant. No impacts on wetlands and adverse impacts on surface waters from increased stormwater would be mitigated through regulatory compliance.
<i>Hydrogeology/ Groundwater</i>	No effect.	Impacts are not significant. Possible impacts due to the potential for minor oil and antifreeze spills, leaks from vehicles, and pollutant leaching as a result of demolition activities.	Impacts are not significant. Possible impacts due to the potential for minor oil and antifreeze spills, leaks from vehicles, etc.
<i>Floodplains</i>	No effect.	No effect.	No effect.
<i>Coastal Zone</i>	No effect.	No effect.	No effect.
Biological Resources			
<i>Vegetation</i>	No effect.	Effects are not significant from removal of vegetation.	No effect.
<i>Wildlife</i>	No effect.	Effects are not significant from removal of vegetation.	No effect.
<i>Threatened & Endangered Species</i>	No effect.	No effect.	No effect.
<i>Wetland Habitat</i>	No effect.	No effect.	No effect.
Cultural Resources			
<i>Built Environment</i>	No effect.	Effects are not significant. Potential minor impacts to viewsheds and settings of historic buildings can be anticipated.	Effects are not significant. Potential minor impacts to viewsheds and settings of historic buildings can be anticipated.
<i>Archaeology</i>	No effect.	No effect.	No effect.
<i>Native American Resources</i>	No effect.	No effect.	No effect.
Socioeconomics			
<i>Economic Development</i>	No effect.	Effects are not significant; 50% of jobs created will be directly caused by construction, most of which will be temporary.	Effects are not significant; minor increases in jobs, sales volume, and personal income.
<i>Demographics</i>	No effect.	Effects are not significant; insignificant increases in ROI population of a temporary nature.	Effects are not significant; minor increases in the ROI population.
<i>Housing</i>	No effect.	No effect.	Effects are not significant; minor increase in demand for housing.
<i>Quality of Life</i>	No effect.	No effect.	Effects are not significant; small number of additional children to be absorbed by ROI school system.

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Environmental Justice</i>	No effect.	No effect.	No effect.
<i>Protection of Children</i>	No effect.	No effect.	No effect.
Transportation			
<i>Roadways and Traffic</i>	No effect.	Effects are not significant; transitory increase in traffic due to construction vehicles.	Effects are not significant; increased traffic from additional workforce.
<i>Installation Transportation</i>	No effect.	No effect; there are no plans to implement an internal shuttle in the future.	No effect; there are no plans to implement an internal shuttle in the future.
<i>Public Transportation</i>	No effect.	Effects are not significant; no increase in transit ridership is expected during construction.	Effects are not significant; no significant increase in transit ridership is expected as a result of implementing the action.
Utilities			
<i>Potable Water Supply</i>	No effect.	Requires normal short-term disruptions from utility extensions; effects are not significant.	Effects are not significant; comparatively small demand would not be cause for system or regulatory limits to be exceeded.
<i>Wastewater System</i>	No effect.	Requires normal short-term disruptions from utility extensions; effects are not significant.	Effects are not significant; comparatively small discharges would not be cause for system or regulatory limits to be exceeded.
<i>Stormwater System</i>	No effect.	Requires normal short-term disruptions from utility extensions; effects are not significant.	Effects are not significant: compliance with all State and Federal guidelines.
<i>Energy Sources</i>	No effect.	Requires normal short-term disruptions from utility extensions; effects are not significant.	Effects are not significant; comparatively small demand would not cause system overloads or shortages.
<i>Communications</i>	No effect.	Requires normal short-term disruptions from utility extensions; effects are not significant.	Effects are not significant: communication requirements can be provided.
<i>Solid Waste</i>	No effect.	Requires normal short-term disruptions from utility extensions; effects are not significant.	Effects are not significant: required landfill space not large comparatively; adherence to approved solid waste handling procedures prevents adverse effects during operations.
Hazardous and Toxic Substances			
<i>Hazardous Materials Use, Handling and Storage</i>	No effect.	Effects are not significant.	Effects are not significant with proper handling; minimal use except in lab and OMS

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Hazardous Waste Generation, Storage, and Disposal</i>	No effect.	Effects are not significant; little hazardous waste from construction.	Effects are not significant with proper disposal; sufficient disposal capacity available.
<i>Site Contamination Issues</i>	No effect.	Effects are not significant; site contamination issues unlikely but can be handled if encountered.	No effect.
Human Health and Safety	No effect.	Effects are not significant following OSHA and other standards.	Effects are not significant with BSL 3 standards and procedures maintained in lab.
Cumulative Impacts			
<i>Land Use</i>	No effect.	Effects are not significant; projects are consistent with Installation Master Plan.	Effects are not significant; projects are consistent with Installation Master Plan.
<i>Aesthetic and Visual Resources</i>	No effect.	Effects are not significant; projects would follow Installation Master Plan design guidelines.	Effects are not significant; projects would follow Installation Master Plan design guidelines.
<i>Air Quality</i>	No effect.	Effects are not significant; increase in annual emissions would not exceed <i>de minimis</i> thresholds.	Effects are not significant; increase in annual emissions would not exceed <i>de minimis</i> thresholds.
<i>Noise</i>	No effect.	Effects are not significant; minimal increase in noise levels that would not exceed applicable noise standards.	Effects are not significant; minimal increase in noise levels that would not exceed applicable noise standards.
<i>Geology and Soils</i>	No effect.	Effects are not significant; majority of soil have been previously disturbed; mitigation measures would be implemented to off-set soil disturbance.	Effects are not significant; majority of soil have been previously disturbed; mitigation measures would be implemented to off-set soil disturbance.
<i>Water Resources</i>	No effect.	Effects are not significant; impacts minimized through use of required BMPs.	Effects are not significant; impacts minimized through use of required BMPs.
<i>Biological Resources</i>	No effect.	Effects are not significant; creation of habitat through afforestation and forestation requirements.	Effects are not significant; creation of habitat through afforestation and forestation requirements.
<i>Cultural Resources</i>	No effect.	Adverse effects from historic building demolitions by the USAMRIID project have been mitigated by the recordation process as agreed to in an MOA with the Maryland SHPO.	No significant effects.
<i>Socioeconomics</i>	No effect.	Effects are not significant; increase in sales volume and temporary jobs.	Effects are not significant; creation of jobs, increase in sales volume and increase in permanent population.

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Transportation</i>	No effect.	Effects are not significant; recent upgrades to access control points accommodate foreseeable future projects.	Effects are not significant; recent upgrades to access control points accommodate foreseeable future projects.
<i>Utilities</i>	No effect.	Effects are not significant; requires normal short-term disruptions from utility extensions.	Cumulative effects are not significant; relatively small utility requirements compared to other projects.
<i>Hazardous and Toxic Substances</i>	No effect.	Effects are not significant with adherence to applicable standards and regulations.	Effects are not significant with adherence to applicable standards and regulations.
<i>Human Health & Safety</i>	No effect.	Effects are not significant with adherence to applicable standards and regulations.	Effects are not significant with adherence to applicable standards and regulations.

ES.7 MITIGATION RESPONSIBILITY AND PERMIT REQUIREMENT

None of the predicted effects of the proposed action would result in significant impacts; therefore, mitigation is not needed. However, the following requirements and permits would be necessary in implementing the projects identified in the analysis:

- Construction/Demolition Waste Management:** To ensure environmentally sound waste management practices, the contractors will be required to submit a waste management plan within 15 days of the contract award. This project-specific plan must be coordinated with waste management objectives for Fort Detrick as a whole. The contractors must make every effort to reduce overall construction and demolition waste by recycling materials whenever possible. Contractors must also comply with AR 200-1 (*Environmental Protection and Enhancement*) regarding storage, treatment, and disposal of toxic and hazardous materials and dispose of all waste generated during construction and demolition at an approved facility off the Installation.

The construction and demolition contractor(s) will be responsible for the disposal of wastewater, municipal solid waste (MSW), and hazardous waste generated by their activities, as well as the construction and demolition debris, at permitted facilities off the Installation in accordance with Federal, State, and local regulatory requirements. In accordance with Army policy for *Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities* (DA, 2006a), the contracts will include a performance requirement for 50 percent minimum diversion of construction and demolition waste by weight from landfill disposal. The contract specifications will include submission of a contractor's construction and demolition Waste Management Plan.

- Best Management Practices (BMPs):** During construction of the proposed actions, BMPs would be employed to minimize particulate matter from becoming airborne at the project site in compliance with Code of Maryland Regulations (COMAR) pertaining to *Particulate Matter from Materials Handling and Construction* (COMAR 26.11.06.03D).
- Air Quality Requirements:** Fort Detrick is located in an area of moderate ozone non-attainment and in a non-attainment area for PM_{2.5}. Because nitrogen oxides (NO_x) and sulfur dioxide (SO₂) emissions at Fort Detrick surpass the State-established threshold levels, Fort Detrick is considered

a “major source” for permitting purposes under the Clean Air Act (CAA) (USAG, 2003). The CAA requires that a New Source Review (NSR) evaluation be prepared before construction and installation of any new permitted major sources or any major modifications of permitted major sources in non-attainment areas that have the potential to cause significant increases of criteria pollutants (NO_x, SO_x, carbon monoxide [CO]), lead [Pb], volatile organic compounds [VOCs], and particulate matter [PM]).

The CAA requires that a Prevention of Significant Deterioration (PSD) evaluation be prepared before construction and installation of certain types of listed sources in attainment areas that have the potential to emit certain threshold quantities of criteria pollutants. Air quality permits to construct are required for generators greater than 500 horsepower (hp) or 373 Kilowatt (kW) and for fuel burning equipment greater than or equal to 1 Million British Thermal Unit (MMBtu)/hour (hr). Air quality permits to operate are required for fuel burning equipment and hot water heaters with maximum rated capacities of 50 MMBtu/hr or more (USAG, 2006a). If NSR or PSD permits are required to construct the proposed BRAC projects, then it will be the responsibility of Fort Detrick to obtain the necessary permits.

- **Erosion and Sediment Control, and Stormwater Management:** An erosion and sediment control plan for land clearing, grading, or other earth disturbance approved by the Maryland Department of the Environment (MDE) is required under COMAR 26.17.01 for construction activities involving more than 100 cubic yards or more than 5,000 SF (0.11 acre). If the area disturbed is more than one acre, a general permit under the National Pollutant Discharge Elimination System (NPDES) is also required for discharge of stormwater during the construction period.

Stormwater management measures are required for projects that disturb more than 5,000 SF on Federal property according to COMAR 26.17.02 and the *Maryland Stormwater Management Guidelines for State and Federal Projects*. The stormwater management facilities must be designed consistent with the *2000 Maryland Stormwater Design Manual Volumes I and II*, and be constructed in accordance with a project plan approved by the MDE.

- **Forestation Requirements:** All construction on Fort Detrick is subject to the Installation’s Forest Conservation Plan (FCP), to ensure compliance with the Maryland Forest Conservation Act (FCA) (COMAR 08.18.04) and the Forest Resource Ordinance of Frederick County. The FCP, which is on file with the Maryland Department of Natural Resources (MDNR), details the amount of forested land that will be retained, reforested or afforested and identifies the location in Area B where new tree plantings would be conducted to meet forestation requirements.

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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 Fort Detrick, Maryland (see Figure 1-1). These recommendations were approved by the President on September 23, 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 (see Appendix A). 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 law exempts consideration of the need for the action or alternative installations in preparing environmental documentation pursuant to the National Environmental Policy Act (NEPA). However, an appropriate level of NEPA analysis and documentation is required to analyze how the BRAC actions will be implemented for concurrent actions, both BRAC-directed and discretionary, at each installation that is receiving realigned missions. A NEPA document is not required for those installations that are only losing activities.

The BRAC Commission recommendations, which are included as part of BRAC law, as quoted¹, are to:

- Relocate the Medical Biological Defense Research of the Walter Reed Army Institute of Research (Forest Glen Annex) and Naval Medical Research Center (Forest Glen Annex) to Fort Detrick, Maryland, and consolidate it with the US Army Medical Research Institute of Infectious Diseases.
- Realign 12300 Washington Avenue, Rockville, Maryland, by relocating the Medical Biological Defense Research sub-function to the U.S. Army Medical Research Institute of Infectious Diseases, Fort Detrick, Maryland.
- Realign Potomac Annex, Washington, D.C., by relocating Naval Bureau of Medicine, Code M2, headquarters-level planning, investment portfolio management and program and regulatory oversight of DoD Biomedical Science and Technology programs and FDA-regulated medical product development within the biomedical RDA function to a new Joint Biomedical Research, Development and Acquisition Management Center at Fort Detrick, Maryland.
- Realign 64 Thomas Johnson Drive, Frederick, Maryland, by relocating the Joint Program Executive Office for Chemical Biological Defense, Joint Project Manager for Chemical Biological Medical Systems headquarters-level planning, investment portfolio management and program and regulatory oversight of DoD Biomedical Science and Technology programs and FDA-regulated medical product development within the RDA function to a new Joint Biomedical Research, Development and Acquisition Management Center at Fort Detrick, Maryland.
- Close the Flair Memorial Armed Forces Reserve Center and its organizational maintenance shop in Frederick, MD, and relocate US Army Reserve and US Marine Corps Reserve units to a new

¹ Defense Base Closure and Realignment Commission. 8 September 2005. *Final Report to the President*.

consolidated Armed Forces Reserve Center and organizational maintenance support facility on Fort Detrick, MD².

To enable implementation of this recommendation, the Army proposes to provide necessary facilities to support the changes in force structure at Fort Detrick. This environmental assessment (EA) analyzes and documents environmental effects associated with the Army’s proposed action at Fort Detrick - an installation receiving realigned missions. Details on the proposed action covered by this EA are set forth in Section 2.0.

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended (Title 42, U.S. Code [USC], 4321-4347) and regulations of the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1500-1508), this EA was prepared concurrently with and integrated with environmental impact analyses and related surveys and studies required by the Fish and Wildlife Coordination Act (16 U.S. Code [USC] 661 *et seq.*), the National Historic Preservation Act of 1966 (NHPA, 16 USC 470 *et seq.*), the Endangered Species Act of 1973 (ESA, 16 USC 1531 *et seq.*), and other environmental review laws (and their implementing regulations), and Executive Orders (EOs) outlined in Table ES-1.

Table 1-1: Compliance with Federal Environmental Statutes, Regulations, and Executive Orders

Environmental Resources	Statute, Regulation, or Executive Order
Air	Clean Air Act (CAA) of 1970 (PL 95-95), as amended in 1977 and 1990 (PL 91-604); U.S. Environmental Protection Agency (USEPA), Subchapter C-Air Programs (40 CFR 52-99)
Noise	Noise Control Act of 1972 (PL 92-574) and Amendments of 1978 (PL 95-609); USEPA, Subchapter G-Noise Abatement Programs (40 CFR 201-211)
Water	Federal Water Pollution Control Act (FWPCA) of 1972 (PL 92-500) and Amendments; Clean Water Act (CWA) of 1977 (PL 95-217); USEPA, Subchapter D-Water Programs (40 CFR 100-145); Water Quality Act of 1987 (PL 100-4); USEPA, Subchapter N-Effluent Guidelines and Standards (40 CFR 401-471); Safe Drinking Water Act (SDWA) of 1972 (PL 95-923) and Amendments of 1986 (PL 99-339); USEPA, National Drinking Water Regulations and Underground Injection Control Program (40 CFR 141-149)
Biological Resources	Migratory Bird Treaty Act of 1918; Fish and Wildlife Coordination Act of 1958 (PL 85-654); Sikes Act of 1960 (PL 86-97) and Amendments of 1986 (PL 99-561) and 1997 (PL 105-85 Title XXIX); Endangered Species Act of 1973 (PL 93-205) and Amendments of 1988 (PL 100-478); Fish and Wildlife Conservation Act of 1980 (PL 96-366); Lacey Act Amendments of 1981 (PL 97-79); Responsibilities of Federal Agencies to Protect Migratory Birds (EO 13186)

² Although the BRAC Commission recommendation identified the Flair Memorial Armed Forced Reserve Center as located in Frederick, Maryland, it is physically located on Fort Detrick, a federal Army installation.

Environmental Resources	Statute, Regulation, or Executive Order
Wetlands and Floodplains	Section 401 and 404 of the Federal Water Pollution Control Act of 1972 (PL 92-500); USEPA, Subchapter D-Water Programs 40 CFR 100-149 (105 ref); Floodplain Management-1977 (EO 11988); Protection of Wetlands-1977 (EO 11990); Emergency Wetlands Resources Act of 1986 (PL 99-645); North American Wetlands Conservation Act of 1989 (PL 101-233)
Cultural Resources	NHPA (16 USC 470 et seq.) (PL 89-865) and Amendments of 1980 (PL 96-515) and 1992 (PL 102-575); Protection and Enhancement of the Cultural Environment-1971 (EO 11593); Indian Sacred Sites-1966 (EO 13007); American Indian Religious Freedom Act (AIRFA) of 1978 (PL 94-341); Antiquities Act of 1906; Archaeological Resources Protection Act (ARPA) of 1979 (PL 96-95); Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (PL 101-601); Protection of Historic and Cultural Properties (36 CFR 800)
Solid/Hazardous Materials and Waste	Resource Conservation and Recovery Act (RCRA) of 1976 (PL 94-5800), as Amended by PL 100-582; USEPA, subchapter I-Solid Wastes (40 CFR 240-280); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 USC 9601) (PL 96-510); Toxic Substances Control Act (TSCA) (PL 94-496); USEPA, Subchapter R-Toxic Substances Control Act (40 CFR 702-799); Federal Insecticide, Fungicide, and Rodenticide Control Act (40 CFR 162-180); Emergency Planning and Community Right-to-Know Act (40 CFR 300-399); Federal Compliance with Pollution Control Standards-1978 (EO 12088), Superfund Implementation (EO 12580); Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition (EO 13101), Greening the Government Through Efficient Energy Management (EO 13123), Greening the Government Through Leadership in Environmental Management (EO 13148)
Environmental Justice	Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations (EO 12898); Protection of Children from Environmental Health Risks and Safety Risks (EO 13045)

A project to recapitalize U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) has been underway since well prior to the BRAC Commission's announcement. An Environmental Impact Statement (EIS) is currently being finalized by the Garrison and USAMRIID. As a result, there is some unavoidable overlap between the USAMRIID FEIS and this BRAC EA.

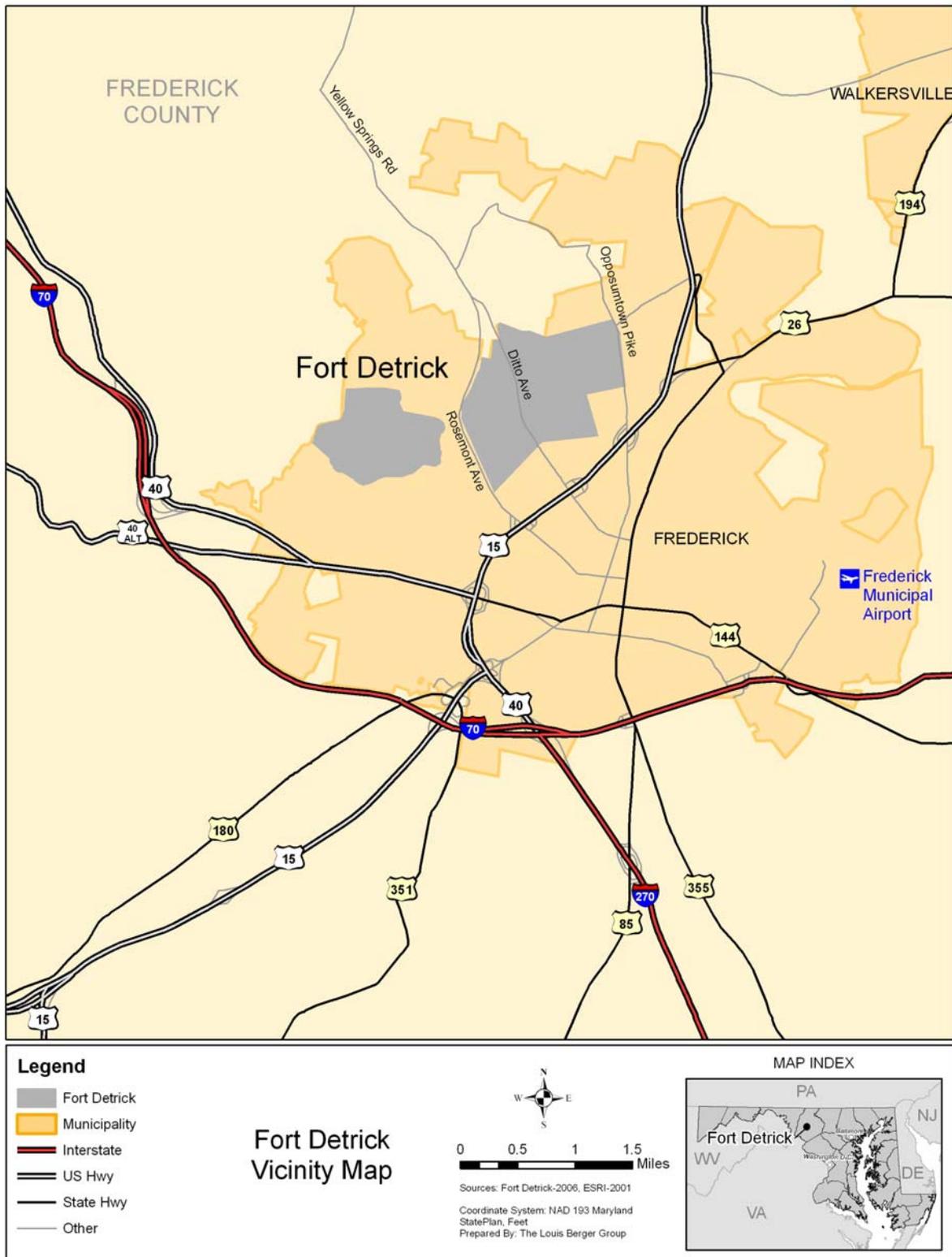


Figure 1-1. Regional and Vicinity Map

1.2 PURPOSE AND NEED

The purpose of the proposed action is to implement the BRAC Commission's recommendations pertaining to Fort Detrick.

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 two major initiatives that contribute to the Army's need for the proposed action.

Base Realignment and Closure. In previous rounds of BRAC, the explicit goal was to save money and downsize the military to reap a "peace dividend" after the Cold War. In the 2005 BRAC round, 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-05 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 Fort Detrick to achieve the objectives for which Congress established in the BRAC process.

Installation Sustainability. On October 1, 2004, the Secretary of the Army and the Chief of Staff of the Army 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 Army³. 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 possible and probable environmental effects of realignments at Fort Detrick, Maryland. 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 is described in Section 2.0, and alternatives, including the no action alternative, are described in Section 3.0. Conditions existing as of 2006, 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.

³ 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.

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 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 decision making. 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 decision making process.

Public participation opportunities with respect to this EA and decision making on the proposed action 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 action, the EA, or draft FNSI. As appropriate, the Army may then execute the FNSI and proceed with implementation of the proposed action. If it is determined prior to issuance of a final FNSI that implementation of the proposed action 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 action.

Throughout this process, the public may obtain information on the status and progress of the proposed action and the EA and FNSI through the Fort Detrick Public Affairs Office by calling 301-619-2018.

1.5 IMPACT ANALYSIS PERFORMED

This EA identifies, documents, and evaluates environmental effects of the BRAC Commission’s recommended realignment of Fort Detrick. The existing conditions at Fort Detrick as of 2006 are described in Section 4.0, Affected Environment and Environmental Consequences, which, with information presented in the No Action Alternative, constitutes the baseline against other alternatives to be measured for the analysis of the effects of disposal and reuse. Conditions in 2006 reflect the operating status of the Installation prior to implementation of the BRAC Commission’s decision/recommendations. Conditions in 2011 reflect fully operational facilities that implement the BRAC Commission’s decision/recommendations for Fort Detrick.

An interdisciplinary team of ecologists, planners, economists, engineers, archeologists, historians, scientists, and military technicians analyzed the proposed action against existing conditions and identified the relevant beneficial and adverse effects associated with the action. The environmental consequences are described in Section 4.0, immediately following presentation of each resource area and condition relevant to the proposed action.

The EA provides the best available information as of June 2006, and includes guidance by Installation personnel. Data presented in the EA reflect the current conditions at Fort Detrick using references to the most recent available data sources, including management plans, EAs and EISs, and Installation-provided Geographic Information System (GIS) data. The following NEPA documents were consulted for incorporation of applicable information:

- *Environmental Assessment: Installation Master Plan for Fort Detrick, Maryland.* U.S. Army Garrison, Fort Detrick, Maryland (USAG, 2003);
- *Revised Area B Master Plan Environmental Assessment.* U.S. Army Garrison, Fort Detrick, Maryland. (USAG, 2004);
- *Environmental Assessment for the Construction and Operation of a Cogeneration Utility Plant (CUP) by Chevron Energy Solutions Company and Keenan Development (CK) on the East-Central Portion of Area A at Fort Detrick, Maryland,* U.S. Army Garrison, Fort Detrick, Maryland (USAG, 2005);
- *Environmental Assessment for the Construction and Operation of the Veterans Affairs Community-Based Outpatient Clinic, Fort Detrick, Maryland.* U.S. Army Garrison, Fort Detrick, Maryland (USAG, 2006a);
- *Draft Environmental Impact Statement - Construction and Operation of New U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) Facilities and Decommissioning and Demolition and/or Re-use of Existing USAMRIID Facilities at Fort Detrick, Maryland.* U.S. Army Garrison, Fort Detrick, Maryland (USAG, 2006b);
- *Final Environmental Impact Statement, Construction and Operation of the National Biodefense Analysis and Countermeasures Center Facility by the Department of Homeland Security at Fort Detrick, Maryland.* Department of Homeland Security and U.S. Army Garrison, Fort Detrick, Maryland (DHS and USAG, 2004b).

The effects of the proposed action on Socioeconomics were assessed using the Economic Impact Forecast System (EIFS) developed by the U.S. Army Construction Engineering Research Laboratory (CERL). This model allows all base closure and realignment actions to be evaluated in the same way.

1.6 FRAMEWORK FOR ANALYSIS

A decision on whether to proceed with the proposed action rests on numerous factors such as mission requirements, schedule, availability of funding, and environmental considerations—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, 2011⁴. In addressing environmental considerations, Fort Detrick 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.

⁴ 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.

1.6.1 BRAC Procedural Requirements

Coordination of the proposed action under the Endangered Species Act and the National Historic Preservation Act is required as a component of the EA (see Appendix D).

1.6.2 Relevant Statutes and Executive Orders

Relevant statutes and Executive Orders 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 bearing on the proposed action include EO 11988 (Floodplain Management), EO 11990 (Protection of Wetlands), EO 12088 (Federal Compliance with Pollution Control Standards), EO 12580 (Superfund Implementation), EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations), EO 13045 (Protection of Children from Environmental Health Risks and Safety Risks), EO 13101 (Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition), EO 13123 (Greening the Government Through Efficient Energy Management), EO 13148 (Greening the Government Through Leadership in Environmental Management), EO 13175 (Consultation and Coordination with Indian Tribal Governments), and EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds). These authorities are addressed in various sections throughout this EA when relevant to particular environmental resources and conditions. The full text of the laws, regulations, and EOs is available on the Defense Environmental Network & Information Exchange Web site at <http://www.denix.osd.mil>.

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 INTRODUCTION

This section describes the Army's proposed action for carrying out the BRAC Commission's recommendations. The BRAC Commission recommended the realignment of the following agencies/activities with relocation to Fort Detrick, Maryland. These include, but may not be limited to:

- Relocate Medical Biological Defense Research of the Walter Reed Army Institute of Research (Forest Glen Annex) and Naval Medical Research Center (Forest Glen Annex) to Fort Detrick, MD, and consolidate it with U.S. Army Medical Research Institute of Infectious Diseases.
- Realign 12300 Washington Ave, Rockville, MD, by relocating the Medical Biological Defense Research sub-function to the U.S. Army Medical Research Institute of Infectious Diseases, Fort Detrick, MD.
- Realign Potomac Annex, Washington, DC, by relocating Naval Bureau of Medicine, Code M2, headquarters-level planning, investment portfolio management and program and regulatory oversight of DoD Biomedical Science and Technology programs and (FDA)-regulated medical product development within the biomedical RDA function to a new Joint Biomedical Research, Development and Acquisition Management Center at Fort Detrick, MD.
- Realign 64 Thomas Johnson Drive, Frederick, MD, by relocating the Joint Program Executive Office for Chemical Biological Defense, Joint Project Manager for Chemical Biological Medical Systems headquarters-level planning, investment portfolio management and program and regulatory oversight of DoD Biomedical Science and Technology programs and FDS-regulated medical product development within the RDA function to a new Joint Biomedical Research, Development and Acquisition Management Center at Fort Detrick, MD.
- Close the Flair Memorial Armed Forces Reserve Center and its organizational maintenance shop in Frederick, MD, and relocate U.S. Army Reserve and U.S. Marine Corps Reserve units to a new consolidated Armed Forces Reserve Center and organizational support facility on Fort Detrick, MD.

2.2 PROPOSED ACTION / IMPLEMENTATION PROPOSED

The proposed action is to implement the Commission's recommendations as mandated by the BRAC legislation, Public Law 101-510. The proposed action involves constructing new facilities to accommodate the personnel and functions of organizations realigning and relocating to Fort Detrick.

2.2.1 Fort Detrick Garrison Mission and Vision

The mission of the U.S. Army Garrison and Fort Detrick is to command, operate and administer resources to provide quality installation support to Department of Defense (DoD) and non-Department of Defense customers, meeting their current and future mission requirements through an innovative, quality workforce using best business practices. The vision of the U.S. Army Garrison is to support Fort Detrick through technology and innovation, fostering an environment for growth and transformation in the 21st Century.

Fort Detrick serves four of the President's cabinet-Level agencies: The Department of Defense,, Department of Agriculture, Department of Homeland Security and Department of Health and Human

Services involved in biomedical defense research and development, medical materiel management, global telecommunications, and rapid detection of new and emerging crop pathogens.

Within the DoD, Fort Detrick supports elements of all four military services. Major Department of the Army mission partners include the U.S. Medical Research and Materiel Command and the 21st Signal Brigade.

2.2.2 Personnel Loading

The BRAC Commission recommendations for relocating these organizations would result in the arrival of about 225 workforce personnel (42 Military, 33 Civilian, and 150 Contractors) at Fort Detrick. Fort Detrick is the largest employer in Frederick County, Maryland, with 7,808 employees of which approximately 1,200 are active duty military personnel (USAG, 2006b). NCI-Frederick employs approximately 2,400 individuals (USAG, 2003). The BRAC realignment action would result in a workforce increase of about 2 percent. The potential direct, indirect, and/or cumulative impacts to the environment from the increase in personnel will be considered in this EA. The breakout of personnel by mission is listed in Table 2-1.

Table 2-1. Fort Detrick 2005 BRAC Actions – Incoming Activities

Action	Organization	From	Total Estimated Incoming Personnel
Incoming	Relocate Medical Biological Defense Research of the Walter Reed Army Institute of Research and Naval Medical Research Center to Fort Detrick, MD.	MD - Forest Glen Annex	73
Incoming	Relocate the Medical Biological Defense Research sub-function to Fort Detrick, MD.	MD -Rockville	49
Incoming	Relocate Naval Bureau of Medicine, Code M2 to Fort Detrick, MD.	Washington, DC - Potomac Annex	12
Incoming	Relocate the Joint Program Executive Office for Chemical Biological Defense, Joint Project Manager for Chemical Biological Medical Systems headquarters-level planning, investment portfolio management and program and regulatory oversight of DoD Biomedical Science and Technology programs and FDA-regulated medical product development within the RDA function to Fort Detrick, MD.	MD - Frederick	91
Incoming	Relocate U.S. Army Reserve and U.S. Marine Corps Reserve units to a new consolidated Armed Forces Reserve Center and organizational support facility on Fort Detrick, MD.	MD - Frederick	0
		TOTAL	225

2.2.3 Proposed Action – BRAC Related Projects

The following presents the proposed action, or BRAC-related projects assessed in this EA. The site-specific BRAC-related projects are defined by existing DD Form 1391s (DA, 2006b). The DD Form 1391 is used by the Department of Defense to submit requirements and justifications in support of funding requests for military construction to Congress. Table 2-2 identifies for each proposed BRAC project the new facility square footage (SF) and the estimated number of personnel that would occupy the facility on a daily basis. Figure 2-1 identifies project locations at the Installation.

Table 2-2. BRAC-Related Projects

Project Number	Project Title	New Facility SF	Approximate # of Personnel Occupying Facility Daily
64273	Medical Bio-Defense Research Laboratory	88,310	122
64275	Joint Bio-Medical RDA Management Center	22,660	103
64931	Armed Forces Reserve Center	72,104	10
TOTAL		183,074	

Medical Bio-Defense Research Laboratory (Project #64273)

A Medical Bio-Defense Research Laboratory and air conditioned warehouse support space would be constructed to provide facilities for consolidated defense research laboratory, animal holding capability and administrative space to support BRAC-05 re-stationing actions at Fort Detrick. This project would establish the Joint Center of Excellence for Biological Defense Research in accordance with BRAC-05 recommendations.

The medical biological defense research and supporting functions currently being conducted at Forest Glen Annex, Maryland, and in leased space within the National Capital Area would be relocated to Fort Detrick. A review of existing facilities at Fort Detrick indicates that there are no buildings available to support the increase in biomedical research and animal holding capabilities directed by the BRAC-05 re-stationing actions.

The approved conceptual site is in accordance with the Installation Master Plan and located strategically adjacent to USAMRIID on the National Interagency Biodefense Campus (NIBC).

The laboratory would contain 84,310 SF, and the laboratory storage would contain 4,000 SF. These facilities would provide additional research laboratory, laboratory support, vivarium, vivarium support, and administrative space. Approximately 122 personnel would be added to the daily workforce of Fort Detrick. The new building would meet biosafety (BSL) level 3.

However, there is uncertainty regarding the potential construction of the new Medical Bio-Defense Research Laboratory. In the event that this new Medical Bio-Defense Research Laboratory is not constructed, the organizations that would have occupied this facility may be located in the remaining space of existing USAMRIID building #1425 or other USAMRIID facilities. This EA assumes construction of the new Medical Bio-Defense Research Laboratory. This will ensure that any impacts associated with implementation of this project can be adequately identified and analyzed as a portion of the BRAC EA required by NEPA. If a determination is made that the new Medical Bio-Defense Research Laboratory will not be constructed, subsequent NEPA documents that tier off of this EA will be prepared in the form of an EA or a Record of Environmental Consideration.

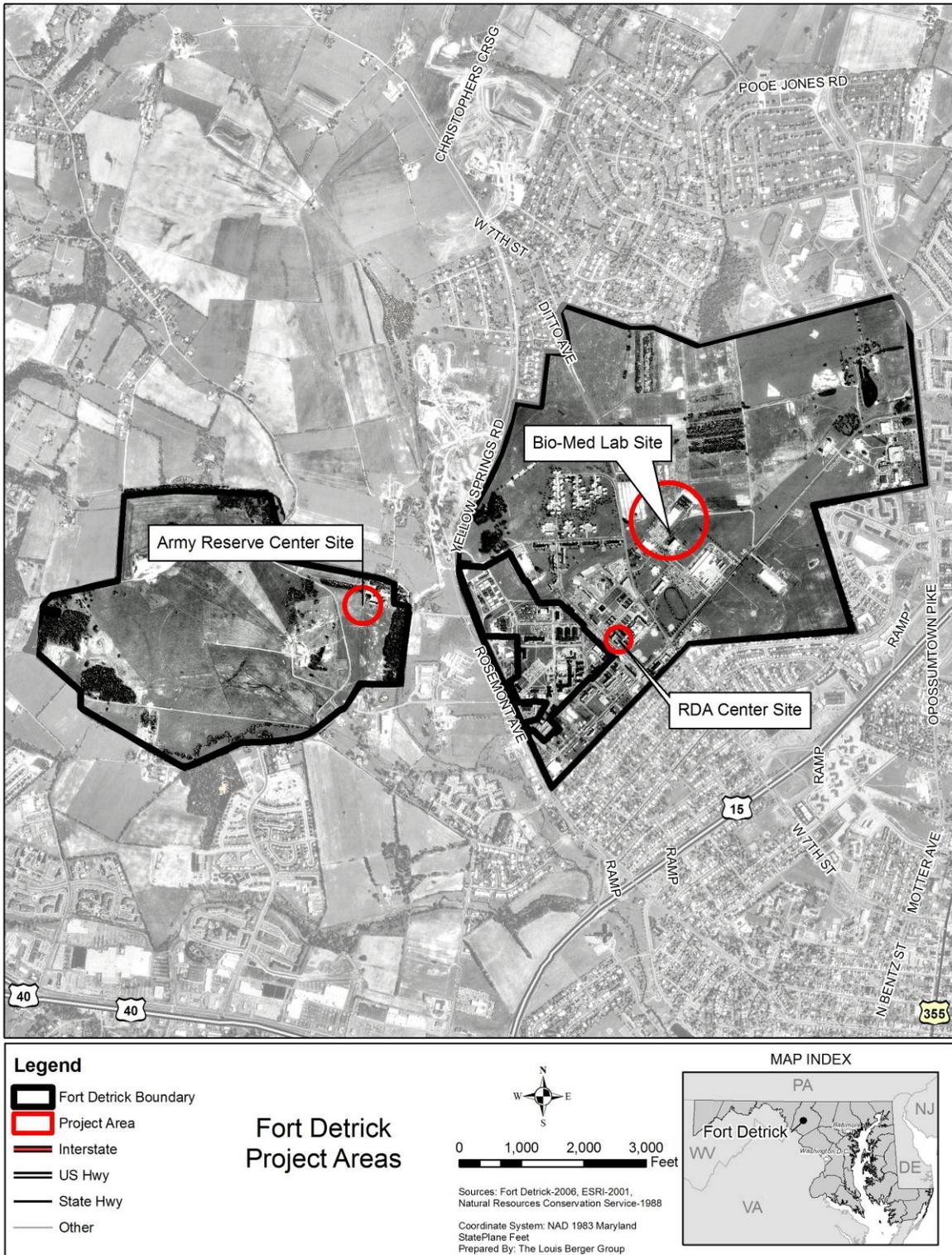


Figure 2-1. Proposed Locations for BRAC - Related Actions

Joint Bio-Medical RDA Management Center of Excellence (Project # 64275).

In accordance with the recommendations of BRAC-05, a Joint Bio-medical RDA Management Center would be constructed to provide administrative and operational space for activities to be relocated to Fort Detrick, MD. Related medical administrative activities are currently located at various locations within Maryland and Washington, DC.

The following medical administrative activities would be relocated to Fort Detrick, MD: Naval Bureau of Medicine, Code M2, from the Potomac Annex; and the Joint Project Manager for Chemical Biological Medical Systems (CBMS) from Thomas Johnson Drive, Frederick, MD. Currently, there is no adequate, permanent administrative space available at Fort Detrick to accommodate these relocations. This project would accommodate these activities with the construction of a new permanent multi-story administrative facility at Fort Detrick within the planned administrative campus.

The approved site is in accordance with the Installation Master Plan and located strategically adjacent to the primary administrative functions of the Headquarters, US Army Medical Research and Materiel Command, US Army Medical Research Acquisition Activity, and the Joint Medical Logistics Center.

The building would be a new permanent multi-story administrative facility and contain 22,660 SF. Approximately 103 personnel would be added to the daily workforce of Fort Detrick. The project provides for demolition of Buildings 817, 818, 820, and leased trailer 823 (approximately 23,850 SF) and includes 30,000 SF of paving, utility relocations, storm drainage, site improvements and information systems.

Joint Reserve Center (Project #64931)

As part of the BRAC-05 recommendations, an Armed Forces Reserve Center (AFRC) would be constructed to replace the PFC Flair Memorial AFRC located in Area B of Fort Detrick. Primary facilities would include an Organizational Maintenance Shop (OMS) and unit storage building. Buildings will be of permanent construction with HVAC systems, plumbing, mechanical systems, security systems, and electrical systems. The PFC Flair Memorial AFRC, which consists of a training buildings and an OMS, would be closed and all Army Reserve and Marine Corps Reserve units would be relocated to the new consolidated AFRC and OMS on Fort Detrick, Maryland.

The current AFRC is 51 years old and cannot meet the Reserve component training or maintenance requirements for the assigned units. Built in 1956, the PFC Flair Memorial AFRC is 15,589 SF in size and provides a 100-member training facility. This proposed AFRC would provide a 200-member training facility that realigns Army Reserve, National Guard, and Marine Corps Reserve units. The new facility would provide administrative, educational, assembly, library, learning center, vault, weapons simulator, and physical fitness areas for three Army Reserve units and two Marine Corps Reserve units. The maintenance shop would provide work bays and maintenance administrative support. The project would also provide adequate parking space for all military and privately-owned vehicles.

The approved conceptual site is in accordance with the Installation Master Plan and located near the existing AFRC in Area B of Fort Detrick. A new building would be constructed adjacent to the existing site, tripling existing square footage to meet BRAC requirements. The proposed AFRC building would contain 58,647 SF; the maintenance shop 8,999 SF; and the unit storage 4,458 SF, for a total of 72,104 SF. No additional personnel would be added to the daily workforce of Fort Detrick; however, the center would accommodate up to 200 personnel for reserve activities and serve a full-time duty staff of 15-22 personnel. Necessary utility connections, site drainage features, and paved surfaces would be added.

Existing buildings could be either demolished or reused for other purposes in the future. In the event that such actions occur, subsequent NEPA documents that tier off this EA will be prepared.

2.2.4 Schedule

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. The AFRC project is schedule to begin prior to September 15, 2007, but the Medical Bio-Defense Research Laboratory and the Bio-Medical RDA Management Center are not. All BRAC-related projects on Fort Detrick are scheduled to be completed by September 15, 2011.

Implementation of the proposed action would occur over a span of approximately 4 years, as shown in the schedule contained in Table 2-3. Facilities construction would be synchronized to meet the needs, on a priority basis, of units being relocated.

Table 2-3. Schedule for Fort Detrick 2005 BRAC Projects

Project Number	Project Title	Estimated Construction Start	Estimated Construction Completion
64273	Medical Bio-Defense Research Laboratory	March 2009	April 2011
64275	Joint Bio-Medical RDA Management Center	March 2010	July 2011
64931	Armed Forces Reserve Center	April 2007	April 2008

3.0 ALTERNATIVES

3.1 INTRODUCTION

The proposed action described in Section 2.0 is the Army's preferred alternative. Potential alternatives to the proposed action have been examined for their applicability according to three variables:

- means to physically accommodate realigned units
- siting of new construction
- schedule

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 decision making (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 presents the Army's consideration of whether reasonable action alternatives exist other than the proposed action alternative that require detailed evaluation in this EA. The section also describes the No Action Alternative.

The following details criteria for alternatives:

Means to Accommodate Realigned Units. Relocation of units and establishment of new 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
- Construction of new facilities

Army Regulation 210-20, *Master Planning for Army Installations*, establishes Army policy that new construction will not be proposed or authorized in a master plan to meet an installation mission that can be supported by reassignment of existing adequate facilities. Such reassignments must meet mission requirements, support operational efficiency, and promote sustainable development of the installation.

DD Form 1391s prepared for each of the projects contained in the proposed action provide justifications that construction of new facilities is required to meet mission requirements. The 1391s state that existing facilities are deficient to accommodate the requirements to be fulfilled by the proposed facilities and therefore these proposed facilities would be implemented as new construction projects.

Siting of New Construction. The Army considers new construction of facilities when use of existing facilities, renovation, 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 land use designation for the site, adequacy of the site for the function required, 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 environmental incompatibilities.

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

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 based on 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.

3.2 NO ACTION ALTERNATIVE

CEQ regulations require inclusion of the No Action Alternative. The No Actions Alternative would be to continue the missions at Fort Detrick as they are currently being performed. Because the BRAC law mandates realignment actions to occur at the Installation, the No Action Alternative is not possible. Nevertheless, the No Action Alternative serves as a baseline against other alternatives can be measured.

Under the No Action Alternative, Fort Detrick would not implement the proposed action. No units would relocate from other locations. Medical administrative activities currently located at various locations in Maryland and Washington, D.C. would not relocate to Fort Detrick. Medical Biological Defense Research and supporting functions currently conducted at the Forest Glen Annex, Maryland and at leased space within the National Capital area would also not relocate to Fort Detrick. The current AFRC would continue to be utilized with Reserve units operating and training in facilities not properly configured to allow the most effective training to complete mission requirements. Fort Detrick would use its current inventory of facilities, though routine replacement or renovations actions could occur, through normal military maintenance and construction procedures, as circumstances independently warrant. The No Action Alternative is evaluated in detail in this EA.

3.3 REALIGNMENT (PREFERRED) ALTERNATIVE

Fort Detrick has identified three major facilities projects required to support the proposed action. These projects involve demolition and new construction that would provide approximately 183,100 SF of built space (see Table 3-1).

Table 3-1. Demolition and Construction for Proposed Projects

Project Number	Project Title	Demolition (SF)	Construction (SF)
64273	Medical Bio-Defense Research Laboratory	0	88,310
64275	Joint Bio-Medical RDA Management Center	23,850	22,660
64931	Armed Forces Reserve Center	0	72,104
TOTAL		23,850	183,074

Siting of the new construction follows the *Installation Master Plan for Fort Detrick, Maryland* (USAG, 2003). The Installation Master Plan for Fort Detrick seeks generally to collocate like uses and to separate incompatible uses, according to the Installation's 16 land use categories⁵. Siting of the proposed BRAC facilities, which is also based on this principle as shown below, locates facilities in a way to support mission goals and objectives as efficiently and effectively as possible.

- The Joint Bio-Medical RDA Management Center would be located in the “Administrative” area, adjacent to Building 810 on Area A on the Fort Detrick Campus.
- The Medical Bio-Defense Research Laboratory would be located in the “RDT&E” area within the National Interagency Biodefense Campus in Area A.
- The Armed Forces Reserve Center would be located in the “Training” area in Area B. It is located adjacent to the site of the existing reserve center, thus continuing the current land use.

While variations of the present proposal for siting of facilities could be developed, the locations reflected in the Realignment (Preferred) Alternative reflect a sound comprehensive approach, already taken in developing the comprehensive Installation Master Plan (USAG, 2003) that limits environmental impacts while assuring efficient support to mission goals and objectives. Alternative siting of facilities would neither reduce impacts nor provide more efficient or effective support to mission goals and objectives. Therefore, alternative siting of facilities is not further evaluated in this EA.

3.4 ADDITIONAL ALTERNATIVES

3.4.1 Alternatives to the Proposed Actions

Existing Facilities at Fort Detrick - Construction of new facilities is driven by the need to ensure adequate space is available for mission requirements. Fort Detrick's existing 1.9 million SF of space is, with very minor exception, fully utilized for current mission requirements. Evaluation of all facilities at Fort Detrick shows a substantial shortfall in built space to accommodate the additional personnel and their equipment. Overall, however, the post requires approximately 183,100 SF of additional space to meet the needs of the realigned units. The units and functions being evaluated under this EA require a substantial amount of additional and adequate space for new missions that could not be provided efficiently by existing facilities. However, as stated in Section 2.2.3, there is uncertainty regarding the potential construction of the new Medical Bio- Defense Research Laboratory. In the event that this new laboratory is not constructed, the organizations that may have occupied this facility may be located in the remaining space of existing USAMRIID facilities. This EA assumes construction of the new laboratory. If a determination is made that the new laboratory will not be constructed, subsequent NEPA documents that tier off of this EA will be prepared in the form of an EA or a Record of Environmental Consideration.

Demolition of inadequate buildings to provide space is being evaluated in this EA, where appropriate. Use of existing built space is not considered feasible, with the exception of the Medical Bio-Defense Research Laboratory, and is not further evaluated in this EA.

⁵ Installation Master Plan for Fort Detrick recognizes the following 16 land use categories: Administrative, Agrifield, Community Facility, Family Housing, Grazing Area, Landfill, Maintenance, Medical and Dental, National Cancer Institute, Open Buffer Zone, Operations, RDT&E (Research, Developmental, Testing & Evaluation), Recreation, Training, Troop Housing, and Utility.

Lease or Contract - Use of off-post leased space to meet Fort Detrick'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. Use of 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. It is directly contrary to the purpose for the BRAC actions at Fort Detrick, which are consolidating like functions for mission effectiveness. In addition, this option is not feasible since the BRAC action requires that the new facilities be located on Fort Detrick property. For these reasons, use of leased space is not feasible and is not further evaluated in this EA.

New Construction Alternate Locations - Fort Detrick has identified 3 facilities projects required to support the proposed action. All the projects involve new construction that would provide approximately 183,100 SF of built space.

Proposed areas for new construction conform to the Installation Master Plan for Fort Detrick, as detailed in Section 3.3. The proposed locations adhere to the general and specific siting criteria set forth in Section 3.1. Precise footprints have not been specified; therefore, the general areas proposed for each project will be assessed. While variations of the present proposal for siting of facilities might be possible, the general locations shown in Figure 2-1 must be coordinated with other development in the same area and needed adjacencies for mission efficiency. Their placement reflects a sound, compatible set of solutions dictated by current land uses and/or necessary adjacencies with other facilities. Alternative siting schemes would produce different lay-outs but would neither reduce impacts nor provide more efficient or effective support to mission goals and objectives. Accordingly, additional alternatives for siting of facilities requirements are not evaluated in detail in this EA.

Schedule - The schedule for implementation of the proposed action must balance facilities construction timeframes and planned arrival dates of inbound units and stand-up dates of newly-established units, all within the 6-year limitation of the BRAC law (see Section 2.2.4). Realignment earlier than that shown in the schedule in Section 2.2.4 is not feasible in light of the time required to build facilities. Shifting of schedules to accomplish realignment at a later date would unnecessarily delay realization of benefits to be gained. Since earlier implementation is not possible, and since delay is not permitted by the BRAC law, alternative schedules are not further evaluated in this EA.

4.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

4.1 INTRODUCTION

This section describes the current environmental conditions of the areas that would be affected should the proposed action be implemented. It also includes analysis of potential effects arising from the implementation of the proposed action. Descriptions of environmental conditions represent baseline conditions, or the “as is” or “before the action” conditions at the installation. Existing conditions at Fort Detrick in 2006 reflect the operating status of the Installation prior to implementation of the BRAC Commission’s decision/recommendations. The baseline description facilitates subsequent evaluation of changes in conditions that would result from realignment. The environmental consequences section evaluates the potential effects arising from the implementation of the proposed action. Potential impacts of the Proposed Action Alternative are discussed in terms of short- and long-term impacts, direct and indirect. Significance of an impact is determined by evaluating both the context and intensity of an action to the resource. Impact thresholds for each resource are established in the environmental consequences section for that resource. Direct, indirect, and cumulative effects of the proposed action are addressed, as well as the anticipated effects of mitigation.

Baseline environmental conditions are presented first for each environmental resource or condition, followed immediately thereafter by evaluation of potential effects of the No Action and the Proposed Action, or Realignment (Preferred) Alternative.

4.2 LAND USE

4.2.1 Affected Environment

4.2.1.1 Regional Geographic Setting and Location

Fort Detrick is situated in central Maryland approximately 45 miles west of Baltimore and 45 miles northwest of Washington, D.C. Interstate 70 (I-70), Interstate 270 (I-270) and U.S. Route 15 are the three major routes that provide access to the Installation. Fort Detrick is located in the northwest portion of the City of Frederick, Frederick County, a fast growing formerly rural county at the periphery of the Washington-Baltimore Consolidated Statistical Area. The City of Frederick is the largest city in Frederick County and the second largest city in population and land area in Maryland, and serves as the county seat. The immediate area surrounding Fort Detrick is primarily urban. As the largest county in Maryland, Frederick County covers 665 square miles (USAG, 2003).

Fort Detrick encompasses 1,212 acres divided into four separate parcels of land identified as Areas A, B, and C (two parcels), which include 69 acres in Area A owned and operated by the National Cancer Institute (NCI) – Frederick (USAG, 2003). For the purposes of this EA, the Installation is defined as 1,143 acres of Army-owned land in Areas A, B, and C at Fort Detrick, while Fort Detrick is defined as the entire 1,212 acres.

Climate – The temperate continental climate of Frederick County has four distinct seasons with generally short, warm summers and winters that are mild with occasional cold periods. Local weather patterns are influenced by the Catoctin Mountains, a north-south trending mountain range located approximately 5 miles west of Fort Detrick (USAG, 1998a). The average annual temperature is 54 degrees Fahrenheit (°F); however, historical extreme temperatures have ranged from -12 °F in winter to 109 °F in summer. The average annual precipitation for Frederick is 40.8 inches. The average annual snowfall for Frederick County is 26.4 inches (USAG, 2003).

4.2.1.2 Installation Land

Rapid expansion of the Installation during and following WWII strongly influenced existing land use. Facilities constructed during this time were situated based on need, economics, and expediency rather than from an organized land use development plan. Many of the temporary structures constructed during this time period still exist. Since WWII, land uses have typically been determined according to use, compatibility, and utility support. Recent trends in upgrading facilities at Fort Detrick include abandoning and demolishing temporary WWII structures (USAG, 2003).

Area A in Fort Detrick is the most intensively developed section of Fort Detrick. Facilities located in Area A include four mission areas: the Military Community (housing, recreation, conference center), Strategic Communications (operations), Research (National Interagency Biodefense Campus and the Biotechnology Campus), and the Joint Medical Logistics Complex. Non-developed areas in Area A are predominantly occupied by open lawns and small stands of trees. Area B consists of approximately 399 acres that are used for agricultural research, afforestation⁶ planting, animal grazing, animal maintenance, training of soldiers in conjunction with the operation of PFC Flair Armed Forces Reserve Center, antenna facilities, and a sanitary landfill. Area C consists of two parcels along the west bank of the Monocacy River east of Area A that are used exclusively for industrial operations. One 7-acre parcel of Area C contains the water treatment plant (WTP) that serves the Fort Detrick population. The second parcel is a 9-acre tract of land one-quarter mile downstream from the WTP containing the Fort Detrick wastewater treatment plant (WWTP) (USAG, 1998a). Only Areas A and B are affected by proposed projects within the scope of this BRAC EA.

Existing land use at Fort Detrick can be categorized into 16 different land use types (USAG, 2003).

- Administrative
- Agrifield
- Community Facility
- Family Housing
- Grazing Area
- Landfill
- Maintenance
- Medical and Dental
- National Cancer Institute (NCI) - Frederick
- Open Buffer Zone
- Operations
- Research, Development, Test, and Evaluation (RDT&E)
- Recreation
- Training
- Troop Housing
- Utility

The proposed Joint Bio-Medical RDA Management Center would be located in the “Administrative” area, adjacent to Building 810 in Area A, and located strategically adjacent to the primary administrative functions of the Headquarters, US Army Medical Research and Materiel Command, US Army Medical Research Acquisition Activity, and the Joint Medical Logistics Center. The proposed Medical Bio-Defense Research Laboratory would be located in the “RDT&E” area within the National Interagency Biodefense Campus in Area A, and located strategically adjacent to USAMRIID on the National Interagency Biodefense Campus. The proposed Armed Forces Reserve Center would be located in the “Training” area in Area B, adjacent to the site of the existing PFC Flair Memorial AFRC.

4.2.1.3 Surrounding Land

Frederick County - As Federal government property, Fort Detrick is not subject to local zoning laws. Although land use at Fort Detrick is not regulated by the City of Frederick or Frederick County, local land

⁶ Afforestation is the establishment of a forest in an area on which forest cover has been absent for a long period of time or the planting of open areas that are not presently in forest cover.

use patterns and future plans for local development are potential considerations. The compatibility of land uses on the Installation and those of the city and county is an important consideration for future development of the Fort Detrick/Frederick area (USAG, 2003).

Frederick County is divided into eight planning regions that comprise geographically distinct land areas within the county. The City of Frederick and Fort Detrick are located in the Frederick region, which is bordered by the Monocacy River to the east, the Catoctin Mountains to the west, Little Hunting Creek to the north, and Ballenger Creek to the south. Fort Detrick is described in the *Frederick Region Plan*, which provides recommendations for land use through the year 2045 (USAG, 2003).

According to the *Frederick Region Plan*, Fort Detrick is classified as Institutional. This designation includes a diverse array of public and quasi-public land uses. Unlike other land use designations, the county does not have a separate institutional zoning district. Therefore, the underlying zoning for Institutional areas is based on the nature and location of the area (USAG, 2003).

City of Frederick - The City of Frederick covers 20.8 square miles. According to the 2004 *City of Frederick Comprehensive Plan*, land use within the city is distributed as follows: 29 percent is residential, 21 percent is institutional, 8 percent is commercial, 5 percent is industrial, 25 percent is vacant, and the remaining 11 percent includes mixed use, conservation, recreation and rights of way (City of Frederick, 2004).

Fort Detrick is located approximately 1.5 miles northwest of downtown Frederick and occupies the northwest quadrant of the City. The 1995 *City of Frederick Comprehensive Plan* characterized Fort Detrick as Institutional although the Installation has many attributes of an industrial/office research activity area (USAG, 2003).

Land uses in the areas surrounding Fort Detrick have not changed significantly during the past several years. Areas adjacent to the northern, southern, and eastern borders of Area A are predominantly classified as Low Density Residential with a few small sections of High Density Residential. Frederick Community College is adjacent to the northeast corner of Area A and is designated as Institutional. Areas along Carroll Creek, which border Area B to the south and east, are designated for Conservation. Areas to the north and west of Area B are predominately designated as Low Density Residential areas. In addition to Conservation areas, the land between Areas A and B include areas designated as Office/Neighborhood Commercial, Institutional, Limited Industrial, General Commercial, and Residential (low, medium, and high densities). City and county roads border the Installation in several areas creating a physical barrier between land uses on the Installation and those adjacent off-site areas (USAG, 2003).

4.2.1.4 Current and Future Development in the Region of Influence

Frederick County has traditionally been defined as the Region of Influence (ROI) for Fort Detrick; the County is also defined as the ROI for this study. The ROI is described in greater detail in Section 4.10, Socioeconomics.

4.2.2 Environmental Consequences

Impacts to land use were determined by the following criteria:

No Effect – No impacts to surrounding land use from the proposed project.

Not Significant Effect – The impact to land use would be measurable or perceptible, but would be limited to a relatively small change in land use that is still consistent with the surrounding land uses.

Significant Effect – The impact to land use would be substantial. Surrounding land uses are expected to substantially change in the short- and long-term. The action would not be consistent with the surrounding land use.

4.2.2.1 No Action Alternative

No direct or indirect effect would be expected. Implementation of the No Action Alternative would not alter the existing land use at the sites being considered under the proposed action.

4.2.2.2 Realignment (Preferred) Alternative

Regional Geographic Setting and Location - No direct or indirect effects would be expected. All three proposed projects would occur within the Fort Detrick boundary.

Installation Land – Effects would be not significant. All three proposed projects would occur within the Fort Detrick boundary. Siting of the new construction is consistent with the *Installation Master Plan for Fort Detrick, Maryland*. Siting of the proposed facilities locates facilities in a way to support mission goals and objectives and would enhance the real property value of the Installation.

Surrounding Land – No direct or indirect effect would be expected. All proposed projects would be located within the Fort Detrick boundary. None of the projects would interfere with public surrounding lands.

Current and Future Development in the Region of Influence – Effects would be not significant. All projects would be located within the Fort Detrick boundary. Development impacts associated with project construction and increased personnel within the ROI are discussed in Section 4.10. Socioeconomics. In general, short-term construction requirements and an increase in personnel living off-post would add financial capital to the local and regional economy and create an additional demand for housing and businesses that provide goods and services.

4.3 AESTHETICS AND VISUAL RESOURCES

4.3.1 Affected Environment

Fort Detrick is located in western Maryland in semi-rural Frederick County. The predominant adjacent land use is low density residential, although there are a few small sections of high density residential. There is also an area along Carroll Creek to the south and east that is designated as a conservation area. Frederick Community College is located along the north border of the Installation, along Opossumtown Pike. The Installation occupies 1,143 acres: the Main Post (Area A) consists of 728 acres, the sanitary landfill (Area B) consists of 399 acres, and the Wastewater Treatment Plant and Water Treatment Plant (Area C) consists of 16 acres. Area A is characterized by dense low-rise development, while Area B is characterized primarily by open spaces, such as the Antennae Farm, USAMRIID Animal Farm, Air Force Medical Evaluation Support Activity (AFMESA), and several active and inactive waste disposal sites. There are no BRAC projects located in Area C. Areas A, B, & C are delineated in the *Revised Area B Master Plan Environmental Assessment* (USAG, 2004).

The building styles at Fort Detrick depend on the particular age and function within the Installation. The buildings on the Main Post range from one- and two-story brick structures to single-story wood-sided structures to prefabricated metal sheds. There are relatively few buildings in Area B and most are single-story structures with flat roofs or outlying metal shed structures.

The three project sites are located in different areas of the Installation: the new Medical Bio-Defense Laboratory and Joint Bio-Medical RDA Management Center of Excellence are located in the Area A while the Joint Reserve Center will be located in Area B.

4.3.1.1 Site Character

Medical Bio-Defense Laboratory – This project site is located in the NIBC in the center of the Main Post at the terminus of Sultan Drive. Currently, there are two existing administrative buildings on the site. Building 1432, built in 1994, is an approximately 12,480 SF steel frame administrative building for the U.S. Army Medical Materiel Agency (USAMMA)/U.S. Air Force Medical Logistics Office (AFMLO). Building 1423, built in 1987, is an approximately 41,812 SF single-story brown brick administrative building for the USAMMA/AFMLO/ Joint Readiness Clinical Advisory Board (JRCAB).

According to the Environmental Assessment for the Fort Detrick Installation Master Plan (USAG, 2003), this project site is adjacent to two clusters of buildings that have been determined as historically significant. Buildings 1412, 1414, and 1415 are located to the immediate southwest of the project area, south of Sultan Road. Due to their role in supporting biological warfare research during the Cold War, these buildings have been deemed eligible for listing on the National Register. Buildings 1301, 1302, 1304-06 are located approximately 200 feet to the north in the USDA part of Area A. Due to their function in supporting research and testing by the Crops Research Division in the 1950s and 1960s, these buildings have also been determined to be eligible for listing on the National Register.

Joint Bio-Medical RDA Management Center of Excellence – This project area is located in the Command and Control section of the Main Post along the southern edge of the Main Post's boundary along Porter Street. The site is bounded by Ditto Avenue, Chandler Street, Schreider Street, and Doughten Drive. The Blue Grey Parade Ground Athletic Field is located to the south of the project site.

Currently, there are several buildings adjacent to the project site. The first structure (Building 810) is the Headquarters U.S. Army Medical Research and Materiel Command (USAMRMC) and U.S. Army Garrison (USAG). It is a multi-story red brick building with a metal gable roof. Adjacent buildings 817, 818, & 820 are single story wood frame structures occupied by the U.S. Army Medical Research Acquisition Activity (USAMRAA). Building 568 and the Million Liter Test Sphere (which is on the National Register of Historic Places) are also adjacent to the project site. The line of sight between the proposed new building and the Test Sphere will be completely obscured by the presence of Bldg 568.

Joint Reserve Center – The project site is situated between a Training Area to the north with the US Army Reserve Training Center and Flair Reserve Center Building (1240), an open buffer zone to the south, and the agricultural fields to the west. This large building is a single story brick structure with a flat roof. There are also several adjacent single story metal shed or brick high bay garage structures (1241, 1246, and 1247) that surround the adjacent parking lot.

4.3.1.2 Viewsheds

Medical Bio-Defense Laboratory – The existing site allows for some visual access from the existing project site to Buildings 1301, 1302, and 1304-06 to the north and Buildings 1412, 1414, and 1415 to the southwest across Sultan Road.

Joint Bio-Medical RDA Management Center of Excellence – The existing site allows for unobstructed views of the Blue Grey Parade Ground Athletic Field from buildings 810, 817, 818, and 820.

Joint Reserve Center – Currently, the US Army Reserve Training Center and Flair Reserve Center Building have unobstructed views across a parking lot towards the open buffer zone to the south and the agricultural fields to the west.

4.3.2 Environmental Consequences

In order to evaluate the alternatives, the following criteria have been established to define the level of impacts to visual resources:

No Effect – No impacts to the viewshed of any historic resources and/or the aesthetic character of the Installation from the proposed project.

Not Significant Effect – No permanent direct or indirect impacts to the viewsheds of any historic resources and/or the aesthetic character of the Installation from the proposed project would be expected. Any temporary visual disturbances that alter the character of the viewshed would be returned to its original state following the action.

Significant Effect – Direct or indirect impacts to the viewsheds of any historic resources of the Installation are anticipated, and these effects would be greater in number, extent, and/or duration than non-significant impacts. Significant impacts could include disturbances (such as the long-term alteration of the viewshed that would require mitigation) that could alter the character of the viewshed of a historical resource, and the viewshed might not resume its original state following the action.

4.3.2.1 No Action Alternative

Under the No Action Alternative, no construction would occur within the three proposed project areas. As a result, there would be no beneficial or adverse impacts to the viewsheds encompassing these areas.

4.3.2.2 Realignment (Preferred) Alternative

The proposed actions would be concentrated in three areas within the Fort Detrick.

Medical Bio-Defense Laboratory – Adverse visual/aesthetic impacts on the project area would not be significant. The new laboratory would contain approximately 84,310 SF and would likely be a multi-story structure. It would be visible from Sultan Drive. Although the new laboratory will be in the viewshed of the historic USDA buildings, as long as the exterior design of the building is consistent with the aesthetic quality of the surrounding buildings, there will be no adverse effects. In addition, buildings 1412, 1414 and 1415 will be demolished for the construction of the NIBC (see Section 4.9.1.2).

Joint Bio-Medical RDA Management Center of Excellence – Adverse visual/aesthetic impacts on the project area would not be significant. The new administrative building would be a multi-story structure containing approximately 22,000 SF. The location would likely be at the northeast corner of Doughten Street and Schreider Street and would be consistent with the aesthetic quality of Building 810.

Joint Reserve Center – Adverse visual/aesthetic impacts on the project area would not be significant. The new reserve center would contain approximately 58,647 SF and would likely be a multi-story structure. The exterior design of the building would be consistent with the aesthetic quality of the area in which it is placed.

4.4 AIR QUALITY

The EPA defines ambient air in 40 CFR Part 50 as “that portion of the atmosphere, external to buildings, to which the general public has access.” In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 Clean Air Act Amendments (CAAA), the EPA has promulgated ambient air quality standards and regulations. The National Ambient Air Quality Standards (NAAQS) were enacted for the protection of the public health and welfare, allowing for an adequate margin of safety. To date, the EPA has issued

NAAQS for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO₂), particles with a diameter less than or equal to a nominal 10 micrometers (PM₁₀), particles with a diameter less than or equal to a nominal 2.5 micrometers (PM_{2.5}), ozone (O₃), nitrogen dioxide (NO₂), and lead (Pb). Areas that do not meet NAAQS are called non-attainment areas.

4.4.1 Affected Environment

The EPA has classified the Metropolitan Washington, DC area, including the area of the proposed action (Frederick County, Maryland), as in non-attainment for the criteria pollutant PM_{2.5}, and in moderate non-attainment for the criteria pollutant ozone. The NAAQS for both pollutants are presented in Table 4-1.

To regulate the emission levels resulting from a project, Federal actions located in non-attainment areas are required to demonstrate compliance with the general conformity guidelines established in 40 CFR Part 93 *Determining Conformity of Federal Actions to State or Federal Implementation Plans* (the Rule). The Proposed Action is located within an area designated by the EPA as moderate ozone non-attainment area and a PM_{2.5} non-attainment area; therefore, a General Conformity Rule applicability analysis is warranted.

Table 4-1. Ambient Air Quality Standards for Ozone

Pollutant	Federal Standard	Maryland Standard
Ozone (O ₃) ¹ 8-Hour Average	0.08 ppm	0.08 ppm
Particulate Matter (PM _{2.5}) [*] 24-Hour Average	65 µg/m ³	65 µg/m ³
Annual Geometric Mean	15 µg/m ³	15 µg/m ³

* Federal primary and secondary standards for this pollutant are identical.
(Sources: USEPA, 2006a; MDE 2002)

Section 93.153 of the Rule sets the applicability requirements for projects subject to the Rule through the establishment of *de minimis* levels for annual criteria pollutant emissions. These *de minimis* levels are set according to criteria pollutant non-attainment area designations. Projects below the *de minimis* levels are not subject to the Rule. Those at or above the levels are required to perform a conformity analysis as established in the Rule. The *de minimis* levels apply to direct and indirect sources of emissions that can occur during the construction and operational phases of the action.

To determine the applicability of the Rule to this action, emissions were estimated for the ozone precursor pollutants NO_x and volatile organic compounds (VOCs), and PM_{2.5}. Annual emissions for these compounds were estimated for each of the project actions (construction and operation) to determine if they would be below or above the *de minimis* levels established in the Rule. The *de minimis* level for moderate ozone areas is 100 tons per year (TPY) for NO_x and 100 TPY for VOCs. Sources of NO_x and VOCs associated with the proposed project include emissions from construction equipment, construction crew commuting vehicles, painting of interior building surfaces and parking spaces (VOCs only), stationary heating units (boilers and water heaters), and daily commuter traffic. Under the Proposed Action, there would be an increase in employment by 225 employees and therefore an increase in daily commuter traffic.

The rules governing an applicability analysis for PM_{2.5} and *de minimis* levels are in the process of promulgation by EPA. During this interim period, EPA believes it is appropriate for Federal agencies to use the PM₁₀ *de minimis* level of 100 TPY as a surrogate for PM_{2.5} *de minimis* levels in their General Conformity applicability analysis. Since PM_{2.5} emissions are a subset of PM₁₀ emissions, PM_{2.5} emissions

will always be less than PM₁₀. Under EPA’s guidance, if an action’s direct or indirect emissions of PM_{2.5} exceed the 100 TPY threshold, a General Conformity determination would be required.

In addition to evaluation of air emissions against *de minimis* levels, emissions are also evaluated for regional significance. A Federal action that does not exceed the threshold emission rates of criteria pollutants may still be subject to a general conformity determination if the direct and indirect emissions from the action exceed ten percent of the total emissions inventory for a particular criteria pollutant in a non-attainment or maintenance area. If the emissions exceed this ten percent threshold, the Federal action is considered to be a “regionally significant” activity, and thus, the general conformity rules apply.

4.4.1.1 Ambient Air Quality Conditions

Ambient air quality is monitored in Frederick County by one monitoring station for ozone that has been in operation since 1995. This monitor is located at the Frederick Municipal Airport in Frederick, Maryland. This monitor exceeded the standard for ozone an average of ten times each year from 1998 through 2002, with a high of 19 days above the standard in 1999. This station exceeded the standard for ozone 3 times in 2003 and only once in 2004 and 2005. Table 4-2 shows the existing 8-hour ozone monitoring data within Frederick County, Maryland.

Table 4-2. Existing Eight-Hour Ozone Monitoring Data within Frederick County

Monitoring Station	Year				
	2001	2002	2003	2004	2005
#240210037 – Frederick Municipal Airport	0.104/0.095	0.098/0.095	0.117/0.114	0.095/0.084	0.086/0.084

Values are in parts per million (ppm); 1st/2nd highest data
 NAAQS: Eight-hour average = 0.08 ppm (0.085 is an exceedance)
 (Source: USEPA, 2006b)

4.4.1.2 Meteorology/Climate

Temperature is a parameter used in calculations of emissions for air quality applicability. Climate at Fort Detrick can be characterized as a humid, continental climate with an average high temperature of 86°F (30°C) in July and an average low temperature of 20°F (-7°C) in January. Summers are warm with periods of high humidity and winters are cold, with periods of snow cover (World Climate, 2005).

4.4.1.3 Air Pollutant Emissions at Installation

Fort Detrick has a Title V Part 70 Operating Permit, for which all of its existing stationary sources of air pollution, such as boilers, incinerators, and emergency diesel generators, are considered as a single stationary source, since they are in a contiguous area, and under common control. These facilities also comprise the primary sources of NO_x emissions at Fort Detrick. The proposed action will contribute to future incinerator waste as well as potentially increasing boiler emissions. Table 4.3 shows actual emissions of criteria pollutants from stationary sources at Fort Detrick for 2005.

Table 4-3. Actual Criteria Air Pollutant Emissions (TPY) at Fort Detrick in 2005

Pollutant	Boilers (Heaters)	Incinerators	Diesel Generators	Tanks	Surface Coating Operations	Total*
CO	17.20	1.84	1.07	0	0	20.12
NO _x	104.47	6.83	4.03	0	0	115.37
PM ₁₀	56.29	6.55	0.08	0	0	62.93
SO _x	185.61	3.74	0.64	0	0	190.02
VOCs	1.04	0.20	0.11	2.29	0	3.64

*Totals may not add up due to rounding
(Source: USAG, 2006b)

Fort Detrick has installed various air pollution mitigation measures such as stack scrubbers, and is currently reviewing further means of reducing air pollution from stationary sources.

4.4.1.4 Regional Air Pollutant Emissions Summary

The EPA calculates the Air Quality Index (AQI) for five major air pollutants regulated by the Clean Air Act: ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. The Metropolitan Washington Council of Governments (MWCOCG) collects data daily to determine air quality for the region, and releases it in the form of the AQI, which runs from zero to 300, with zero being no air pollution, to 300 representing severely unhealthy air pollution levels. An AQI value between 101 and 150 indicates that air quality is unhealthy for sensitive groups, who may be subject to negative health effects. Sensitive groups might include those with lung or heart disease, who can incur adverse effects at lower levels of ground level ozone and particulate matter than the general public. An AQI value between 151 and 200 is considered to be unhealthy, and could result in negative health effects for the general public, with more severe effects possible for those in sensitive groups. AQI values above 200 are considered to be very unhealthy (Air Watch, 2006).

Data have been collected on violations of both the 8-hour and 1-hour ozone health standards; however, since the 1-hour standard has been replaced with the 8-hour standard, only days in violation of the 8-hour standard will be discussed. In addition, data on PM₁₀ were not available before 2004. In 2001, the Metropolitan Washington area experienced 24 days that violated the 8-hour ozone health standard, three of which were considered “Code Red”, or in the unhealthy category. In 2002, the area experienced 38 days that violated the 8-hour ozone health standard, nine of which were considered Code Red, and two of which were considered Code Purple, or very unhealthy. In 2003, the region had seven days that violated the 8-hour ozone standard for health, of which one was Code Red, and two were Code Purple. In 2004, the region had seven days that violated the 8-hour ozone health standard, two of which were Code Red, and one day which violated the standard for particulate matter. Finally, in 2005, the region had 19 days that violated the 8-hour ozone health standard and two that violated the standard for particulate matter (MWCOCG 2001; 2002; 2003; 2004a; and 2005b). The trend in air quality appears to be inconsistent in the region.

4.4.2 Environmental Consequences

In order to evaluate the alternatives, the following criteria have been established to define the level of impacts to air quality:

No Effect – No impacts to air quality from the proposed project

Not Significant Effect – Impacts to air quality do not exceed the *de minimis* levels for a pollutant or exceed ten percent of the daily limits laid out in the Plan to Improve Air Quality In The

Washington, DC-MD-VA Region: State Implementation Plan (SIP), “Severe Area SIP” Demonstrating Rate of Progress for 2002 and 2005; Revision to 1990 Base Year Emissions; and Severe Area Attainment Demonstration for the Washington DC-MD-VA Nonattainment Area

Significant Effect – In order for the impact on air quality from the 2005 BRAC actions at Fort Detrick to be significant, the construction and operational emissions would have to exceed the *de minimis* levels for a pollutant or exceed ten percent of the daily limits laid out in the Plan to Improve Air Quality In The Washington, DC-MD-VA Region: State Implementation Plan (SIP), “Severe Area SIP” Demonstrating Rate of Progress for 2002 and 2005; Revision to 1990 Base Year Emissions; and Severe Area Attainment Demonstration for the Washington DC-MD-VA Nonattainment Area (MWCOC, 2004).

4.4.2.1 No Action Alternative

No direct or indirect effects would be expected. Implementation of the No Action Alternative would not affect current air quality conditions.

4.4.2.2 Realignment (Preferred) Alternative

Direct effects would not be significant. A project construction and operations-related General Conformity Applicability Analysis was performed for the proposed construction and demolition activities. The General Conformity applicability analysis estimated the level of potential air emissions (PM₁₀, VOCs and NO_x) for the proposed action. Appendix B contains a detailed description of the assumptions and methodology used to estimate potential emissions for the construction phases of the proposed action for the proposed BRAC related construction at Fort Detrick.

Table 4-4 summarizes the total emissions associated with the construction and operation phases of the proposed construction at Fort Detrick. Construction-related emissions would be temporary and only occur during the 40-month development period for all buildings; however, a conservative approach was initially employed in the applicability analysis to assure that construction scheduling would not result in more severe results than predicted. The analysis first assumed that the construction emissions for all three buildings would occur concurrently over the same one-year period. These results were further added to a year of operations, bounding the potential emissions that might result for any overlap between construction and operations emissions.

Table 4-4. Summary of Annual Emissions – Proposed Action

Activity	Construction Emissions (TPY)			Operation Emissions (TPY)			Combined Emissions (TPY)		
	NO _x	VOCs	PM ₁₀	NO _x	VOCs	PM ₁₀	NO _x	VOCs	PM ₁₀
Heavy Equipment (building/parking)	10.52	1.42	1.77				10.52	1.42	1.77
Construction Crew Commuting Vehicles*	0.70	0.76	0.01				0.70	0.76	0.01
Painting	NA	1.22	NA				NA	1.22	NA
Stationary Heating Unit (boiler and water heater)				0.575	0.028	0.159	0.575	0.028	0.159
Incinerator Emissions				0.121	0.003	0.141	0.121	0.003	0.141
Daily Commuter Traffic				1.76	1.90	0.03	1.76	1.90	0.03
Totals							13.69	5.33	2.12

Note: Construction Crew Commuting Vehicles and Daily Commuter Traffic represent only the emissions increase associated with the implementation of the Proposed Action

Table 4-4 shows that the emissions associated with constructing and operating the three new buildings at Fort Detrick, when compared to the *de minimis* values for this ozone and PM non-attainment area of 100 TPY for VOCs, NO_x and PM₁₀, fall well below the *de minimis* values even under the initial conservative assumptions that were employed. As a result, further analysis employing less severe assumptions was not needed nor performed. The Proposed Action is not subject to the General Conformity Rule requirements.

Air emissions were also evaluated to determine regional significance. The *Plan to Improve Air Quality In The Washington, DC-MD-VA Region: State Implementation Plan (SIP), "Severe Area SIP" Demonstrating Rate of Progress for 2002 and 2005; Revision to 1990 Base Year Emissions; and Severe Area Attainment Demonstration for the Washington DC-MD-VA Nonattainment Area* (MWCOG, 2004b) sets forth daily target levels of 339.3 tons per day of VOCs and 539.0 tons per day of NO_x for the Washington Metropolitan ozone non-attainment region. Although the 8-hour ozone standard has been approved for use instead of the 1-hour ozone standard, the 8-hour SIP has not yet been finalized. Therefore, pursuant to EPA regulations and in accordance with the Metropolitan Washington Air Quality Committee, the 1-hour SIP remains valid as a basis for comparison of emissions (MWCOG, 2005b). The increase in annual emissions from the construction and demolition activities would not make up ten percent or more of the available regional emission inventory for VOCs or NO_x. Air quality impacts are therefore not expected to be significant.

4.5 NOISE

Noise is unwanted sound. Sound is all around us; sound becomes noise when it interferes with normal activities such as speech, concentration, or sleep. Noise associated with day-to-day operations is of concern in communities surrounding many military installations, and noise is also often of concern on installations.

4.5.1 Affected Environment

Fort Detrick is considered a relatively quiet installation with no significant sources of noise. The post does not have an airfield, heavy industrial operations, or heavy weapons ranges. Minor sources of noise include an active helicopter pad, the boiler plant (Building 190), the carpenter shop (Building 199), the generators in Buildings 1673 and 1677, vehicular traffic, military training unit physical training (PT) activities in the morning (usually between 0630-0800 hours), and the bugle and cannon exercised weekdays at 1700 hours (USAG, 2006b). The helipad, located in Area A southwest of Building 1520, is used infrequently for emergency air evacuation of medical patients and for “very important person” visitors (USAG, 2006b). Noise is also generated by vehicles and current construction activities at Fort Detrick.

The State of Maryland (COMAR 26.02.03.02 and 26.02.03.03) and the City of Frederick (Ordinance G-02-9) have established environmental noise standards that set maximum allowable noise levels for receivers located in industrial, commercial, and residential districts. The regulatory limits for noise levels for receivers in residential areas are 65 decibels (Type A; dBA) during daytime hours (0700-2200 hours) and 55 dBA at night (i.e., 2200-0700 hours.). The regulatory limit for noise levels for receivers in industrial areas is 75 dBA anytime. Noise levels exceeding maximum standards are not permitted beyond the property line of the source (USAG, 2006b). Based on sound-level measurements performed on the Installation, the noise generated from Fort Detrick current operations is compatible with surrounding residential use (USAG, 2006b).

4.5.1.1 Construction and Demolition

The State of Maryland (COMAR 26.02.03.03 A(2)(a)) and the City of Frederick (Ordinance G-02-9) state that noise levels from construction or demolition activities must not exceed 90 dBA at the boundaries of the construction/demolition site during daytime hours (i.e., 0700-2200 hours) (USAG, 2006b). Fort Detrick has made this requirement more stringent and established that noise levels emanating from construction or demolition activities must not exceed 90 dBA at the NIBC property line during 0700-1630 hours⁷ (USAG, 2006b). Construction and demolition contractors would be required to adhere to these requirements. Fort Detrick has developed a bulletin titled *General Noise Requirements for the National Interagency Biodefense Campus (NIBC)*, which they provide to contractors prior to site activity (USAG, 2006b).

Additionally, construction activities must not permit prominent discrete tones and periodic noises (e.g., dump truck tailgate banging) that exceed a level that is 5 dBA lower than the noise level standard established in these requirements. Blasting operations associated with construction and demolition activities are exempt from COMAR and the City of Frederick regulatory requirements for noise during

⁷ Fort Detrick voluntarily adheres and surpasses state and local requirements related to noise during construction and demolition. According to Fort Detrick personnel, contractors do not have a problem meeting these requirements, for they also construct projects throughout Frederick and the State of Maryland where they must adhere to the requirements.

daytime hours. Any construction activities conducted outside the hours specified in this requirement must be pre-approved through the Installation Command. Construction or demolition activities conducted during the weekend must also be pre-approved by Installation Command (USAG, 2006b).

Noise can also affect the health of construction/demolition workers. OSHA standards for occupational noise exposure associated with construction (29 CFR 1926.52) would be applicable.

4.5.1.2 Facility Operations

The Medical Bio-Defense Research Laboratory would be located adjacent to the USAMRIID on the NIBC and over 1,000 feet from the Fort Detrick fence line. The NIBC is classified as RDT&E (USAG, 2003), and the Medical Bio-Defense Research Laboratory would house laboratory and storage space, vivarium and vivarium support space, and administrative space.

The Joint Bio-Medical RDA Management Center of Excellence would be located adjacent to the primary administrative functions of the Headquarters, US Army Medical Research and Materiel Command, US Army Medical Research Acquisition Activity, and the Joint Medical Logistics Center.

As part of the BRAC-05 recommendations, a Joint Reserve Center would be constructed to replace the PFC Flair Memorial AFRC located in Area B of Fort Detrick. Facilities would include an AFRC, OMS, and unit storage building. The approved conceptual site is in accordance with the Installation Master Plan and located near the existing AFRC in Area B of Fort Detrick, which is an area designated as training.

During a power outage, emergency generators could run for hours⁸. Regulatory noise standards would not apply during an emergency situation (COMAR 26.02.03.03 B).

4.5.2 Environmental Consequences

The following criteria have been developed to assess noise impacts:

No Effect – Natural sounds would prevail; noise generated by construction and operation of the facility would be infrequent or absent, mostly immeasurable.

Not Significant Effect – Noise levels would exceed natural sounds, as described under no effect, but would not exceed applicable noise standards.

Significant Effect – Noise levels would exceed applicable noise standards on a temporary, short-term, or permanent basis or for a prolonged period of time.

4.5.2.1 No Action Alternative

No effects would be expected. Implementation of the No Action Alternative would not alter the existing noise at the sites being considered under the proposed action, nor at any additional locations.

4.5.2.2 Realignment (Preferred) Alternative

Noise from Construction/Demolition - Effects would not be significant. Short-term direct effects would be expected during the construction of each of the proposed projects. Noise impacts during the

⁸ The DD Form 1391s for the proposed facilities do not indicate if generators are to be included. Given that the facilities would house vivarium and refrigeration units, generators could be included. A decision to include generators would likely be made during a future DD Form 1391 planning charrette.

construction and demolition⁹ phases would be mitigated by confining construction activities to normal working hours and employing noise-controlled construction equipment to the greatest extent possible. Noise levels and the time of day they are generated during construction and demolition would be required to adhere to State of Maryland and City of Frederick requirements and the additional Fort Detrick requirements as outlined in the bulletin titled General Noise Requirements for the NIBC. The Fort Detrick point-of-contact for noise from construction/demolition is Mark Lewis of the Environmental Management Office at (301) 619-3136 (Lewis, 2006a).

Furthermore, arrival of heavy equipment and materials would be scheduled to occur during normal work hours to the greatest extent possible to avoid disturbing personnel on post and the surrounding communities.

Noise from Facility Operations - Effects would not be significant. Adverse long-term day-to-day noises from vehicles after the facilities become operational would occur. Once the facilities are constructed, noise would be generated by vehicles and facility operations. It is unlikely that high levels of noise would emanate from the Medical Bio-Defense Research Laboratory once operational. The Joint Bio-Medical RDA Management Center of Excellence would be located in an administrative area as identified in the Fort Detrick Master Plan, and it is unlikely that high levels of noise would emanate from the administrative facility once it was occupied. Training and vehicle maintenance at the new Joint Reserve Center facilities would not be expected to produce high levels of noise. Military vehicle loading associated with the OMS Facility at the Joint Reserve Center is not expected to change and the vehicles would remain parked and maintained in an area very close to the existing area. Any noise associated with military vehicle operations would remain similar to baseline conditions.

Significant noise would not be expected to emanate from any of the facilities. The facilities would be located in areas that are not sensitive noise receptors on-post, and their distance from off-post residential areas helps ensure compliance with all applicable noise standards.

4.6 GEOLOGY AND SOILS

This subsection describes the geology, topography, and soils occurring in the proposed project areas. The assessment of the existing geology, topography, and soils is based on U.S. Geological Survey (USGS) topographic maps and the Natural Resources Conservation Service Soil Survey for Frederick County.

4.6.1 Affected Environment

4.6.1.1 Geologic and Topographic Conditions

Fort Detrick is located in the Western Lowlands Section of the Piedmont Physiographic Province, in the southwest to northeast trending Frederick Valley. The terrain is gently rolling in nature, with an average elevation of about 350 feet above sea level. The Frederick Valley is underlain by lower Paleozoic carbonate rocks, which tend to exhibit features typical of karst terrain, including bedrock pinnacles, solution channels, and disappearing streams (USAG, 2001). Sinkholes are known to develop in the Frederick Formation. These circular depressions in the landscape are created when groundwater dissolves underlying limestone and the resulting cavity collapses. The potential for the formation of sinkholes increases in response to unnatural surface loading (i.e., building construction and stormwater retention) on enclosed topographic depressions (USAG, 2003). Also, because sinkholes can accelerate surface water and contaminant entry into an aquifer, they can become gateways for groundwater contamination.

⁹ Demolition is associated with the Joint Bio-Medical RDA Management Center.

A fault passes through the approximate center of Area B. Geologic units found beneath Fort Detrick include the Frederick Limestone (Upper Cambrian) and Grove Limestone (Cambro-Ordovician) underlying Area A, and New Oxford Formation (Lower Triassic) underlying Area B. The Frederick Limestone and New Oxford are predominant (USAG, 2003).

4.6.1.2 Soils

Soils within Area A of Fort Detrick are made up primarily of the Duffield/Frankstown series. These soils are characterized as deep, well-drained, moderately permeable soils which develop from impure limestone (USAG 2001). Both soils are fertile, highly productive, easy to manage, and very similar in both use suitability and management needs. The Duffield series of soils are found extensively throughout the Frederick Valley (USDA, 2002). Available water capacity for the Duffield series of soils is low to moderate. The Frankstown silt loams are slightly shallower than the Duffield and contain more shale or cherty gravel. Both soils are well-drained, fertile, highly productive, easy to manage, and similar in both use suitability and management needs. They are used principally for grain, hay and pasture (USAG, 2001).

The soils in Area B include the Lindside, Augusta, Athol, Penn, Colbert, and Hagerstown series (USAG, 2001). The Lindside series are very deep, moderately well drained soils that are typically found in floodplains and upland depressions (USDA, 2002). Augusta series soils are found on alluvial terraces and low deposits of colluvial material in the southern portion of Area B. The series is poorly drained, with moderate permeability (USDA, 2006). The Athol and Penn series soils occupy the major portion of this area. These soil types are similar and typically red in color. Penn soils develop from purple to dark red shale and sandstone and require intensive management to increase fertility. Athol soils develop from weathered limestone, red shale, and sandstone, and are characterized as highly productive. Hagerstown series soils are derived from limestone and can be highly productive. The Colbert soils have low fertility and permeability and are found in limited areas (USAG, 2003). There are three subsurface conditions in Area B. The southern half of Area B is composed of a red-brown, highly plastic, silty clay with numerous gravelly zones. The northwestern section contains a red-brown, gravelly clay with some mica; and the north central sector of Area B contains hard micaceous shale (USAG, 2003).

Medical Bio-Defense Research Laboratory – The soils found at the proposed site of the Medical Bio-Defense Research Laboratory is composed entirely of Duffield Silt Loam (USAG, 2003). The Duffield Series consists of very deep and deep, well drained soils on uplands. They formed in material weathered from impure limestone. Typically these soils have a dark grayish brown silt loam surface layer 10-inches thick. The subsoil from 10 to 53 inches is yellowish-brown and brownish-yellow silty clay loam. The substratum from 53 to 60 inches is yellowish-brown shaly silt loam. These soils are found on slopes ranging from 0 to 35 percent (USDA, 2002).

Joint Bio-Medical RDA Management Center of Excellence – The soil at the proposed site of the proposed RDA Management Center is the Duffield Silt Loam (USAG, 2003). A description of these soils is given in the Medical Bio-Defense Research Laboratory.

Joint Reserve Center – The soil at the proposed site of the Joint Reserve Center is the Athol Gravelly Loam (USAG, 2003). The Athol series consists of deep, well-drained soils formed in materials weathered from conglomerate or breccia, and cemented by a red matrix, and is found on slopes ranging from 3 to 8 percent. Permeability in these soils is moderate. Athol soils are fairly extensive in Frederick County. They generally occur in places where the underlying limestone merges with shale and limestone. Athol soils are not considered hydric (USDA, 2002).

4.6.1.3 Prime Farmland

Prime farmland, as defined by the USDA, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas (USDA, 2006). The soil series found within the Medical Bio-Defense Research Laboratory, Joint Bio-Medical RDA Management Center of Excellence, and Joint Reserve Center sites, are soils indicative of prime farmland or farmland of statewide importance for Frederick County, Maryland, as determined by the USDA Natural Resource Conservation Service (USDA, 2006). However, these areas are not considered prime farmlands because there is no agricultural use within these areas, the areas have been built-up, and in most cases the soils have been heavily modified from operations on the post.

4.6.2 Environmental Consequences

To assess the magnitude of impacts to geology, topography, and soils in the area of the project sites, the following impact thresholds were used:

No Effect – Geology, topography, or soils would not be impacted or the impact to these resources would be below or at the lower levels of detection, or existing conditions do not exist for impacts to occur.

Not Significant Effect – Impacts to geology, topography, or soils would be detectable. Impacts to undisturbed areas would be small. Mitigation would be needed to offset adverse impacts and would be relatively simple to implement and would likely be successful.

Significant Effect – Impacts on geology, topography, or soils would be readily apparent and result in a change to the character of the resource over a relatively wide area. Mitigation measures would be necessary to offset adverse impacts and may or may not be successful.

4.6.2.1 No Action Alternative

No effects would be expected. Implementation of the No Action Alternative would result in no changes to the sites being considered under the proposed action. There would be no new construction or demolition, and as a result, there would be no impacts to geology, topography, or soils.

4.6.2.2 Realignment (Preferred) Alternative

Geologic and Topographic Conditions – No significant adverse impacts to geologic or topographic conditions would be expected. All of the sites proposed for construction under the proposed action are primarily flat or gently rolling terrain, and would likely require only minor leveling and grading. Considerable alterations of the general topographic character of the site would not occur. While the proposed sites are located within karst terrain, there are no known sinkholes located within the proposed footprints of the new construction.

Soils – No significant adverse impacts to soils would be expected. Soils found within the footprints of the proposed new construction would likely be affected by activities associated with leveling and grading of the site. Vegetative cover would be removed, soils would be compacted, and soil layer structure would be disturbed and modified. Soil productivity, (i.e. the capacity of the soil to produce vegetative biomass), would decline in disturbed areas and be completely eliminated for those areas within the footprint of building structures or parking facilities. These effects would not be considered significant, given that the majority of soils at Fort Detrick have been previously disturbed or modified. Soils at the RDA Management Center are covered primarily by concrete or are otherwise disturbed, and therefore expected impacts on soils at this site would not be significant.

Disturbed areas outside of the building and parking facility footprints would be reseeded following construction activities, and soil productivity on these sites would return. Soil erosion and sediment production would be minimized for all construction operations as a result of following an approved sediment and erosion control plan. All sites would be regraded and revegetated (as necessary) following construction activities, and soil erosion and sediment control measures would be included in site plans to minimize long term erosion and sediment production at each site. Each site would be constructed with stormwater controls favoring methods that allow for stormwater to reenter the groundwater system rather than leaving the site as surface flow.

The majority of the soils underlying the proposed sites have somewhat limited shrink-swell potential, indicating that there would be low potential for uneven or problematic settling of any newly constructed buildings or parking facilities.

Prime Farmland - Because the areas within Medical Bio-Defense Research Laboratory, Joint Bio-Medical RDA Management Center of Excellence, and Joint Reserve Center contain no agricultural uses, have been built-up, and contain soils that have been heavily modified, no lands suitable for classification as Prime Farmland consideration were identified. As a result, no impacts to Prime Farmlands would occur under this alternative.

4.7 WATER RESOURCES

4.7.1 Affected Environment

The following sections provide a summary of the general condition and character of water resources found at Fort Detrick, as well as more specific descriptions of the water resources in the immediate vicinity of the proposed project sites.

4.7.1.1 Surface Water

Watersheds – Fort Detrick is located in the Monocacy, Maryland, Pennsylvania Watershed (EPA 8-digit HUC, 02070009). The Maryland Department of the Environment (MDE) has delineated this watershed into 3 smaller subwatersheds (MD 8-digit HUCs¹⁰ roughly equivalent to an EPA 12-digit HUC). Fort Detrick falls within one of these three subwatersheds, the Lower Monocacy River Watershed (MD 8-digit HUC, 02140302). The Lower Monocacy River Watershed, in turn, is divided into 18 smaller drainages identified by a MD 12-digit HUC code. All three of the proposed project sites exist within one of these MD 12-digit drainages (MD-HUC 021403020233). Streams located on or near the Installation all flow south and join the Monocacy River, the Potomac’s largest tributary, and eventually empty into the Chesapeake Bay (Figure 4-1).

Streams – The Monocacy River is a warm water fishery and has been classified by the State of Maryland as Recreational Trout Waters and Public Water Supply (Use IV-P) (Code of Maryland Regulations

¹⁰ Hydrologic Unit Codes (HUC): Watersheds are organized into a system that divides and subdivides the United States into successively smaller watersheds. These levels of subdivision, used for organization of hydrologic data, are called “hydrologic units”. Hydrologic Unit Codes are given to each of these units in a manner that preserves watershed hierarchy. This is done by adding additional digits to a watershed’s HUC to designate smaller sub-watersheds within an encompassing watershed. As an example, a large river watershed may have an 8 digit HUC of 02040301. All sub-watersheds to this watershed would begin with this 8 digit number, but would have additional digits as their unique identifier (02040301102, 02040301103, etc.) These unique identifiers are commonly used by federal and state agencies to organize and track water quality impairments.

[COMAR] 26.08.02). Fort Detrick relies on the Monocacy River as its principal source for drinking water (See Section 4.12 for a discussion of water utility infrastructure).

Those tributaries of the Monocacy River that are not designated Use IV-P are designated as Use III-P (Natural Trout Waters and Public Water Supply). These tributaries must maintain water quality standards that ensure the growth and propagation of self-sustaining trout populations and their associated food organisms. Use III-P tributaries must provide a safe and effective public water supply source (MDDSD, 2006). Carroll Creek, which flows between Area A and Area B at Fort Detrick, is a major tributary to the Monocacy River and is classified as a III-P water.

All streams in the 12-digit HUC drainage encompassing Fort Detrick are considered impaired (MDE, 2004) due to bacteria, and elevated sediment and nutrient levels (Stover, 2006). Carroll Creek is currently listed as requiring Total Maximum Daily Load (TMDL) development.

Within the 12-digit HUC drainage, there are roughly 55 miles of stream, the majority of which are small tributaries flowing to Rock Creek and Carroll Creek. Carroll Creek drains all of Area B and the western portion of Area A. It begins about 2 miles northwest of Area B and flows southeast until the eastern border where it runs south, approximately 750 feet east of the proposed AFRC site. It is then joined by Rock Creek approximately 2,000 feet south of Area A before merging with the Monocacy River about 2 miles south of Area A. The eastern portion of Area A drains to the Monocacy River through Federal Emergency Management Agency (FEMA) Tributaries #9 and #10 (also known as Detrick Branch and Two Mile Run, respectively). Tributary #9 originates in the south central portion of Area A, flows east to the southeastern boundary of Area A through a swale adjacent to the Unaccompanied Enlisted Personnel Housing (UEPH) stormwater retention pond and outflow A-4, exits Area A, and discharges one mile east into the Monocacy River.

Runoff from the proposed Armed Forces Reserve Center and Joint Bio-Medical RDA Management Center would drain into Carroll Creek. The Carroll Creek watershed is designated as an inter-jurisdictional flood hazard watershed due to historic and documented flood damages. Development in this flood hazard watershed may not increase the downstream peak discharge for the 100-year frequency storm event.

The Medical Biological Defense Research Laboratory site is located on generally flat land. Drainage from this site would likely flow east via a new stormwater conveyance currently proposed to support the USAMRIID project in the general alignment of the Allegheny Power Right of Way, head underneath Porter Street, and continue downgradient to the Unaccompanied Enlisted Personnel Housing (UEPH) stormwater retention pond south of the barracks. When overflowing, stormwater from the UEPH will drain south into the proposed regional stormwater management pond (Lewis, 2006b).

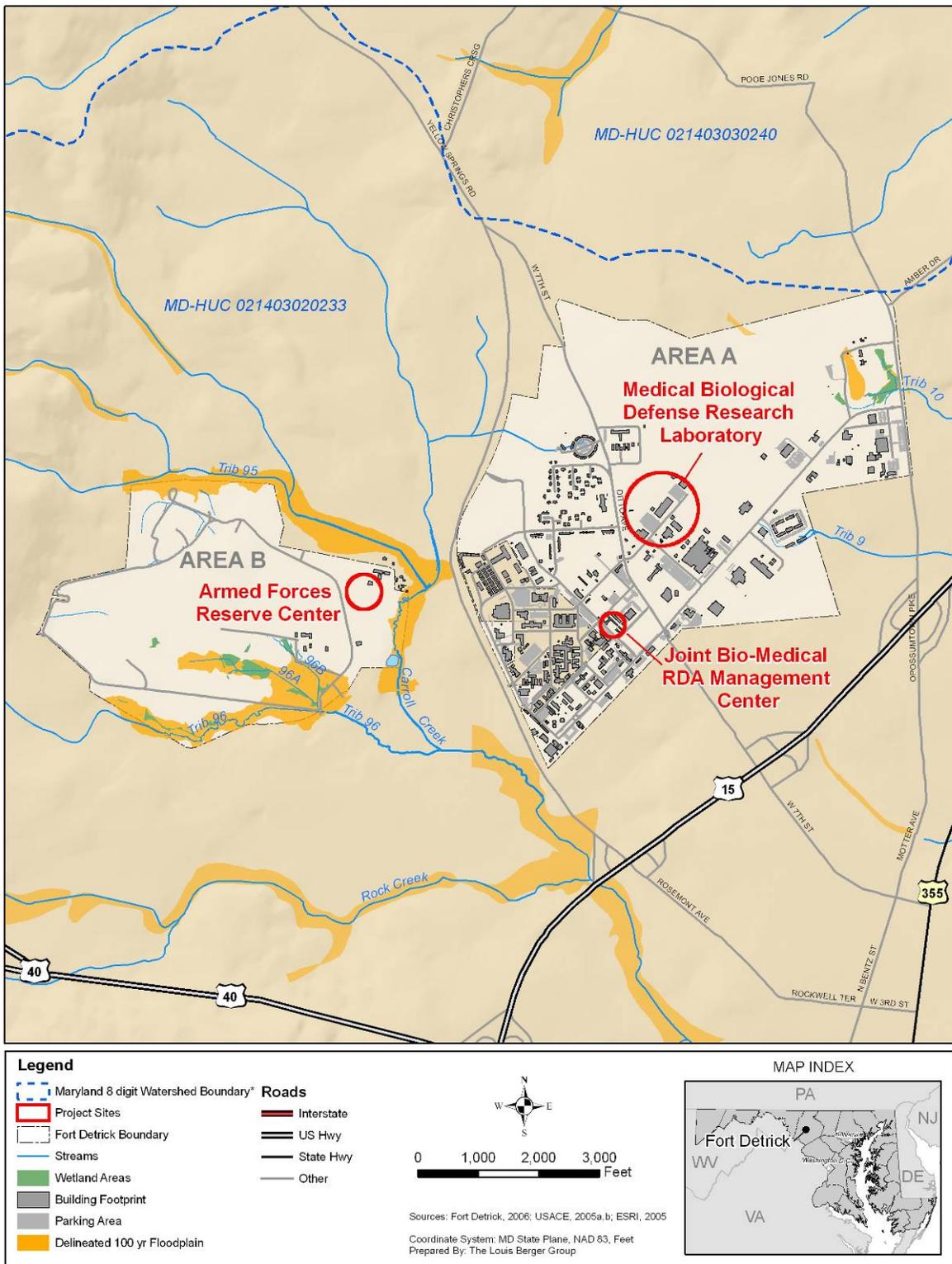


Figure 4-1. Water Resources at Fort Detrick

Wetlands – Wetlands are jointly defined by the USEPA and the USACE as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (40 CFR 230.3(t) and 33 CFR 328.3(b)). Freshwater wetlands in Maryland are protected by the Non-tidal Wetlands Protection Program, which sets a state goal of no overall net loss of non-tidal wetlands acreage and functions. Activities in non-tidal wetlands require a non-tidal wetlands permit or a letter of exemption, unless the activity is exempted by regulation. Any activity that involves excavating, filling, changing drainage patterns, disturbing the water level or water table, grading and removing vegetation in a non-tidal wetland or within a 25-foot buffer requires a permit. If the wetland is designated as a Special State Concern, the buffer is expanded to 100 feet (MDE, 2006). The INRMP for Fort Detrick serves as a guide for the management and protection of wetlands at Fort Detrick (USAG, 2001).

The USACE has conducted wetland surveys for both Area A and Area B of Fort Detrick (USACE, 2005a). A thorough field reconnaissance of Area A concluded that no wetland or potential wetland sites were found in any location other than those within the vicinity of Nallin Farm Pond in the northeastern corner. The field reconnaissance of Area B identified approximately 7 acres of primarily wet meadow wetlands; all located in the south central portion of the area within the FEMA Tributary #96 drainage. Based on these studies and the locations of the wetlands identified, there are no jurisdictional wetlands within 25 feet of any of the proposed action sites. It is also not anticipated that any runoff from any of the proposed project sites would drain into or through any of the surveyed wetlands at Fort Detrick.

4.7.1.2 Hydrogeology/Groundwater

Fort Detrick and all of the potential project site areas are underlain by the Piedmont Hard Rock Formation. This area contains some of the most productive hard rock aquifers in the State, with relatively good groundwater quality. About 20% of the formations have potential to produce at least 50 gallons per minute (gpm). Most of the wells in the area draw from fractures or solution channels located within calcareous rock. These fractures are extensively interconnected and have a high potential for groundwater contamination. Regionally, groundwater flows towards the Monocacy River, the main drainage system for the Frederick Valley. Locally, groundwater tends to follow surface terrain and flows in the direction of drainage features and streams, which eventually flow to the Monocacy River.

Groundwater Contamination – In 1987, trichloroethylene (TCE) was detected at levels above the USEPA Maximum Contaminant Level (MCL) in water withdrawn from a well in Area A. TCE was used as a coolant in a refrigeration system that operated in building 568 until it was removed between 1970 and 1971. An unknown quantity of TCE was spilled during the filling, operation, or maintenance of the system. Currently, a TCE plume exists in the groundwater, which is being addressed by the Fort Detrick Installation Restoration Program. A decision document was signed in June 2001 that requires the extraction of groundwater to provide hydraulic containment of contaminated groundwater in the source area and treatment of all waste produced. Fort Detrick and potentially affected residences do not currently use groundwater for drinking water supplies; therefore, the identified contaminants do not pose a health risk to residents and workers on the Installation.

In 1992, TCE contamination above MCLs was discovered off-post in residential wells. Data indicated that Area B-11, on the far southwest side of Area B was the likely source of the groundwater contamination. Area B-11 is a 5.2-acre section of a larger 19.6-acre landfill complex that includes sites Area B-6 (FTD 69), Area B-8 (FTD 70), and Area B-10 (FTD 71). The site is being investigated for soil and groundwater contamination. Materials disposed in this area included TCE and perchloroethylene (PCE) drums, among a range of other domestic and laboratory refuse.

From 2001 to 2004, an interim removal action (IRA) was completed at the source of the TCE and PCE contamination within Area B-11. All excavations were backfilled, and the site was covered with soil and reseeded. The remaining areas of the B-11 Landfill will need further sampling and investigation in order to determine future response actions. Intrusive investigations in the remaining landfill areas will be minimized due to the discovery of vials containing preserved pathogens during the B-11 IRA. It is anticipated no further removal actions will be performed for adjacent disposal areas.

Residential use of groundwater in this area is currently limited, as potentially impacted residences were connected to Fort Detrick or the City of Frederick potable water supplies or offered bottled water. None of the proposed actions would alter or disturb conditions at site B-11 in Area B.

4.7.1.3 Floodplains

EO 11988 requires Federal agencies to avoid, to the extent possible, long-term and short-term impacts on floodplains that may result from their actions. In addition, State regulations regulate construction in waterways or 100-year floodplains under Environment Article Title 5, Subtitle 5-501 through 5-514 (COMAR 26.17.04). These regulations are meant to assure that activities in a waterway or its floodplain do not create flooding on upstream or downstream property, maintain fish habitat and migration, and protect waterways from erosion. Activities are evaluated for impacts on the floodplain, public safety and welfare, and natural resources.

Floodplain studies were recently conducted by USACE at Fort Detrick (USACE, 2005b). The purpose of these studies was to determine the existing 5-, 10-, 25-, 50-, and 100-year flood elevations and to delineate the respective floodplains. Floodplains were identified and delineated along Tributary 10 (Two Mile Run) in Area A, and along Carroll Creek, Tributary 95, and Tributary 96 (A, B) (Figure 4-1). Based on this recent comprehensive survey, none of the proposed project sites are located within a floodplain. The general location proposed for the Armed Forces Reserve Center is roughly 300 feet from the 100-year floodplain of Carroll Creek. The sites for both the proposed Medical Biological Defense Research Laboratory and the Joint Bio-Medical RDA Management Center are more than ½ mile from the nearest delineated floodplain (Tributary 10 and Nallin Pond floodplains and the Carroll Creek floodplain, respectively).

4.7.1.4 Coastal Zone

Fort Detrick is not located in a coastal area, based on Environment Article Title 16 (COMAR 26.22.01.01).

4.7.2 Environmental Consequences

To assess the magnitude of water quality impacts to water resources in the area of the project sites, the following impact thresholds were used:

No Effect – Current water quality and hydrologic conditions would not be altered or existing conditions do not exist for impacts to occur.

Not Significant Effect – Impacts (chemical, physical, or biological effects) would be either not detectable, or detectable, but at or below water quality standards or criteria. Alterations in water quality and hydrologic conditions relative to historical baseline may occur, however, only on a localized and short-term basis.

Significant Effect – Impacts (chemical, physical, or biological effects) would be detectable and would be frequently altered from the historical baseline or desired water quality conditions;

and/or chemical, physical, or biological water quality standards or criteria would be locally, slightly and singularly, exceeded on either a short-term or prolonged basis.

4.7.2.1 No Action Alternative

No effects would be expected. Implementation of the No Action Alternative would not alter the existing water resources at the sites being considered under the proposed action.

4.7.2.2 Realignment (Preferred) Alternative

Although direct adverse impacts would be expected, impacts on water resources from construction and operation of the Medical Bio-Defense Research Laboratory and Joint Bio-Medical RDA Management Center in Area A, and the Armed Forces Reserve Center in Area B, are not anticipated to be significant. Primary impacts associated with these projects would stem from erosion and sediment production during construction, followed by a long-term increase in stormwater runoff derived from newly created impervious surface area. Overall, these impacts would not be significant, given the implementation of sediment and erosion control measures during the construction phase and installation of required stormwater controls to reduce runoff associated impacts over the operational lifetime of the proposed structures.

The three proposed construction projects would fall under the permitting and regulatory requirements of Maryland's Environment Article, Title 4, Subtitle 1 and 2 for erosion and sediment control and stormwater management (COMAR 26.17.01 and 26.17.02); Environment Article, Title 9, Subtitle 3 (COMAR 26.08.04); Environment Article, Title 5, Subtitle 05 (COMAR 26.17.04); the Federal Clean Water Act Section 402 and the Code of Federal Regulations (40 CFR 122.26). Erosion and Sediment Control Plans would meet the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control (MDE, 1994). Stormwater management plans would follow the Maryland Stormwater Design Manual (MDE, 2000a) and the Stormwater Management Guidelines for State and Federal Projects (MDE, 2001). Prior to construction at any site, a General Permit for Construction Activity would be obtained, which would include an approved sediment and erosion control plan.

The MDE requires that any project disturbing more than 5,000 square feet of soil receive prior approval of its stormwater management approach. Additionally, the Fort Detrick NPDES General Stormwater Discharge Permit requires the installation to document its compliance approach for controlling post-development stormwater runoff. An Institutional Management Plan (IMP) has been prepared to provide a comprehensive stormwater management plan and practices for development in drainage areas A-3 and A-4. The Medical Biological Defense Research Laboratory will be located in drainage area A-4. The MDE has provided conceptual approval of the regional stormwater management approach. The IMP was submitted to MDE on August 23, 2006 for review and ultimate approval. The area of development that the Joint Bio-Medical RDA Management Center will be located is an area designated as the Administration Area. An evaluation of this area is currently being conducted to determine the ability to provide a regional approach for stormwater management.

Surface Water/Wetlands – Adverse impacts would be expected, but would not be considered significant. Measures would be implemented to comply with stormwater permits from the State during both construction and operation, which would ensure that impacts from increased runoff, altered drainage patterns, or changes in water quality due to surface water runoff would not be significant.

Drainage from the proposed Armed Forces Reserve Center has the potential to impact Carroll Creek, which is currently listed on the State's list of impaired waterbodies. Excess sediment has been noted as a common source of impairment for streams in this drainage, and the construction and operation of the Armed Forces Reserve Center has the potential to result in sediment delivery to this stream. To minimize

any potential adverse impacts associated with sediment production during construction of the Armed Forces Reserve Center, erosion and sediment control measures would be implemented under a State-approved plan. In addition, long term impacts associated with increased runoff volumes and potential concerns regarding the quality of runoff from newly created impervious surfaces would be minimized through the design and construction of stormwater control measures, such as stormwater ponds or bioinfiltration measures. Assuming these erosion and sediment control measures are implemented, any impacts on Carroll Creek associated with the construction and operation of the Armed Forces Reserve Center in Area B would not be considered significant.

Based on the wetland studies noted earlier and the locations of the wetlands identified, there are no jurisdictional wetlands within 25 feet of any of the proposed action sites. In addition, it is not anticipated that runoff from any of the sites would drain into any of the identified jurisdictional wetlands on Fort Detrick identified by the USACE. Therefore, no impacts on area wetlands are anticipated.

No direct impacts on surface water resources would be anticipated as a result of the construction and operation of the Medical Bio-Defense Research Laboratory or the Joint Bio-Medical RDA Management Center, since these facilities would be constructed in an already developed area with no significant nearby water resources. Long-term impacts associated with increased runoff volumes and potential concerns regarding the quality of runoff from newly created impervious surfaces would be minimized through the design and construction of stormwater control measures, under an approved stormwater plan for these sites.

Hydrogeology/Groundwater – Adverse effects would be expected; however, they would not be significant. Any oil and antifreeze spills, leaks from vehicle maintenance operations, and pollutant leaching as a result of demolition activities (at the RDA Center and possibly the Armed Forces Reserve Center site) could pose a threat to groundwater sources at Fort Detrick. However, spills and leaks would be minimized by adherence to standard operating procedures for vehicle maintenance and the operation of equipment. Any potentially toxic substances in areas proposed for construction and/or demolition would be removed and safely disposed of prior to operations.

Fort Detrick does not use groundwater for drinking water supplies, but groundwater contaminants have been identified. Because there is the potential for TCE groundwater contamination in both Area A and B, dewatering operations for subsurface construction would need to incorporate procedures for the detection of any contaminated water and its disposal in accordance with applicable regulations (Gortva, 2006a). Although these contaminants do not pose a health risk to residents and workers on the Installation, the post would continue to adhere to existing groundwater protection protocols. No new impacts would be expected as a result of these protocols for the proposed development and operations under the proposed action.

Floodplains – None of the proposed sites are located within a floodplain. Therefore, no impacts on floodplains are anticipated as a result of the proposed actions.

Coastal Zones – Fort Detrick is not within a Coastal Zone Management Area, and therefore coastal management measures do not apply.

4.8 BIOLOGICAL RESOURCES

4.8.1 Affected Environment

Most of the ecosystems at Fort Detrick have been highly altered due to urbanization and human activities. Much of the native vegetation has been destroyed or displaced by species that are more tolerant to disturbances. The three remaining types of natural communities on the Installation are upland forests,

grasslands, and wetland/riparian communities. The wetlands and forest communities are very small and fragmented. The small size of the Installation, fragmentation, and extensive mowing operations contribute to a relatively low biodiversity. Fort Detrick maintains approximately 500 acres of pasture, grassland, forested areas, and experimental agricultural fields (USAG, 2001).

4.8.1.1 Vegetation

The flora of Fort Detrick is common and typical of rural farmland in northwest Maryland. Fort Detrick is in the Piedmont Province of Maryland and was originally covered by an oak-hickory forest. Trees characteristic of this forest association include northern red oak (*Quercus rubra*), black oak (*Q. velutina*), scarlet oak (*Q. coccinea*), white oak (*Q. alba*), chestnut oak (*Q. prinus*), and several species of hickories (*Carya spp.*). Other species associated with this forest type include yellow poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), black gum (*Nyssa sylvatica*), black walnut (*Juglans nigra*), and flowering dogwood (*Cornus florida*). Typical understory composition in oak-hickory forests is comprised of sassafras (*Sassafras albidum*), sourwood (*Oxydendrum arboretum*), serviceberry (*Amelanchier spp.*), Virginia creeper (*Parthenocissus quinquefolia*), and poison ivy (*Rhus radicans*).

Areas A and B have large open fields dominated by alfalfa (*Medicago spp.*), tall fescue (*Festuca elatior*), and brome grass (*Bromus spp.*) in Area A, and pastureland with bluegrass (*Poa spp.*), fescue (*Festuca spp.*), and other common grasses and forbs typical of the region in Area B.

The Maryland Forest Conservation Act requires that the Installation have a forest conservation plan, participate in the afforestation/forestation process, and sign a forest maintenance agreement. Fort Detrick's Forest Conservation Plan requires that any construction project that disturbs over 40,000 SF (0.92 acres) of unforested land must mitigate the disturbance through forestation of 15 percent of the equivalent surface (USAG, 2006b).

In addition, any specimen tree in the landscape that is removed will be replaced at least 2:1 depending on the size of the tree (Boyland, 2006a).

Medical Bio-Defense Research Laboratory – The majority of the proposed Medical Bio-Defense Research Laboratory site contains undeveloped grassland that is mowed once each year. Dominant field species in this area include alfalfa, tall fescue, and brome grass (USAG, 2006b). Deciduous landscape trees are found scattered around the project site.

Joint Bio-Medical RDA Management Center of Excellence – The proposed project site consists primarily of mowed lawns and landscape vegetation. There are 2 large pine trees located on the subject property; Tree No. 1818, a Douglas-fir (*Pseudotsuga menziesii*) and Tree No. 1856, a holly (*Ilex spp.*) (Boyland, 2006a). These trees have been tagged and recorded through the Environmental Management Office.

Joint Reserve Center – The proposed project site is located primarily on the site of the existing PFC Flair Memorial AFRC. The surface is composed of impervious asphalt with scattered vegetation consisting of species that are tolerant to human disturbances. To the south of the existing AFRC is undeveloped grassland consisting of grasses and forbs typical to Area B. To the west of the existing AFRC is a strip of planted conifers, approximately 650 feet long by 100 feet wide (USAG, 2006c).

4.8.1.2 Wildlife

The amount of wildlife habitat is limited due to human activities and urbanization. Fauna is predominantly composed of species that are adapted to the living conditions in urban, suburban, and agricultural habitats. Some species of bird, mammal, and herptofauna typical of oak-hickory and northern

hardwood forests are present in the forested areas of the Installation. Additionally, because of the small size of the forested blocks in both Area A and B, a number of edge species are present (USAG, 2001).

Based on the Integrated Natural Resource Management Plan (INRMP) for Fort Detrick (USAG, 2001), there is potential for 57 mammal species to occur in the vicinity of the Installation, given suitable habitat conditions. However, due to a lack of suitable habitats on the Installation, the actual number of mammal species that inhabit Fort Detrick is much smaller (USAG, 2003). A mammal survey conducted in June 1997 recorded a total of 12 mammals at Fort Detrick including, white-tailed deer (*Odocoileus virginianus*), meadow vole (*Microtus pennsylvanicus*), eastern cottontail (*Sylvilagus floridanus*), gray squirrel (*Sciurus carolinensis*), eastern chipmunk (*Tamias striatus*), fox squirrel (*Sciurus niger*), woodchuck (*Marmota monax*), white-footed mouse (*Peromyscus leucopus*), deer mouse (*Peromyscus maniculatus*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), and an unidentified species of bat (USAG, 2003).

Avian habitats at Fort Detrick are diverse and include riparian areas, hardwood forests, hay fields, and pasture lands. A wide variety of avian species have the potential to utilize Fort Detrick habitats during both the breeding season and winter. The most common birds found in Area A include: the house wren (*Troglodytes aedon*), the northern cardinal (*Cardinalis cardinalis*), the American crow (*Corvus brachyrhynchos*), and the gray catbird (*Dumetella carolinensis*) (USAG, 2003). Common bird species found in Area B include mourning dove (*Zenaida macroura*), red-bellied woodpecker (*Melanerpes carolinus*), downy woodpecker (*Picoides pubescens*), barn swallow (*Hirundo rustica*), blue jay (*Cyanocitta cristata*), house wren (*Troglodytes aedon*), tufted titmouse (*Baeolophus bicolor*), and American robin (*Turdus migratorius*) (USAG, 2004).

Fort Detrick lies within the geographical range of 60 species of reptiles and amphibians. Area A has a small number of potentially suitable habitats for herpetofauna, however, no formal herpetological survey has been conducted at the Installation (USAG, 2003). Examples of species that are likely to occur on Area B include American toad (*Bufo americanus*), spring peeper (*Hyla crucifer*), green frog (*Rana clamitans melanota*), bull frog (*Rana catesbeiana*), and eastern box turtle (*Terrapene carolina carolina*) (USAG, 2004).

Medical Bio-Defense Research Laboratory – The proposed project site is located in a developed portion of the Installation bordered by grassland to the north. Wildlife species common on-site include species that are tolerant to human disturbances.

Joint Bio-Medical RDA Management Center of Excellence – The proposed site consists of manicured lawns and landscape vegetation within a highly developed portion of the Installation. The site is impacted with concrete sidewalks and parking lots on two sides. The level of disturbance at the site limits the abundance and diversity of species utilizing the site. Wildlife on-site includes species that are typically tolerant to human disturbances, such as sparrows.

Joint Reserve Center – The proposed project site is located in the vicinity of the existing PFC Flair Memorial AFRC, which is situated on an impervious asphalt surface. To the south of the site is undeveloped grassland. Wildlife on-site consists of species that typically inhabit grassland areas and are tolerant to human disturbances.

4.8.1.3 Threatened and Endangered Species

The altered environment of Fort Detrick provides little high-quality habitat for most species of wildlife. There are no known Federal- or State-listed rare, threatened, or endangered species of plants or animals within the Installation (Boyland, 2006a; USAG, 2001). A survey for rare, threatened, and endangered small mammals and a survey for rare, threatened, and endangered plants were prepared by the Maryland

Natural Heritage Program of the Maryland Department of Natural Resources in February 2002. Both surveys found no evidence of special status species on the Installation (USAG, 2003). The status of species may change over time as a result of changes in listing status for Federal and State threatened and endangered species, and as a result of new surveys of the Installation (USAG, 2003).

4.8.1.4 Wetland Habitat

The Monocacy River, Carroll Creek, and the Nallin Farm Pond are the three major bodies of water in the vicinity of Fort Detrick that support freshwater fisheries. Nallin Farm Pond, which covers approximately 3.3 acres in Area A, is fed by natural springs and a small amount of runoff from the area. The Pond supports resident populations of bass (*Micropterus spp.*) and bluegill (*Lepomis macrochirus*). Trout (*Oncorhynchus spp.*) are stocked on a put-and-take basis). Area B contains one small pond of approximately 0.23 acres. Both bass and bluegill can be found in this pond (USAG, 2001).

Carroll Creek supports a variety of fish, including rosyside dace (*Clinostomus funduloides*), carp (*Cyprinus carpio*), blacknose dace (*Rhinichthys atratulus*), longnose dace (*Rhinichthys cataractae*), bluntnose minnow (*Pimephales notatus*), creek chub (*Semotilus atromaculatus*), pearl dace (*Margariscus margarita*), white sucker (*Catostomus commersoni*), yellow bullhead (*Ameiurus natalis*), redbreast sunfish (*Lepomis auritus*), bluegill, largemouth bass (*Micropterus salmoides*), fantail darter (*Etheostoma flabellare*), Potomac sculpin (*Cottus girardi*), and rainbow trout (*Oncorhynchus mykiss*). Carroll Creek and its tributaries upstream of US Route 15 are designated as Class III, Natural Trout Waters by the State of Maryland (USAG, 2001). Class III is the highest of four State water quality designations and is applied to surface water bodies that support or have the potential to support the growth and propagation of trout (USAG, 2004).

Wetland habitats on-site were identified based on the vegetation present and evidence of wetland hydrology observed at the time of the site investigations. In addition, Geographic Information Systems (GIS) data were obtained from the Installation and reviewed to determine the presence of wetland habitats within the project sites.

Medical Bio-Defense Research Laboratory – No wetland habitats are located on the proposed Medical Bio-Defense Research Laboratory site. The nearest wetland habitat is in the vicinity of Nallin Pond, located 3,200 feet northeast of the project site.

Joint Bio-Medical RDA Management Center of Excellence – No wetland habitats are present on the proposed RDA Management Center site. The nearest wetland habitat is in the vicinity of Nallin Pond, located almost 1 mile northeast of the project site.

Joint Reserve Center – No wetland habitats are located on the proposed Joint Reserve Center site. The nearest wetland habitat is located approximately 200 feet southeast of the project site

4.8.2 Environmental Consequences

The following thresholds were used to determine the magnitude of effects on wildlife and wildlife habitat and vegetation, with separate criteria being used to evaluate impacts to threatened and endangered species:

No Effect – No impacts to native species, their habitats, or the natural processes sustaining them would occur, or such conditions do not exist for impacts to occur.

Not Significant Effect – Impacts would be detectable, but would not be expected to be outside the natural range of variability and would not have any long-term effects on native species, their habitats, or the natural processes sustaining them. Occasional responses to disturbance by some

individuals could be expected, but without interference to feeding, reproduction, or other factors affecting population levels. Sufficient habitat would remain functional to maintain viability of all species

Significant Effect – Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they would be expected to be outside the natural range of variability for long periods of time or be permanent. Population numbers, population structure, genetic variability, and other demographic factors for species might have large, short-term declines, with long-term population numbers significantly depressed. Frequent responses to disturbance by some individuals would be expected, with negative impacts to feeding, reproduction, or other factors resulting in a long-term decrease in population levels. Loss of habitat might affect the viability of at least some native species.

Impacts to threatened and endangered species were classified using the following terminology, as defined under the ESA:

No effect – The proposed action would not affect a listed species or designated critical habitat OR listed species or designated critical habitat are not present.

May affect / not likely to adversely affect – Effects on special status species are discountable (i.e., extremely unlikely to occur and not able to be meaningfully measured, detected, or evaluated) or completely beneficial.

May affect / likely to adversely affect – When an adverse effect to a listed species may occur as a direct or indirect result of proposed actions and the effect is either not discountable or completely beneficial.

Likely to jeopardize proposed species/adversely modify proposed critical habitat – The appropriate conclusion when Fort Detrick identifies situations in which actions could jeopardize the continued existence of a proposed species or adversely modify critical habitat to a species within and/or outside Fort Detrick boundaries.

4.8.2.1 No Action Alternative

No effects would be expected. Under the No Action Alternative, the proposed new BRAC facilities would not be constructed on the proposed sites and no adverse impacts to biological resources would occur.

4.8.2.2 Realignment (Preferred) Alternative

Vegetation – Expected adverse effects would not be significant at both the Bio-Defense Research Laboratory and the Joint Reserve Center sites. Construction and operation of the proposed facilities could disturb the plant ecology in the immediate areas. Portions of the strip of conifers to the west of the Reserve Center could be impacted, although exact area will not be known until the precise location of the Reserve Center is determined during the project design process. These impacts would not be significant and could be mitigated by adherence to BMPs. In addition, positive impacts to the local plant ecology would result from the planting requirements under the Installation's Forest Conservation Plan, which would partially offset the adverse impacts of construction.

No significant adverse effects would be expected at the site for the Bio-Medical RDA Management Center. The proposed site has already been highly altered by human activities. The two trees currently on the site would likely be removed. Planting requirements under the Installation's Forest Conservation Plan would partially offset the adverse impacts of construction.

Wildlife – Expected adverse effects would not be significant at both the Bio-Defense Research Laboratory and the Joint Reserve Center sites. Construction and operation of these two facilities could disturb wildlife in the immediate area. Some species, particularly birds, would be temporarily discouraged from the area through destruction of habitat, noise, and/or dust. Wildlife species that utilize this area have adapted to living conditions in habitats altered by humans.

Adverse, but not significant, effects would be expected at the site for the Bio-Medical RDA Management Center. Construction of this facility could temporarily disturb wildlife in the immediate area, particularly birds. Diversity of wildlife on-site is limited and species that utilize this area have adapted to living conditions in habitats altered by humans.

Threatened and Endangered Species - No effects to threatened and endangered species would be expected since there are no special-status species inhabiting the proposed project sites.

Wetland Habitat – No effects would be expected. It is unlikely that wetland habitats would be negatively impacted by construction or operation of the three proposed BRAC facilities. No wetland habitat is located on any of the proposed sites. The nearest wetland area is located approximately 200 feet from the Joint Reserve Center. The exact location of the Reserve Center will be determined during the project design process, and the proposed design will include appropriate mitigations to ensure wetlands are not significantly impacted (see Section 4.7 Water Resources).

4.9 CULTURAL RESOURCES

This section assesses impacts on buildings, sites, structures, districts, and objects eligible for or included in the National Register of Historic Places (NRHP); cultural items as defined in the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990; Native American sacred sites for which access is protected under the American Indian Religious Freedom Act (AIRFA) of 1978; archaeological resources as defined by the Archaeological Resources Protection Act of 1979; and archaeological artifact collections and associated records as defined by 36 CFR Part 79.

The information immediately below and in Section 4.9.1 is largely excerpted from the June 2006 “Integrated Cultural Resource Management Plan (ICRMP): U. S. Army Garrison, Fort Detrick, Maryland” (USAG, 2006d), prepared for U.S. Army Garrison Safety, Environment and Integrated Planning Office, Fort Detrick, Maryland by R. Christopher Goodwin Assocs., Inc.

4.9.1 Affected Environment

4.9.1.1 Prehistoric and Historic Background

The Prehistoric background of Fort Detrick will not be described as none of the BRAC projects addressed in the EA have any potential for affecting prehistoric resources. See Section 4.9.2.1 below.

The origins of today’s Fort Detrick lie in the decision of Frederick County to open a small municipal airport north of the city of Frederick in 1929. Construction of the airfield required the leveling and clearing of previously agricultural land at the edge of town. The airfield was leased to the Maryland National Guard for training in 1931 and named Detrick Field after Major Frederick L. Detrick, a local veteran of World War I. Although it was used by the Army Air Corps for pilot training briefly prior to mobilization for World War II, its subsequent contribution to national defense was in an altogether different field. A U.S. Biological Warfare Program was established in 1941 in response to reports of “germ warfare” development by Germany and Japan and grew to the point of requiring specialized facilities for research and production. Therefore, in 1943 the Army Chemical Warfare Service purchased Detrick Field, which offered cleared, flat land and reusable buildings 45 miles from Washington, D.C. Four missions were carried out at Detrick: the creation of pathogenic agents; the development of pilot

production plants for biological agents, the development and testing of delivery vehicles, and the development of defensive measures. The physical plant created to carry out this work was greatly enlarged from that associated with the airfield. By late 1945 there were 245 structures, including housing for 5,000 workers (only 77 of these structures remain).

Between 1944 and 1956, Fort Detrick, as it was ultimately renamed, acquired the more rural Area B for an outdoor test area, Area C for utility plants, and additional acreage for Area A. However, the decision by President Richard Nixon in 1969 to discontinue the nation's program to develop biological weapons led to another major mission change. Fort Detrick became a center for biomedical research and administration as well as cancer research. Today, the advent of the War on Terrorism and the apparent threat of biological agents used as weapons have caused a renewed emphasis at Fort Detrick on the mission of medical/biological defense research.

4.9.1.2 Status of Cultural Resource Inventories and Section 106 Consultations

Fort Detrick's management, the U.S. Army Garrison, has achieved substantial and thorough compliance with the mandate of Section 110 of the National Historic Preservation Act (NHPA) to survey, inventory and evaluate NRHP eligibility for all cultural resources under its control. This has been accomplished through a series of cultural resources surveys carried out by professionally qualified consultants, whose conclusions, once endorsed by the Installation, have been reviewed and confirmed by the Maryland Historical Trust, and the State Historic Preservation Office (SHPO). Section 106 of NHPA, as set out in the procedures of 36 CFR Part 800, requires that Federal Agencies such as the Army/Fort Detrick take into account the effect of any undertaking upon NRHP eligible resources and allow the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment upon the adequacy of that consideration. With recent revisions to ACHP's procedures, this consultation process has become, more than ever, a dialogue delegated to the cognizant SHPO and the public, except in exceptional circumstances of national significance or the setting of new precedents. As with NEPA, the obligation of the Federal agency under NHPA is one of taking into account and incorporating into its project planning certain external values. The agency retains the final decision.

Built Environment - The first major architectural survey of Fort Detrick was part of the 1992 *Cultural Resources Management Plan and Maintenance, Rehabilitation, and Repair Guidelines for Fort Detrick, Maryland* and its supplement *State Inventory Forms and National Register of Historic Places Nomination Forms for Historic Properties, Fort Detrick, Maryland* prepared by the U.S. Army Corps of Engineers, Baltimore District. Evaluating all pre-1945 buildings, it confirmed the NRHP listing of three buildings associated with the Nallin Farm Complex (#1652, 1655, and 1661) as well as the NRHP eligibility of two more (# 1653 and 1656). No other pre-1945 structures, including those associated with the Airfield itself and the "tarmac" (Hamilton Street) were found eligible. The Maryland SHPO concurred in the report.

In 2000, in accordance with Army Regulation 200-4, the U.S. Army Corps of Engineers (USACE) Baltimore District prepared the *Integrated Cultural Resources Management Plan (ICRMP), Fort Detrick, Maryland* (USACE, 2000). This management plan also updated the architectural knowledge base about Fort Detrick by incorporating a survey of all buildings constructed between 1946 and 1960 against the context of the Cold War. The following Cold War era buildings were found NRHP eligible: # 190, the Oil Heat Plant; # 375, the Steam Sterilization Plant; # 1301, the Medical Research Laboratory; # 1302, The R&D Greenhouse, #1303-6, other Greenhouses; # 1412, Laboratory Building; # 1414, Incinerator; and # 1415, Administration Building. By an *Individual Property/District Maryland Historical Trust Internal NR-Eligibility Form* signed on 4 April 2000, the Maryland SHPO concurred (Boylard, 2006c).

In September 2004 R. Christopher Goodwin & Assocs., Inc. completed a reconnaissance level architectural survey of all buildings fitting into the accepted Cold War Era period of significance (1946-1989 versus the 1946-1960 period used in 2000). Goodwin examined 139 structures and then conducted

more intensive analysis of those found to have potential for significance. Their results were that only Buildings # 375 and 384 were found NRHP eligible as examples retaining their integrity of industrial engineering connected with Fort Detrick's mission of biological weapons research. Unfortunately Goodwin was not aware at the time that the Maryland SHPO had officially accepted the more inclusive 2000 determination of eligibility (Boyland, 2006b). The Garrison has now finalized the 2006 ICRMP to reflect the eligible buildings to be #190, #375, 1301-1306, 1412, 1414, and 1415 as Cold War Significant.

Fort Detrick has consulted with the SHPO regarding proposed actions for construction of the NIBC, which would include required demolition of Buildings 1412, 1414, and 1415. A Memorandum of Agreement (MOA) between Fort Detrick and the SHPO has been developed and documents the Army's compliance with the NHPA (see Appendix E). The recordation process identified in the MOA has mitigated the adverse effects of the NIBC on historic properties. In addition, a similar MOA and recordation process have been completed for Buildings 1303 and 1304.

Also of note is the presence nearby of the "One Million Liter Test Sphere" or Building 527, a property listed on the National Register of Historic Places for its scientific and engineering significance. The structure is part of the 69-acre parcel in Area A that Fort Detrick ceded to the National Cancer Institute (NCI) in 1971. Although its management as an historic property is the responsibility of NCI, its adjacency to the proposed Joint Bio-Medical RDA Management Center of Excellence means that actions at Fort Detrick may have potential effects upon it under NHPA (USACE 2000).

Archaeological Resources – The 1992 *Cultural Resources Management Plan and Maintenance, Rehabilitation, and Repair Guidelines* developed an archaeological sensitivity map for Fort Detrick and identified the location of historic sites. A 1993 Phase I archaeological survey by USACE utilized a pedestrian survey of the accessible portions of the Installation and tested 625 acres. Of the eight sites examined, Prehistoric Site 18FR679 and Historic Sites 18FR680 and 18FR681 were discounted due to lack of integrity and research potential. Further evaluation of 18FR683, the Stonewall Jackson Beall Site; 18FR684, the Nallin Farm Site; 18FR685, the Wide Pasture Site; 18FR682, the Lime Kiln Site; and 18FR74 (all Historic) was called for in the event of any future project impacting them.

Further investigations by R. Christopher Goodwin have refined the picture. 18FR682, the Lime Kiln Site in Area B, investigated in 1995, was found to lack research potential and therefore was not NRHP eligible. 18FR684, the Nallin Farm Site, represents 18th and 19th century components with sufficient integrity to be NRHP eligible. While 18FR685, the Wide Pasture Site, a scatter of cultural materials associated with the demolished residence of the post commander, was not NRHP eligible, the landscape was made the subject of public interpretation. 18FR74 is in Area C and outside the scope of this BRAC EA. Lastly, 18FR683, the Stonewall Jackson Beall Site, has been evaluated in various studies with contradictory results so must be considered potentially NRHP eligible until firmly established otherwise. With the exception of one site requiring further research, the archaeological picture of Fort Detrick is complete enough to allow projects that do not impact known NRHP sites to proceed without further clearance.

Beyond the obligation to comply with NHPA for NRHP eligible archaeological resources, there are other substantive laws relating to the treatment of archaeological sites and collections. In the event of an issue of this nature, particularly an unanticipated discovery, the current Fort Detrick ICRMP contains complete guidance.

4.9.1.3 Native American Resources

To date, no traditional cultural properties or Native American sacred sites have been recorded at Fort Detrick. There are no Federally recognized Indian tribes present in Maryland, although the possibility exists that items or human remains of Native American origin can be discovered for which cultural

affiliation may be established with recognized tribes located out of State. There is also a Maryland Council of Indian Affairs, which may be consulted. The current Fort Detrick ICRMP contains a complete list of laws and procedures relating to Native American patrimony, which would be implemented in the event of an unanticipated discovery.

4.9.2 Environmental Consequences

Potential impacts to cultural resources have been evaluated based on the extent of resources on or eligible for the NRHP in the area. This analysis parallels the procedures for determining the effects of a Federal undertaking upon historic properties under 36 CFR 800 implementing Section 106 of the NHPA.

For each valid alternative in the EA, an assessment has been made of what NRHP resources, if any, are within its potential area of impact and the reasonably foreseeable nature and extent of any impact. Usually, Cultural Resource Management Plans and underlying historic architectural and archaeological studies for Federal installations provide sufficient data to make this assessment. Where such information is inadequate, the requirement for additional effort to identify historic properties is noted.

The following provides an explanation of the characterization of impacts to cultural resources as “no effect, not significant, and significant” in comparison with the terminology of “no effect, no adverse effect, and adverse effect” used in NHPA.

Section 106 Scale

Per 36 CFR 800.11 (i) *effect* means alteration to the characteristics of a historic property that qualify it for inclusion or eligibility for the National Register. Per 36 CFR 800.5 (a) (1), the effect becomes *adverse* when “an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.” Examples of adverse effects include: the physical destruction of all or part of the historic property; an alteration of the property that is not consistent with the Secretary of Interior’s Standards for the Treatment of Historic Properties (36 CFR 68); the removal of the property from its historic setting; changing the character of the property’s use or of the physical features of its setting that contribute to its significance; and the introduction of visual, aural, and atmospheric elements that diminish the integrity of the property’s significant historic features.

Environmental Impacts to Cultural Resources vs. the Section 106 Scale

No effect – This equates to *no effect* for Section 106.

Not Significant Effect – An impact that alters or has the potential to alter the historic characteristics or setting of an NRHP property but does not diminish its integrity. This equates to *no adverse effect* for Section 106.

Significant Effect – An impact that diminishes or destroys the integrity of an NRHP property. This equates to *adverse effect* for Section 106.

In the practice of Section 106 consultation, adverse effects can often but not always be mitigated, when the loss of integrity of the NRHP resource is justified, balanced against other competing interests. The results of the consultation process are usually memorialized in a Section 106 Memorandum of Agreement containing mitigation stipulations. Neither the initial identification of a significant impact to cultural resources or a determination of adverse effect under Section 106 necessarily precludes a FNSI under NEPA. The loss of NRHP cultural resources would have to be major in scale and importance and without acceptable feasible mitigation measures to negate a FNSI.

4.9.2.1 No Action Alternative

No effects would be expected. Implementation of the No Action Alternative would not alter any existing cultural resources at the sites being considered under the proposed action.

4.9.2.2 Realignment (Preferred) Alternative

Implementation of the realignment has been reviewed against the baseline knowledge of National Register of Historic Places eligible resources present for each of the three specific BRAC projects areas.

Built Environment

Medical Bio-Defense Research Laboratory – No effects would be expected. The project site does coincide with the location of the following buildings determined eligible for the National Register of Historic Places due to their Cold War Era significance and confirmed by the Maryland SHPO in April, 2000: Buildings # 1412, 1414, and 1415 (USACE, 2000). These buildings are already planned for demolition to clear the site for the new USAMRIID facilities, an impact that is addressed in an EIS now under development for that project. Fort Detrick, by letter dated June 1, 2006, initiated consultation with the Maryland SHPO on the adverse effect of the demolitions as an element of the USAMRIID Facilities undertaking. An MOA regarding the demolition of 1412, 1414, and 1415 has been signed by the SHPO and COL Deutsch, Commander, Fort Detrick, and the MOA has been forwarded to the Advisory Council on Historic Preservation for finalization. The recordation process required by the MOA has been completed. A similar MOA and recordation process have been completed for Buildings 1303 and 1304.

Joint Bio-Medical RDA Management Center of Excellence – Not significant effects would be expected. The project requires the demolition of Building # 817, 818, 820, and leased trailer 823. Architectural surveys have established that none of these buildings are NRHP eligible (USACE, 2000). NHPA can take into consideration the effect of new construction upon the setting of an historic building. Although the proximity of the Joint Bio-Medical RDA Management Center of Excellence to the NCI's One Million Liter Test Sphere may constitute such an effect – and the reality of that effect cannot be determined until the project's bulk and massing is developed during conceptual design – it is unlikely that a structure of scientific significance would be adversely affected because the line of sight between the Test Sphere and the proposed building will be mostly (if not completely) obscured by the presence of Building 568.

Joint Reserve Center – No effects would be expected. The Flair Reserve Center in Area B may or may not be demolished and a new structure built adjacent to existing site. The Flair Center has been determined not NRHP eligible (USACE, 2000).

Archaeology – There are no NRHP eligible sites within the projects' construction zones; therefore, no effects would be expected.

Native American Resources – There are no known Native American resources within the projects' construction zones, therefore no effects would be expected.

4.10 SOCIOECONOMICS

4.10.1 Affected Environment

The economic Region of Influence (ROI) for Fort Detrick consists of Frederick County, Maryland, and it constitutes the area where the predominant socioeconomic effects of the Proposed Action would take place. The geographical extent of the ROI is based on residential distribution of the Installation's military, civilian, and contracting personnel and the location of businesses that provide goods and services to the Installation and its employees. The baseline year for the socioeconomic analysis is 2006, although

much of the economic and demographic data for the ROI are available only through the year 2005. Wherever possible, the most recent data available is presented so that the affected environment descriptions are reflective of current conditions in the ROI.

4.10.1.1 Economic Development

Regional Economic Activity

The ROI civilian labor force in 2005 totaled 120,077, with 116,436 employed (USBLS, 2005a). The unemployment rate for the ROI averaged 3 percent in 2005, compared to 4.1 percent for the State of Maryland and the national unemployment rate of 5.1 percent (USBLS, 2005b). During the last 5 years, the ROI unemployment rate has dropped from a high of 4.1 percent in 2001 with improving economic conditions during the past four years.

Outside of the public sector, the construction, retail trade, health care, and professional technical services sectors are the major sources of employment in the ROI. Together, these three sectors generated approximately 41 percent of the ROI's jobs in 2005 (USBEA, 2004a). In Frederick County, public sector employment accounted for 10.6 percent of the total jobs. Table 4-5 presents total employment in the ROI and a percentage distribution of jobs by sector. As seen in the Table, transportation and warehousing, information, and utilities are not major drivers of the local economy. Consistent with economic trends elsewhere in the United States, manufacturing jobs have declined over time with the emergence of a more service oriented economy, although in Frederick County, it remains a sector of moderate importance.

The ROI per capita personal income (PCPI) in 2004 was \$37,632, more than the U.S. PCPI of \$33,050, but slightly less than that of Maryland (USBEA, 2004b).

Table 4-5. Frederick County Employment

Industry Sector	Frederick County (Number)	Frederick County (Percent)
Forestry, Fishing	D	D
Mining	D	D
Farming/Agriculture	3,146	2.6
Construction	13,034	10.8
Utilities	200	0.17
Manufacturing	6,677	5.6
Wholesale Tr.	3,640	3.0
Retail Trade	14,822	12.3
Trans and Warehousing	1,903	1.6
Information	2,077	1.7
Finance and Insurance	8,220	6.8
Real Estate	4,286	3.6
Prof. Tech. Services	10,793	9.0
Mgmt. of Companies	140	0.1
Adm. And Waste Services	6,825	5.7
Educational Services	2,605	2.2
Health Care	10,872	9.0
Arts & Recreation	1,907	1.6
Accommodations Food Services	7,903	6.6
Other Services	6,647	5.6
Government	15,441	12.8
Total Employment	120,198	100.0

D= not shown to avoid disclosure of confidential information. (Source: USBEA, 2004a)

Installation Contribution to the Local Economy – Fort Detrick employs 7,808 people, of which 1,191 are active duty military personnel. Of the 1,191 active duty military personnel, 25 percent are officers, 1 percent is warrant officers, and 74 percent are enlisted soldiers (Cole, 2006a). The Installation workforce accounts for about 9 percent of all ROI employment. Installation expenditures in the ROI totaled \$500 million during 2005. Payroll expenditures reached \$185.5 million in 2005 and the average annual salary for civilian workers at Fort Detrick was \$60,000 (Babb, 2006). Salaries for permanent military personnel at Fort Detrick averaged \$39,560 in 2005 (Armies of the World, 2006). The range of salaries and the distribution of the military personnel by rank are shown in Table 4-6 below.

Table 4-6. Fort Detrick Salaries

Rank	Number	Average Salary
Officers	297	\$66,833
Warrant Officers	18	\$46,702
Enlisted (FT/Reserve)	876/225	\$30,167

Note: Average salaries were determined using the US Army pay rates for 2006. The midpoint of all categories was taken to determine the average annual salary of each type of military personnel. This average was then multiplied by the number of each of the personnel per type. An average was found by adding all of the average salaries and dividing by the total number of personnel across all three types.

(Source: Holden, 2006; Armies of the World, 2006)

Fort Detrick’s overall contribution to the ROI economy is quite important both in terms of employment generation and expenditures. Furthermore, with almost 60 percent of the military personnel living off post, the Fort Detrick workforce is well integrated into the local economy.

4.10.1.2 Demographics

In 2005, Frederick County had a population of 220,701 and was the 8th largest county in Maryland (Stats Indiana, 2006a). The population growth has been robust, increasing by more than 90 percent during the period 1980 to 2000. Frederick County is now the 3rd fastest growing county in Maryland. Population data for Maryland and the United States are also provided in Table 4-7 for comparison purposes.

Table 4-7. Frederick County Population Growth 1980 -2005

Location	1980	1990	2000	2005
Frederick County	114,792	150,208	195,277	220,701
State	4,216,933	4,780,753	5,296,486	5,600,388
United States	226,545,805	248,709,873	281,421,906	296,410,404

(Source: Stats Indiana, 2006a)

4.10.1.3 Housing

The ROI housing stock is summarized in Table 4-8, which identifies both owner-occupied and renter-occupied homes, along with median home values, for the ROI. The housing units identified in the table include all structure types (e.g., single-family homes, apartments, and mobile homes). Frederick County’s housing market has been quite robust, with an estimated 8,487 units added between 2000 and 2004, or a growth rate of 11% over this period. The estimated median value of owner-occupied units in the county was \$160,200, well above the nationwide median value of \$119,600 (USCB, 2000). The Frederick County government has a variety of programs focused on improving the living conditions of low to moderate income households residing in the county. There are home ownership programs, rental subsidy programs, and homeowner rehabilitation programs. For families with children and adults who are homeless, Frederick County Social Services works with the homeless to find both temporary and

permanent housing solutions. There is one Emergency Cold Weather Shelter (CWS) that is available for adults during the cold weather months.

Table 4-8. Housing Characteristics for Frederick County

Frederick County	
Total Housing Units	73,017
Occupied Housing Units	70,060
Owner-occupied	53,138
Renter-occupied	16,922
Vacant Housing Units	2,957
Median Home Value (Owner-occupied)	160,200

(Source: USCB, 2000)

4.10.1.4 Quality of Life

Quality of Life refers to those amenities available to the Installation’s military personnel, their dependents, and civilian employees, and which contribute to their well-being. The relative importance of these amenities to a person’s well-being is subjective (e.g., some individuals consider educational opportunities essential to their well-being, others may place a high value on the availability of health care services, and still others may hold public safety as their primary quality-of-life concern). BRAC quality-of-life analyses typically address issues relating to potential impacts of the proposed action on the availability of public services and leisure activities that contribute to quality of life of the affected Installation’s workforce and their dependents. For purposes of this study, the affected environment for quality of life includes military housing, schools for DoD dependents, family support services, medical facilities, shops and services, and recreational opportunities.

Installation Housing – Only a small percentage of military personnel reside on Fort Detrick. In 2005, there were approximately 459 housing units on Fort Detrick. Approximately 60 percent of all military personnel currently live off-base (Cole 2006b). As seen in the Table 4-9, 92 percent of enlisted housing units are occupied and there is a small waiting list. Table 4-9 shows the breakdown of military housing at Fort Detrick.

Table 4-9. Distribution of Fort Detrick Housing Units by Type

Housing Unit Type	Number of Units	Vacancy Rate
Officer Family Units (field grade officers and above)	22	0%
Enlisted living in family units*	232	8%
Bachelor Units	194	17%
“Overflow units”	11 (3 field grade and 8 company grade officers currently occupying)	0%

*Enlisted living in family units includes all ranks of soldiers E1-E9 (Source: Cole, 2006b)

Health Care Facilities – The Frederick County Health Department works to improve the health of its citizens by providing preventative health care services, treating and controlling communicable diseases and mental illnesses, and working to treat substance abuse throughout the community. The two major healthcare facilities in Frederick County are the Frederick Memorial Healthcare System, and the Mountain Manor Treatment Center. The Frederick Memorial Healthcare System consists of the Frederick Memorial Hospital, the Rose Hill Outpatient Facility, Mt. Airy Immediate Care, and the FHM Cancer Center, which provides outpatient cancer care. The Frederick Memorial Hospital is a private, not for profit hospital with 298 beds. It also has a new 48-bed emergency care facility that opened in April 2004.

The hospital treats approximately 60,000 patients per year. On post, the Barquist Army Health Care Facility offers clinic services.

Educational Services for DoD Dependents – The U.S. Department of Education provides Federal impact aid to school districts that have Federal lands within their jurisdiction. This Federal impact aid is authorized under Public Law 103-282 as payment in lieu of taxes that would have been paid if the land were not held by the Federal government. School districts receive Federal impact aid for each Federally-connected student whose parent or parents live on or work on Federal property. The amount of Federal impact aid a school receives is dependent on the number of “Federal” students the district supports in relation to the total district student population. Schools received more Federal impact aid for those students whose parents both live and work on Federal property. Total Federal impact aid varies year by year according to congressional appropriations for the program, but in general Federal impact aid has ranged from \$250 to \$2,000 per student.

The ROI has one school district- the Frederick County Board of Education. Within this, more than 50 schools service Frederick County’s families and children. There are 32 elementary schools, 12 middle schools, and 11 high schools with approximately 18,200, 9,300, and 11,800 students enrolled respectively (NCES 2003-2004). Table 4-10 list all of the schools by type and enrollment.

Table 4-10. Frederick County, Maryland Schools

School Type	# of Schools	Student Enrollment
Elementary	32	18,200
Middle	12	9,300
High School	11	11,800
Other/Special Education	4	757
Total	59	40,057

(Source: NCES 2003-2004)

Family Support Services – Fort Detrick operates the Military Child Development Program, which provides high quality child care for children aged 6 weeks to kindergarten age. It also offers school age services to military families in Family Child Care Homes, which accepts children up to 12 years of age. This program has been called a “model for the nation.” In addition, the Fort Detrick Child Development center accepts children for both full day care and hourly care to active duty, civilian, and contract workers on the base.

Shops, Services, and Recreation – There are 6 tennis courts, a swimming pool, a fitness center offering group exercise classes, a 4-lane bowling center, and a jogging trail available on post. Off-base, Frederick County has a variety of shopping centers, ranging from high end centers such as Francis Scott Key Mall to the Prime Outlets in Hagarstown. Frederick is Maryland’s second largest city and its downtown area is a 50-block historic district that has been designated as one of America’s "Dozen Distinct Destinations" by The National Trust for Historic Preservation. In this downtown historic area, there are over 100 specialty shops and art galleries, 200 antique dealers, and 30 multi-ethnic restaurants. Further north, one can go swimming, boating, hiking, fishing, and rock climbing at Catoctin Mountain National Park, Cunningham Falls State Park, and Gambrill State Park.

Law Enforcement – The Frederick County Sheriff’s Office, consisting of a patrol section (K-9 unit, a traffic unit, Community Deputies, and the honor guard), and an administration unit, provides law enforcement services in the ROI. Each patrol team is supervised by a Sergeant, two Corporals and a Lieutenant.

Fire Protection – There are 31 Fire/Rescue EMS stations located within the ROI, with four of them located in the City of Frederick itself. Each fire or rescue station recruits its own volunteers from community members surrounding a particular station. In addition, Fort Detrick has a fire department that serves facilities on the installation, including barracks and family housing.

4.10.1.5 Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. The Executive Order is designed to focus the attention of Federal agencies on the human health and environmental conditions in minority communities and low-income communities. Environmental justice analyses are performed to identify potential disproportionately high and adverse impacts from proposed actions and to identify alternatives that might mitigate these impacts. Data from the U.S Department of Commerce 2000 Census of Population and Housing were used for this environmental justice analysis. Minority populations included in the census are identified as Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and other Pacific Islander, Hispanic, of two or more races, and other. Poverty status, used in this EA to define low-income status, is reported as the number of persons with income below poverty level. The 2000 Census defines the poverty level as \$8,794 of annual income, or less, for an individual, and \$17,603 of annual income, or less, for a family of four.

In 2004, 87% percent of the ROI population was white, and 7.2% percent was black, and 3.8 percent were of Hispanic origin. For the United States, 80.4 percent of the population was white, 12.8 percent was black, and 12.6 percent was of other minority racial groups. Approximately 12.5 percent of the U.S. population was Hispanic (Stats Indiana, 2006b). The ROI has a lower percentage of minority residents than for both the state of Maryland and the United States, as shown in Table 4-11. The Census Bureau bases the poverty status of families and individuals on 48 threshold variables, including income, family size, number of family members under the age of 18 and over the age of 65, and amount spent on food. In 2003 approximately 5.6 percent of the ROI residents were classified as living in poverty, lower than the state of Maryland and approximately half the poverty rate for the United States as a whole.

Table 4-11. Race, Ethnicity, and Poverty Status

	ROI	MARYLAND	UNITED STATES
White	192,207	3,583,210	211,460,626
Black or African American	15,931	1,615,036	34,658,190
American Indian and Alaskan Native	594	17,860	2,475,956
Asian	5,446	257,876	10,242,998
Native Hawaiian and Other Pacific Islander	115	3,319	398,835
Some other race	3,048	123,087	15,359,073
Two or more Races	3,360	80,757	6,826,228
Hispanic or Latino (of any race)	8,447	297,717	35,305,818
Total Population	220,701	5,558,058	281,421,906
Median Household Income	\$66,493	\$54,302	\$41,944
Percent Living Below Poverty	5.6%	8.8%	12.4%

(Source: Stats Indiana, 2006b; Census, 2000)

4.10.1.6 Protection of Children

On April 21, 1997, President Clinton issued Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. This Executive Order directs each Federal agency to ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. EO 13045 recognizes that a growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health risks and safety risks. These risks arise because children's neurological, immunological, digestive, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weight than adults; children's size and weight may diminish their protection from standard safety features; and children's behavior patterns make them more susceptible to accidents because they are less able to protect themselves. Therefore, to the extent permitted by law and appropriate, and consistent with the agency's mission, President Clinton has directed each Federal agency to (1) make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children, and (2) ensure that the agency's policies, programs, and standards address disproportionate health risks to children that result from environmental health risks or safety risks. Examples of risks to children include increased traffic volumes and industrial or production-oriented activities that would generate substances or pollutants in which children may come into contact with or ingest.

4.10.2 Environmental Consequences

EIFS Model Methodology. The economic effects of implementing the proposed action are 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 associated with the renovation of housing represent the direct effects of the action. Based on the input data and calculated multipliers, the model estimates changes in sales volume, income, employment, and population in the ROI, accounting for the direct and indirect effects of the action. Appendix C discusses this methodology in more detail and presents the model input and output tables developed for this analysis.

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 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.

Impacts to socioeconomics were identified using the following criteria:

No Effects – No change to socioeconomic conditions.

Not Significant Effect – A change that does not fall outside the historic range of ROI economic variation.

Significant Effect – A change is considered significant if it falls outside the historical range of ROI economic variation.

4.10.2.1 No Action Alternative

Economic Development – No effects would be expected. Under the no action alternative, the Installation working population and Installation expenditures would remain unchanged from baseline

levels. No new construction would take place. Therefore, economic activity levels would be the same as under the baseline conditions.

Demographics – No effects would be expected. Under the No Action Alternative, the Installation working population would remain unchanged from baseline levels and no new construction would take place. Therefore, the ROI population growth would be the same as under baseline conditions.

Housing – No effects would be expected. Under the No Action Alternative, the Installation working population would remain unchanged from baseline levels. Therefore, the demand for housing units would be the same as under baseline conditions.

Quality of Life – No effects would be expected to quality of life, including health, fire, and law enforcement because demand for these services would remain unchanged from baseline levels.

Environmental Justice – No effects would be expected. The No Action Alternative would not result in significant adverse impacts to any demographic group residing or working in the economic ROI. Therefore, there would be no disproportionately high and adverse impacts to minority populations or low-income populations. Hence, the No Action Alternative for Fort Detrick would not result in any environmental justice impacts.

Protection of Children – No effects would be expected. The No Action Alternative would not result in adverse impacts to children.

4.10.2.2 Realignment (Preferred) Alternative

Economic Development – Expected direct and indirect beneficial effects would not be significant. Under the proposed action, 42 military personnel, 150 contractors, and 33 civilian employees would be added to the Fort Detrick workforce. According to the EIFS model, the proposed action would generate an approximate total net gain of 676 jobs in the Fort Detrick economic ROI (379 direct and 297 indirect jobs). Of these jobs created, nearly 50 percent are directly from construction activities, and would be of a short-term nature. The EIFS model shows that this increase in employment would represent a 0.72 percent increase in the region's employment levels and would fall far short of the RTV Value of 7.76 percent. The proposed action would also generate positive changes in the other economic indicators estimated by the EIFs model, including an approximately 1.32 percent increase in sales volume and a 0.6 percent increase in regional personal income.

In addition, the construction of the new facilities on the Installation would further generate economic activity due to the associated increase in expenditures on labor and materials during the building period. Sales volume generated by the proposed action is expected to reach in excess of \$110,000,000, or, a 1.32% increase. Of this total, sales directly related to construction activities is over \$82,000,000, or approximately 74 percent of the total.

Demographics – Expected direct and indirect effects would not be significant. Under the proposed action, incoming military and civilian personnel and their dependents would increase the ROI population by 1,088 (560 local residents, and 528 off-base residents), or by about 0.31 percent.

Housing – Expected adverse direct and indirect effects would not be significant. Under the proposed action, there would be a minor increase in the demand for housing. Given the fast growth in available housing in Frederick County, the available off-base housing stock is likely to be capable of absorbing the predicted increase in population. Meanwhile, on-base housing would continue to be scarce, and many new entrants would have to be put on waiting lists should they desire to live on post. The increase in demand is not expected to result in increases in local housing costs.

Quality of Life – Expected adverse direct effects would not be significant. Approximately 200 school age children would accompany the incoming military and civilian personal. The current school systems, especially the 3 intermediate schools are operating close to capacity and the additional students could slightly worsen the student teacher ratios at certain schools. No effects would be expected for any other of the public services including health, fire, and law enforcement, given the relative small size of the incoming population compared to the population size of the ROI.

Environmental Justice – No effects would be expected. The proposed action would not result in significant adverse impacts to any demographic group residing or working in the economic ROI. Therefore, there would be no disproportionately high and adverse impacts to minority populations or low-income populations. Hence, the proposed action for Fort Detrick would not result in any environmental justice impacts.

Protection of Children – No effects would be expected. All proposed construction would be carried out in areas where few or no children reside or visit. In all cases, proper precautions including the placement of fencing and other types of barriers would be used to prevent potential harm to all civilians, including children.

4.11 TRANSPORTATION

This section describes the general traffic conditions within the affected environment in terms of access and circulation, and assesses any impacts related to these issues.

4.11.1 Affected Environment

4.11.1.1 Roadways and Traffic

Fort Detrick is located in Frederick, Maryland, approximately 45 miles north of Washington, DC and 45 miles west-northwest of Baltimore. Fort Detrick is accessible through interstate and U.S. highways including I-70, I-270, US 40, and US 15. Interstate 270 and other major roadways that converge in the City of Frederick provide convenient access to Washington, DC, Baltimore, and other employment centers in the region.

Off Post Roadways – The Installation is accessed through the surrounding street network. The main roads that provide access to Fort Detrick are: US-15, Rosemont Avenue, Seventh Street, Opossumtown Pike, and Military Road.

US-15 is a four-lane divided primary arterial that runs north-south serving both regional and local commuter traffic in the City of Frederick. This highway, also known as the Frederick Bypass, is located approximately one-half mile south of Fort Detrick. In the vicinity of the Installation, US-15 operates as a grade-separated road connecting with east-west arterials through interchanges. Close proximity of the interchanges along with high vehicular demand causes peak hour congestion along US-15 in Frederick. Three arterials provide direct access from US-15 to Fort Detrick: Rosemont Avenue, Seventh Street, and Opossumtown Pike.

Rosemont Avenue is a four-lane arterial that runs in an east-west direction. Seventh Street is a four-lane arterial in some sections and is a two-lane arterial in others; it runs in an east-west direction with posted speed of 25 miles per hour. Seventh Street is the signed entrance to Fort Detrick at US-15 and provides direct access to the Veterans Gate. All visitors must use this gate to access the post. There are two signals between US-15 and the Veterans Gate (approximately 2,000 feet from US-15 and at the 7th Street/Veterans Gate intersection). Seventh Street ends at the Veterans Gate and non-post traffic turns left to Military Road.

Opossumtown Pike is a four-lane divided arterial that runs in a north-south direction with a 35 miles per hour speed limit. There are left turn lanes provided along the road. This allows for good progressive movement along the corridor.

Military Road is a two-lane undivided collector street that runs in a north-south direction. It runs along the eastern boundary of Fort Detrick and provides a link to connect Rosemont Avenue with Seventh Street.

In March of 2006 the City of Frederick performed traffic studies for the primary arteries that provide access to Area A of Fort Detrick (USAG, 2006b). Based on the data obtained by the City of Frederick and on Fort Detrick gate data, the following conclusions can be made:

- No more than 32 percent of the total daily vehicles traveling on Rosemont Avenue, Military Road, West Seventh Street and Opossumtown Pike collectively are entering and leaving Area A.
- Area A receives no more than 34 percent of the vehicles traveling on these arteries between the morning rush hours of 0600 and 1000.
- Veterans Gate receives approximately 51 percent of the total daily vehicles traveling in the direction of Area A of Fort Detrick along Military Road and West Seventh Street.
- Veterans Gate receives approximately 81 percent of the vehicles traveling in the direction of Area A on Military Road and West Seventh Street between the morning rush hours of 0600 and 1000.

The above points indicate that even though the post contributes a large amount of traffic to the nearby arteries, its contribution is not decisive in the operational conditions that they experience (with the exception of the Veterans Gate).

In traffic analysis, the peak hour is normally used to represent the most critical hours of operation and has the highest capacity requirements for an intersection. The peak hours normally coincide with the commuting hours during workdays. In the 2003 study the AM and PM hours occurred between 0600 through 0900 hours and 1600 through 1800 hours respectively.

Gates – There are four gates that control entry into Fort Detrick. These are: Veterans Gate (formerly Main Gate), Opossumtown Gate, Old Farm Gate, and Rosemont Gate.

The Veterans Gate is located on the southeast side of Area A and provides multiple inbound lanes and outbound lanes to access Fort Detrick. All visitors are required to enter at this location. There is a vehicle inspection area where all visitors are directed. The gate was recently renovated, with completion of the work at the end of 2005. It is open 24 hours per day, 7 days per week including holidays. As of December 2005, approximately 53 percent of the vehicles entering Fort Detrick Area A utilized the Veterans Gate.

The Rosemont Gate provides access to the post through the west. It is exclusively used by permitted (with DOD-sticker) vehicles and operates from 6:00 AM to 6:00 PM, Monday through Friday. The gate is closed all other hours. The Rosemont Gate was recently upgraded to accommodate both incoming and outgoing traffic, as well as redesigned to allow more incoming vehicles onto the Installation for security checks in order to decrease the amount of queued traffic on Rosemont Avenue. As of December 2005, approximately 20 percent of the vehicles entering Fort Detrick Area A utilized the Rosemont Gate (USAG, 2006b).

The Opossumtown Gate is located to the east of Area A. It is exclusively used by permitted (with DOD-sticker) vehicles and operates from 0600 to 1800 hours, Monday through Friday. This gate has one inbound and one outbound lane that connects to Porter Street. As of December 2005, approximately 16 percent of the vehicles entering Fort Detrick Area A utilized the Opossumtown Gate (USAG, 2006b).

The Old Farm Gate is open from 6:00 AM to 6:00 PM. This gate has one inbound and one outbound lane that connects to Doughten Drive. From analysis conducted at the gate it was concluded that there is moderate delay and queuing during the AM peak only (STV Incorporated, 2003). Currently, this gate is the primary access point for commercial and construction related trucking. The Old Farm Gate is scheduled to be renovated in 2007. A truck inspection station will be added to inspect all incoming deliveries. During the renovation period of the Old Farm Gate, the Veterans Gate may be used for trucks and construction vehicles. As of December 2005 approximately 11 percent of the vehicles entering Fort Detrick Area A utilized the Old Farm Gate.

Fort Detrick Gates operate well with little delay during morning and afternoon peak traffic periods. In December 2005, observations at the Veterans Gate noted that during peak periods where high traffic volumes are present (0700-0900 hours, 1100-1300 hours, 1600-1800 hours), very few delays were witnessed (USAG, 2006b).

On Post Roadways – The Fort Detrick road network is comprised of primary, secondary, and tertiary roads. The primary roads are Porter Street, Doughten Drive and Ditto Avenue. The 2003 Installation-Wide Transportation Study reported these roads to have narrow sections compared to the Installation Design Guide (IDG) requirements (STV, Inc., 2003). The majority of the secondary roadways, which include Randall Street, Freedman Drive, and Nelson Street, met their design criteria.

The posted speed limit for roads on the post is 25 miles per hour. The only exceptions are areas by the Child Development Center, the church and a road section with reduced stopping sight distance. There are several types of traffic controls at Fort Detrick; the most relevant are signs, striping, and occasional direction by security personnel. A traffic light was recently installed at the intersection of Porter Drive and Veterans Drive.

Parking – The existing parking facilities, according to the Provost Marshal Office (PMO), are not adequate other than in the southwestern section of the Installation. Deficiencies relate mainly to the amount of on-street parking and a high proportion of small, irregular, and poorly defined lots (STV, Inc., 2003).

4.11.1.2 Installation Transportation

There is no information regarding the availability of an internal shuttle.

4.11.1.3 Public Transportation

Fort Detrick is accessible by public transportation through the Frederick Towne Mall Connector (Route 30) of Frederick County's bus system, TransIT. Route 30 provides hourly service between the Frederick Maryland Rail Commuter (MARC) Station Transit Center in downtown Frederick and the Frederick Towne Mall. There are three stops that provide convenient access to Fort Detrick. One stop is at the Veterans Gate on Military Road; the second stop is at the intersection of Military Road and Rosemont Avenue; and the third stop is at the Old Farm Station Shopping Center at Old Farm Road (west of the Old Farm Gate).

4.11.2 Environmental Consequences

The following criteria have been developed to assess the transportation impacts for each of the alternatives:

No Effect – No alterations of traffic patterns and trends would result from the action.

Not Significant Effect – Short- or long-term alterations of traffic patterns and trends would result from the action. The intersections and gates may reach capacity but this change would be temporary or managed through improvements.

Significant Effect – Traffic patterns would be permanently altered from the action. The intersections and gates would reach capacity and extensive delays would develop.

4.11.2.1 No Action Alternative

No effects would be expected. Implementation of the No Action Alternative would not alter the existing transportation infrastructure at the sites being considered under the proposed action.

4.11.2.2 Realignment (Preferred) Alternative

Roadways and Traffic – No significant adverse effects would be expected to on-post and off-post roadways. There are three projects identified as part of the BRAC mandated initiatives. The impact that these new projects would have on the transportation infrastructure is given by the number of trips that they will generate in addition to the current volumes.

Estimates of the trips generated were prepared using the procedure established by the Institute of Transportation Engineers (ITE) in its Trip Generation Handbook (2nd Edition) and its associated Trip Generation rates (7th Edition). Based on a survey of developments with different land uses, the trips generated in each of them were associated with an independent variable (square footage and number of students/residents/employees) and time period of analysis (AM and PM peak on Weekdays; peak hour on Saturday and Sunday) through a regression analysis.

Using the trip generation procedure outlined by the ITE, the trips generated by each of the projects were estimated and are presented in Table 4-12. Given that there would not be an increase in the personnel attached to the Armed Forces Reserve Center and that the trips they generated were already considered in other studies, there are no additional trips generated. Considering that the Armed Forces Reserve Center will be used for training exercises during the weekends and that the highest weekend of training is expected to involve 147 marines, this weekend is considered representative of the weekend conditions for the traffic analysis.

As the table 4-12 shows, the project that would have the greatest potential impact on neighboring transportation infrastructure is the Medical Bio-Defense Research Laboratory during weekdays and the Armed Forces Reserve Center during weekends. The critical traffic flows in a traffic analysis are the in-bound trips in the AM peak hours and the out-bound trips in the PM peak hours, as they coincide with the highest directions of travel by other users of the road network. The Medical Bio-Defense Research Laboratory would receive 61 trips in the AM peak and generate 66 trips in the PM peak during weekdays. The Armed Forces Reserve Center would receive 80 vehicle trips in the AM peak and generate 77 vehicle trips in the PM peak during the highest weekend of training.

Table 4-12. Trips Generated by Each Additional Project, by Peak Hour and Direction of Flow

No.	Project Description	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
1	Medical Bio-Defense Laboratory - Weekday	61	10	71	7	66	73
2	Joint Bio-Medical RDA - Weekday	61	7	68	10	58	68
3	Reserve Center (AFRC) - Weekday	0	0	0	0	0	0
	Weekday Total	141	19	160	20	142	162
3	Reserve Center (AFRC) - Weekend	80	10	90	13	77	90

The relatively small traffic volumes expected from the proposed projects will add to the existing congestion on the off-post roads, but not degrade the LOS when compared to the conditions identified in the 2006 USAMRIID FEIS. A comparison of current traffic loadings to major roads serving Fort Detrick with projected traffic loading increases to Fort Detrick gates and their corresponding arterials indicates that the impacts of traffic associated with the operation of the new BRAC facilities will be minor (see Table 4-13). The following data for projected traffic loading references the USAMRIID FEIS (USAG, 2006b)

Table 4-13. Estimated Traffic Loadings from Fort Detrick to Major Roads Serving the Installation. Measured by Projected Increase in Gate and Local Traffic. ¹

	BASELINE² (Current)	APPROVED AND PLANNED PROJECTS^{3,4} (Future)
Opossumtown Gate (both directions on Opossumtown Pike)	Less than 15%	Less than 15%
Rosemont and Old Farm Gates (both directions on Rosemont Ave.)	Less than 23%	Less than 23%
Veterans Gate (Heading toward Area A on W. 7 th St. and Military Rd.)	51%	50%

¹ Each percentage estimate represents the contribution of each Fort Detrick Area A gate to the total traffic volume traveling on their corresponding arterial(s).

² Baseline estimates represent the current contribution of each Fort Detrick Area A gate to their corresponding arterial(s).

³ Approved and planned project estimates represent the current contribution of each Fort Detrick Area A gate plus incremental increases from USAMRIID, NIAID IRF, DHS NBACC Facility, Fort Detrick IMP, BRAC, VA CBOC, CUP, and NCI. The traffic loading contributed by USAMRIID will account for less than a quarter of the projected increase in vehicles for all gates due to approved and planned projects.

⁴ Local traffic projections are assumed to be proportional to Frederick County employment growth (16.6%) detailed in the Frederick County data for the period 2005-2010.

The population of Frederick County area will continue to grow at a robust rate. For example, the projected employment growth for Frederick County is expected to increase 16.6 percent between 2005 and 2010. Employment growth at Fort Detrick for the same time period will be approximately 17.4

percent. Thus, the rates of employment growth in Frederick County and Fort Detrick are nearly identical, and indicate that the future development of Fort Detrick is comparable to anticipated countywide development and associated traffic loadings. Expanded telecommuting and carpooling opportunities for Fort Detrick employees will help alleviate Fort Detrick related traffic impacts.

Anticipated traffic impacts from the development of Fort Detrick are summarized below:

- The Veterans Gate will continue to be the most heavily utilized gate when approved and planned projects are included in the future traffic loadings. The Veterans Gate will receive approximately 50 percent of the total daily vehicles traveling either northeast on Military Road or northwest on West Seventh Street, towards Area A based on the current contribution of traffic plus incremental increases from operation of the new BRAC facilities and approved and planned projects.
- The Opossumtown Gate will service less than 15 percent of the total daily vehicles traveling on Opossumtown Pike based on the current contribution of Opossumtown Gate traffic plus incremental increases from operation of the new BRAC facilities and approved and planned projects.
- The Rosemont and Old Farm Gates collectively will service less than 23 percent of the total daily vehicles traveling on Rosemont Avenue based on the current contributions of Rosemont and Old Farm Gates traffic plus incremental increases from operation of the new BRAC facilities and approved and planned projects.

Approximately 31 percent of the total daily vehicles traveling on Rosemont Avenue, Military Road, West Seventh Street and Opossumtown Pike collectively will be entering and leaving Area A based on the current contribution of Area A traffic plus incremental increases from operation of the new BRAC facilities and approved and planned projects.

Considering that several gates were recently improved, with additional lanes in operation, it could be reasonably expected that some of the additional traffic would use other gates instead of using Veterans Gate, therefore reducing the impact on Veterans Gate and its access roads.

Installation Transportation and Public Transportation – Because the numbers of new personnel are small, impacts to public or any post transportation would not be expected to be significant.

4.12 UTILITIES

This section assesses potable water supply, wastewater systems, stormwater systems, energy sources, communications, and solid waste service.

4.12.1 Affected Environment

4.12.1.1 Potable Water Supply

Fort Detrick owns, operates, and maintains the Installation water-distribution system. Source water is withdrawn from the Monocacy River and is processed through the Fort Detrick WTP located in Area C to the east of Areas A and B. Under a water allocation permit that expires in 2012, the State of Maryland permits Fort Detrick to withdraw up to a daily average of 2.0 million gallons of water per day (mgd) of water with a maximum daily withdrawal of 2.5 mgd from the Monocacy River.

The WTP has a maximum processing capacity of 4.25 mgd, but due to the size of the existing distribution pipes, can only provide a maximum of 3.1 mgd of finished water without exceeding the maximum pressure for distribution (USAG, 2006b; DHS and USAG, 2004b). Fort Detrick has an excellent record

of meeting water quality standards, as set by Federal (Clean Water Act), State (COMAR 26.04.01), and Army criteria (USAG, 2006b). The WTP produced approximately 493 million gallons of water in FY 2003, approximately 567 million gallons of water in FY 2004, and approximately 449 million gallons of water in FY 2005. The unusually high amount of water consumed at the Installation in 2004 was due to major leaks. The repair of these leaks (now estimated to be only about 4 percent of water use) enabled the WTP to satisfy consumption demands with decreased production at the WTP for FY 2005, as compared with FY 2004 (USAG, 2006b; DHS and USAG, 2004b).

For emergencies or drought, Fort Detrick and the City of Frederick have a written agreement for the exchange of potable water. In cases of emergency or if a plant is shut down for repair, Fort Detrick and Frederick exchange water between their water distribution systems through a metered manual connection on Area A (USAG, 2006b). The City of Frederick water intake is approximately 75 yards upstream from the Fort Detrick intake (DHS and USAG, 2004b). The City of Frederick uses approximately 6.3 million gallons of water per day, with 68 percent consumed by residential uses and 32 percent by commercial, industrial, and other uses (USAG, 2006b). The City of Frederick pumps approximately 29.3 percent of its drinking water from the Monocacy River.

Water distribution mains from the WTP provide water to the vicinity of the proposed sites in Area A. An 8-inch water main provides water from the WTP to the eastern section of Area B, including the Flair Army Reserve Center.

4.12.1.2 Wastewater System

Fort Detrick operates and maintains two separate sewer systems: the sanitary sewer system and the laboratory sewer system. The sanitary sewer system will support the three projects evaluated by this EA. Although the liquid wastes from the Medical Bio-Defense Research Laboratory are expected to require pre-treatment, neither the laboratory nor the other proposed projects in this EA are expected to utilize the laboratory sewer system, which conveys wastewater from some of the laboratories to a pretreatment facility. Therefore, the laboratory sewer system will not be discussed further.

The sanitary sewer system in Area A uses gravity sewers and force mains to collect the wastewater and convey it to the eastern side of Area A, where it is consolidated into pipes for gravity flow to Fort Detrick's WWTP, located in Area C.

The proposed project sites in Area A for the Medical Bio-Defense Research Laboratory and Joint Bio-Medical RDA Management Center are near wastewater sewer mains. They would contribute wastewater to the existing sewer system through secondary extensions into the new facilities. Waste from the Flair Army Reserve Center site in Area B would be conveyed to the sewer system in Area A through a sewer main that enters Area B at the intersection of Rosemont Avenue and Rocky Springs Road.

The Fort Detrick WWTP, located in Area C, currently operates at 35 to 60 percent of its permitted capacity (2.0 mgd), treating 0.70 to 1.2 mgd of wastewater (USAG, 2006b). The wastewater is treated and then discharged into the Monocacy River at a point downstream from both the Fort Detrick and the City of Frederick water treatment plants. The WWTP permit allows an annual average flow of 2.0 mgd of treated wastewater to be discharged into the Monocacy River. This permit expires on 30 June 2009. The WWTP treated approximately 372 million gallons in FY 2003, approximately 359 million gallons in FY 2004, and approximately 251 million gallons in FY 2005 (USAG, 2006b).

A study has been conducted by O'Brien and Gere for Fort Detrick (USAG, 2006f) to evaluate the ability of the WWTP to treat Fort Detrick's future wastewater flows. The influent wastewater characteristics are expected to remain the same because the basic functions of the new facilities would be similar to the existing ones. The O'Brien and Gere study recommended upgrading the existing trickling filter treatment

process because the current technology cannot provide sufficient removal efficiency to achieve pending requirements for nitrogen and phosphorus removal.

4.12.1.3 Stormwater System

Stormwater drains from the Installation through a system of surface ditches, culverts, inlets, and storm sewer lines into Carroll Creek and two other tributaries of the Monocacy River. Stormwater from the central and western portions of Area A drains west to Carroll Creek. The remaining portion of Area A drains east through other tributaries of the Monocacy River. All of the stormwater from Area B drains into Carroll Creek.

MDE manages the State's stormwater discharges through its Stormwater Management Regulations (COMAR 26.17.01 through .12). In accordance with Federal regulations (40 CFR 122.26) and COMAR 26.17.02, construction projects that involve disturbing more than 5,000 SF of land require that erosion and sediment control and stormwater management plans be submitted and approved by MDE before construction activities can begin. Requirements and guidelines are published in MDE's 2000 Maryland Stormwater Design Manual, Volumes I & II and the Maryland Stormwater Management Guidelines for State & Federal Projects.

Stormwater management measures are also required for redevelopment projects in Urban Areas, which include the City of Frederick and Fort Detrick. COMAR 26.17.02.02 defines redevelopment as any construction, alteration, or improvement exceeding 5,000 SF of land disturbance performed on sites where the existing land use is commercial, industrial, institutional, or multifamily residential. Redevelopment projects are required to reduce existing site imperviousness by 20%, provide water quality for 20% of the site's imperviousness, or a combination of both. Where site conditions prevent these requirements from being met, practical alternatives such as fees, off-site water quality control, or stream restoration may be required.

An Institutional Management Plan (IMP) has been prepared to provide a comprehensive stormwater management plan and practices for development in drainage areas A-3 and A-4. The Medical Biological Defense Research Laboratory will be located in drainage area A-4. The MDE has provided conceptual approval of the regional stormwater management approach. The IMP was submitted to MDE on August 23, 2006 for review and ultimate approval. The area of development that the Joint Bio-Medical RDA Management Center will be located is an area designated as the Administration Area. An evaluation of this area is currently being conducted to determine the ability to provide a regional approach for stormwater management.

4.12.1.4 Energy Sources

The Allegheny Power Company provides electrical power to the Installation via two 35-kilovolt (kV) power lines, primarily from the Monocacy substation and secondarily from the Frederick substation. The demand for electricity at the Installation is high due to the energy-intensive nature of research activities conducted at Fort Detrick. The total electrical power consumption for the entire Installation was approximately 139 million kilowatt-hours (kWh) in FY 2003, 143 million kWh in FY 2004, and 149 million kWh in FY 2005.

Power to Area B is supplied by a 100-amp overhead line from Area A. This power supply line, installed over 40 years ago, crosses Rosemont Avenue and enters Area B in the southeast corner of the property. This power supply line to Area B is nearing capacity (Schmidt, 2004).

The Frederick Gas Company furnishes natural gas to Fort Detrick. Natural gas consumption for the entire Installation was approximately 2.8 million cubic feet in FY 2003, 2.1 million cubic feet in FY 2004, and 1.6 million cubic feet in FY 2005 (USAG, 2006b). The Building 190 Boiler Plant consumed

approximately 70 percent of the natural gas supplied to the Installation in FY 2005 (USAG, 2006b). The Buildings 190 Boiler Plant also uses Number 6 fuel oil to supplement the natural gas fuel.

Through the DoD's Enhanced Use Lease (EUL) Authority, Fort Detrick has leased 10 acres of land to private entities for the purpose of constructing and operating a Cogeneration Utility Plant (CUP). The CUP, slated for opening in early 2008, will be located on the east-central portion of Area A at Fort Detrick, Maryland and is anticipated to provide reliable electrical power, steam and chilled water for prospective end users on and off the Installation (USAG, 2005).

4.12.1.5 Communications

Telephone service is provided by the Fort Detrick Directorate of Information Management (DOIM).

4.12.1.6 Solid Waste

This section discusses municipal solid waste, which will be generated by each of the three projects that this EA evaluates. The Medical Bio-Defense Research Laboratory is also expected to generate special medical and hazardous wastes. Special medical waste and hazardous waste are subject to Federal, State, and local regulations to protect transporters and the public from potential hazards that are associated with possible infectious agents or contaminants in the waste. All special medical and hazardous wastes generated in the proposed laboratory will be managed and disposed of in accordance with applicable Federal, State, local, and Army regulations. Special medical and hazardous wastes are discussed further in Section 4.13.

Municipal Landfill – Fort Detrick operates and maintains a permitted municipal landfill and an incinerator complex that has two municipal incinerators and two medical waste incinerators.

The Fort Detrick Municipal Landfill holds a refuse disposal permit that is effective through 10 July 2010 (USAG, 2006b). The permitted area consists of a 60.9-acre fill area within Area B. This landfill may only accept domestic, municipal, commercial, industrial, agricultural, silvicultural, and construction waste generated at Fort Detrick. Types of waste that are not permitted for disposal at the Fort Detrick Municipal Landfill include controlled hazardous substances, liquid waste, special medical waste, radioactive materials, automobiles, large containers such as drums or tanks (unless flattened or crushed and empty of contents), animal carcasses, untreated sewage, truckloads of separately collected yard waste, and tires, unless otherwise specifically authorized by a valid permit issued under COMAR.

The landfill is constructed with compacted cell floors, synthetic geomembrane liners, and a leachate collection system. A cover of six inches of compacted earth is placed over exposed solid waste daily to prevent odor and particulate emissions, and to minimize infiltration of rainwater into active cells. Intermediate and final covers over completed lifts are installed to depths of one foot and two feet, respectively. The disposal site is graded to minimize runoff, to prevent erosion and ponding, and to drain surface water from the landfill area (USAG, 2003; MDE, 2000b). In compliance with its permit, the Fort Detrick Municipal Landfill has groundwater monitoring wells installed for leak detection, and a leachate disposal system to collect waste liquids percolating through the landfill. Leachate wastewater is pumped to Area A for discharge into the sanitary sewer system for treatment at the Fort Detrick WWTP.

At the end of 2005, the remaining landfill capacity reported to MDE was 907,055 cubic yards. From 2003 thru 2005, the Fort Detrick Municipal Landfill accepted 5,469 cubic yards of material, which includes ash, refuse, fill, sludge, and cover material, for a three-year average of approximately 1,823 cubic yards per year.

Municipal Incineration – Fort Detrick also has an incinerator complex, which consists of two municipal waste incinerators and two medical waste incinerators, located at the western border of Area A. The four

incinerators in the complex have a combined capacity of over 14,000 tons of waste per year; however, they are currently operating at approximately 52 percent of that capacity (USAG, 2006b; DHS and USAG, 2004b).

Fort Detrick operates the municipal waste and medical waste incinerators under the conditions of a CAA Title V Part 70 operating permit and a refuse disposal permit issued by MDE. The amount of municipal solid waste incinerated at Fort Detrick was 2,402 tons in FY 2003, 2,724 tons in FY 2004, and 2,408 tons FY 2005.

Recycling – A variety of materials at Fort Detrick are recycled, including newspaper, white paper, cardboard, glass, aluminum cans, steel cans, and various scrap metals. Computer cards and scrap metal are shipped to the Defense Reutilization and Marketing Service (DRMS) at the Letterkenny Army Depot for recycling. Other DRMS facilities are located in Mechanicsburg, Pennsylvania and Fort Meade, Maryland (USAG, 2003). Waste oil is also recycled at Fort Detrick. A contracted recycling firm collects the waste oil from various points on the Installation (USAG, 2003).

4.12.2 Environmental Consequences

To assess whether impacts to utilities were potentially significant, the following impact thresholds were used to define significance for each utility:

No effect – The proposed action does not impact the human or natural environment

Not Significant Effect – An impact to the human and/or natural environment would occur, but it is less than thresholds indicated below for “significant effect.”

Significant Effect – thresholds for significance are defined below:

General Utility Construction – Impacts from construction of utilities would be considered potentially significant if expected to cause human health and safety issues considerably above industry norms, or if disruptions to Fort Detrick operations or mission were expected to exceed what was acceptable by the Army and there were no ways to mitigate the disruptions.

Potable Water Supply – Impacts would be considered potentially significant if the proposed action or alternatives would require more potable water than could be reliably provided by the combination of available potable water sources, leading to shortages, or if regulatory limitations on withdrawals or the treatment plant would potentially be exceeded. Major systemic distribution constraints could also be potentially significant; however, the fact that major investments would be required to provide potable water reliably would not necessarily constitute a significant impact if the investments were reasonable for the overall magnitude of proposed construction, or to provide needed restoration or modernization, and would prevent shortages or harm to the environment.

Wastewater System – Impacts would be considered potentially significant if the proposed action or alternatives would require more wastewater treatment capacity than could be reliably provided by the wastewater treatment system, potentially leading to the discharge of effluents in excess of standards, or if regulatory limitations on the wastewater treatment plant would potentially be exceeded. Major shortfalls in collection capacity could also be potentially significant; however, the fact that major investments would be required to collect wastewater reliably would not necessarily constitute a significant impact if the investments were reasonable for the overall magnitude of proposed construction, or to provide needed restoration or modernization, and would prevent overflows or harm to the environment.

Stormwater System – Impacts would be considered potentially significant if the proposed action or alternatives would not comply with State or Federal laws governing stormwater discharges.

Energy Sources – Impacts would be considered potentially significant if the proposed action or alternatives would require energy in quantities that would exceed local and/or regional capacities for supply, leading to potentially unreliable service or shortfalls of power or other energy that could affect Fort Detrick's mission. Major systemic distribution constraints could also be potentially significant; however, the fact that major investments would be required to provide energy reliably would not necessarily constitute a significant impact if the investments were reasonable for the overall magnitude of proposed construction, or to provide needed restoration or modernization, and would prevent shortages that could affect Fort Detrick's mission.

Communications – Impacts would be considered potentially significant if the proposed action or alternatives would require communication systems to meet mission requirements that could not be provided without major modifications to the existing Installation systems.

Municipal Solid Waste – Impacts would be considered potentially significant if the proposed action or alternatives would require collection and/or disposal that could not be provided in a reliable manner, which could cause waste to accumulate or be disposed of in a manner that could adversely affect human health or the environment.

4.12.2.1 No Action Alternative

No effects would be expected. Implementation of the No Action Alternative would not alter the existing utility/infrastructure at the sites being considered under the proposed action.

4.12.2.2 Realignment (Preferred) Alternative

Impacts to utilities from construction and operation of the Medical Bio-Defense Research Laboratory and Joint Bio-Medical RDA Management Center in Area A, and the Armed Forces Reserve Center in Area B, are not expected to be significant. Utility extensions would be required to provide service to each of the three proposed projects. These would result in short-term adverse impacts caused by trenching and burial along and potentially in/across roadways that is normal and to be expected for construction activities. Utility loads added by the projects are small compared to overall Fort Detrick loads and system capacities; therefore, impacts to utilities are not expected to be significant. Distribution is convenient to each site.

Potable Water Supply – Adverse short-term effects during construction are not excessive and potable water demand during operation is not expected to be the cause for system or regulatory limits to be exceeded. Expected impacts to the potable water system are therefore not expected to be significant.

There are existing water mains near all proposed project sites; therefore, bringing potable water to each proposed facility should not pose problems. Water pressure would need to be tested for adequacy to meet fire suppression requirements; however, if pressure is inadequate, there are a number of remedies such as provision of booster pumps.

Assuming that water demand for the proposed Medical Bio-Defense Research Laboratory is proportional to that of other bio-research laboratories at Fort Detrick, using the size of one compared to the size of the other as the metric, the Medical Bio-Defense Research Laboratory is estimated to use approximately 6 million gallons of water annually (USAG, 2006b). Water demand for the RDA Management Center, assuming 50 gallons per capita-workday per TM 5-813-1 criteria for a workforce of 103 new personnel, is estimated to be 1,400,000 gallons annually. Water demand for the proposed Joint Reserve Center, which would not add any new personnel, is assumed to stay constant or possibly be reduced as efficient water

fixtures are installed. Therefore total annual water demand for the proposed projects would be approximately 7,400,000 gallons, or an average daily demand of 20,274 gallons per day (gpd). That is approximately 1.65 percent of the total Installation water use of 449 million gallons FY 2005. It is approximately 1.0 percent of the installation permitted capacity of 2.0 mgd, or 730 million gallons annually.

Wastewater System – Short-term effects during construction are not excessive and discharges during operation are not expected to be the cause for system or regulatory limits to be exceeded. Expected impacts to wastewater system are therefore not expected to be significant.

There are existing wastewater mains near all proposed project sites; therefore, provision of wastewater conveyance is not expected to pose problems for any project. Wastewater treatment capacity is adequate to handle sanitary waste from each project. Wastewater, which is proportional to water demand, is estimated as 4 million gallons annually for the Research Laboratory annually (USAG, 2006b) and 500,000 gallons annually for the RDA Management Center. Demand would not be expected to increase at the Reserve Center. Therefore, the projects would be expected to produce 12,000 gpd of new sanitary wastes. The WWTP, which is permitted for 2.0 mgd and averaged between 0.7 and 1.23 mgd the past three years, will have to be upgraded as noted by the O'Brien and Gere study cited in Section 4.12.1.2; however, these three projects are minor contributors. The Research Laboratory is expected to produce wastewater requiring pre-treatment before discharge for treatment at the WWTP, but the method for this has not been determined. The pre-treatment would be accomplished by appropriate technology to assure that standards are met and adverse impacts to the environment or WWTP do not occur.

Stormwater System – Adverse short-term effects during construction are not excessive and all projects would be required to comply with Maryland stormwater guidelines as well as installation guidance; resulting measures implemented during both construction and operation would ensure that impacts would not be significant.

The Medical Biological Defense Research Laboratory, which will be located in drainage area A-4, would be expected to comply with the regional management plan for Area A-4. The location of the Joint Bio-Medical RDA Management Center will probably inhibit the inclusion of this facility into a regional stormwater management basin. Due to the limited available area adjacent to the facility, innovative stormwater management features will need to be evaluated. Site-specific stormwater management features will need to be considered for the Joint Reserve Center development, such as stormwater ponds or bioinfiltration measures.

Energy Sources – Adverse short-term effects during construction are not excessive and demand during operation is not large compared to installation overall use. Therefore, impacts are not expected to be significant.

Annual new demand for electricity is estimated as 3 million kWh annually for the Research Laboratory (USAG, 2006b). Although energy demand has not yet been determined, in the absence of designs for the RDA Management Center and the Reserve Center, it is likely to be considerably less than the 3 million kWh estimated for the Research Laboratory. Flair Reserve Center metered electricity usage in FY 2005, which the new Reserve Center would replace, was approximately 270,000 kWh for the same number of using personnel as will use the new center. The new center will contain approximately five times more interior space, but should be more energy-efficient and could have its energy use offset by less use or demolition of Flair Center. The RDA Management Center, which is an administrative facility of approximately 22,000 square feet serving an estimated 103 personnel, replaces 23,000 square feet of older buildings that will be demolished and that were likely less energy-efficient. The RDA Management Center is one-quarter the size of the laboratory and would likely use less than a quarter of the laboratory's electricity. To summarize, the laboratory would use an estimated 3 million kWh annually, the RDA

Management Center's energy use would be offset by the buildings being demolished, and the Reserve Center could use more than the current center's 270,000 kWh, but a conservative projection in proportion to the five-fold increase of interior space would only be approximately 1.3 million kWh annually. These amounts are considerably smaller than installation usage in FY 2005 of 149 kWh. The three projects are not major drivers for additional electrical capacity.

All three projects are currently expected to use natural gas for heating, although proximity of the Medical Biological Defense Research Laboratory to the central utility plant could lead to its use of process steam for heating as well as for laboratory processes. The RDA Management Center is proximate to the boiler plant and could similarly use steam. Natural gas is expected to be readily available for each site; however, each site would require secondary distribution to the building 5-foot line. Conveyance and natural gas supply, or use of steam from central plants where appropriate, are not expected to pose problems for any project.

Communications – Adverse effects are not expected to be significant. In general, modern telecommunications fiber optics and cabling are being provided to current tenants and are expected to be available for the three projects being evaluated.

Municipal Solid Waste – The requirement for landfill capacity is a small percentage of overall base requirements and would not be expected to be significant; no adverse effects to the environment would be expected by following approved solid waste handling procedures. The Research Laboratory would produce an estimated 73,000 pounds of solid municipal waste and 28,000 pounds of special medical waste annually (estimated based on size of proposed laboratory compared to size of existing bio-research laboratories and the wastes they produce) annually (USAG, 2006b). The RDA Management Center would be expected to produce a smaller volume of municipal waste from administrative (office) type activities and no medical waste, while the Reserve Center would be expected to produce the same level of municipal waste that is currently being produced. These are small amounts compared to the surplus capacities of the incinerator complex and municipal landfill at Fort Detrick. Therefore, the three projects being evaluated are not expected to significantly impact solid waste services in a negative way.

4.13 HAZARDOUS AND TOXIC SUBSTANCES

This section addresses the use, handling, and storage of hazardous and toxic substances at the proposed BRAC facilities; the generation and disposal of hazardous wastes (including hazardous medical and radiological wastes) associated with the proposed operations; and potential site contamination issues, including the potential presence of hazardous or toxic substances in structures to be demolished. The following section, 4.14 Human Health and Safety, addresses specific safety concerns relating to the construction and operation of the BRAC facilities, particularly the Medical Bio-Defense Research Laboratory.

4.13.1 Affected Environment

4.13.1.1 Hazardous Materials Use, Handling, and Storage

Hazardous materials are used in most facilities at Fort Detrick, ranging from small quantities of cleaners and printing supplies to larger quantities of fuels, oils, and various chemicals. Current Fort Detrick hazardous materials policy requires compliance with all Federal, State, and local laws and regulations governing the use of and reporting requirements for hazardous materials and control of hazardous materials to minimize hazards to public health and damage to the environment (USAG, 1998b). The following describes hazardous materials (hazardous or toxic substances) expected to be used, handled, and/or stored at the various BRAC-related facilities assessed in this EA, based on interviews with Fort Detrick personnel and the description of the facilities provided.

Medical Bio-Defense Research Laboratory – This proposed facility would consist of an 84,310 square-foot consolidated defense research laboratory with a vivarium (animal holding and research area), and administrative and storage space. Operations would require the use of a variety of laboratory chemicals. These would be handled and stored in accordance with applicable regulations and label precautions. Use and handling of hazardous and toxic biological agents would also occur. The procedures and precautions related to this use are described in the following section on Human Health and Safety.

Joint Bio-Medical RDA Management Center – The proposed Center would consist primarily of a 22,200 square-foot administrative facility with office space and administrative service areas. There would be minimal use of hazardous materials, such as janitorial products and printing supplies. Any hazardous materials would be handled and stored in accordance with applicable regulations and label precautions.

Joint Reserve Center – This proposed facility would include a 58,647 square-foot Armed Forces Reserve Center (primarily an administrative and training facility), an 8,999 square OMS with work bays, and a 4,458 square foot unit storage building. There would be minimal use of hazardous materials, such as janitorial products and printing supplies, in the administrative portion of this facility. However, the maintenance shop would require the use of several types of hazardous materials. Typical products used would include antifreeze; various petroleum products, oils, and lubricants (POL); brake fluid, hydraulic fluid, cleaners, degreasers, solvents, paints, fuels (gasoline and diesel), and batteries. Safety-Kleen ® parts washers would likely be specified, which provide for the recycling of spent solvents (Gortva, 2006). It is expected that no bulk fuel storage would occur at this location, since refueling stations are available elsewhere on the post (Gortva, 2006). All hazardous materials would be handled and stored in appropriate HAZMAT cabinets or containers in accordance with applicable regulations and label precautions.

4.13.1.2 Hazardous Waste Generation, Storage, and Disposal

Chemical, medical, and radiological wastes are generated at Fort Detrick from various operations and facilities. The Installation has been assigned two EPA Hazardous Waste Generator Identification Numbers (MD 8211620267 for Area A, and MD4211600958 for Area B), both with indefinite expiration dates (USAG, 2006e). Hazardous chemical wastes are generated by research laboratories and some maintenance activities. Each tenant or activity temporarily stores its waste at a satellite accumulation point (SAP). The waste is classified, documented, and reported to the Hazardous Material Management Office (HMMO). The waste is then transported to a 90-day storage area, where it remains until it is transported offsite for disposal or recycling by a licensed hazardous waste contractor (USACE, 1997; Gortva, 2006a). Some spent materials, such as used antifreeze and parts washer solvents, are recycled by Safety-Kleen ®, and therefore do not enter the hazardous waste stream.

Because Fort Detrick holds hazardous wastes for less than 90 days, it is not required to have a hazardous waste storage permit. Each hazardous waste generated must be fully identified and classified, and handled in accordance all applicable Federal and State hazardous waste regulations.

Medical waste includes such items as human and animal blood or parts, pathological wastes, cultures and stocks of infectious agents, syringes, needles, and animal bedding. The proposed research laboratory includes a vivarium (animal holding and research area) and would generate biomedical wastes. Medical waste is collected in approved waterproof, tear-resistant bags or containers, and potentially infectious wastes are autoclaved by the generator before they are removed from the generating facility. Medical wastes would be incinerated in one of two permitted medical waste incinerators located on-site at Fort Detrick. Each incinerator has a capacity of 1,000 pounds per hour and can dispose of about 3 tons of medical waste per day (USAG, 2006b).

Some radiological waste may also be generated by the proposed medical research laboratory, since radiological isotopes are used as tracers in biological testing and research. All radiological waste will be shipped off-site for disposal by a licensed contractor in accordance with all applicable regulations (USAG, 2006b; Esteban 2006).

4.13.1.3 Site Contamination Issues

Installation Restoration Program Site

From investigations generated by the Fort Detrick Installation Restoration and Compliance Cleanup Programs, there are 27 areas in Area A and 13 areas in Area B have been identified as potential Areas of Concern (AOCs) (USAG, 2006b). Many of these sites have been closed out as investigation completed and do not require further action: 23 in Area A and 2 in Area B. AOCs nearby the proposed BRAC facilities that not been closed out or that could have an impact are described below, with descriptions taken directly from the USAMRIID FEIS (USAG, 2006b), which can be consulted for the figures and the original references for the testing and remediation actions described below. Based on interviews with Fort Detrick personnel and the description of the facilities provided, only two of these areas are in close proximity to and could potentially affect construction of two of the proposed BRAC facilities: the Joint Bio-Medical RDA Center and the Joint Reserve Center.

Potential Environmental Concerns in Area A

Water Tower Sites (FTD 69) – There are three water tower sites located in Area A, designated south, west, and north. The water towers were painted with lead-based paints. Particles of dried paint were dispersed in the shallow soils surrounding the towers as a result of normal weathering and sandblasting of the towers. Three inorganic chemicals (chromium total, lead and thallium) were detected in soil above background concentrations and were selected as chemicals of potential concern (COPC) for a Human Health Risk Assessment (HHRA). Based upon the HHRA, chromium, lead, and thallium did not result in an unacceptable risk under the current and anticipated future use scenarios. The Army has voluntarily implemented institutional controls at the site.

Area A Skeet Range – A possible recreational skeet range in the southeast corner of Area A was identified in November 2002. The range was in operation from approximately the 1950s through the 1980s. The former skeet range was located at Building 1520 and extended out approximately 1,000 ft., in an arc southeast to north-northwest. Because lead contamination from firearm discharge in this area was a potential concern, a soil investigation was performed on this site in July 2003. Laboratory analytical results showed lead concentrations to be from 31 to 104 milligrams per kilogram (mg/kg), which are slightly above background levels for that area (i.e., 12 to 28 mg/kg). However, the levels were not higher than MDE residential and industrial risk-based concentration (RBC) levels of 400 mg/kg and 1,000 mg/kg, respectively. Therefore, no remediation of the area was deemed necessary.

Cleanfill Area (FTD 09) – Another area of potential concern is the Cleanfill Area, which is located in the southeastern portion of Area A and encompasses approximately 421,950 ft.² (9.7 acres). The estimated fill depth increases from east to west, less than 3 ft. to 6 ft., respectively. Minor sinkholes were observed east of the heliport and are ascribed to the fill. This area received construction material such as rock, soil, asphalt, and concrete. No records of hazardous waste disposal in this area were found, and the geophysical survey confirmed this observation.

A Phase I investigation incorporated a geophysical survey and soil investigation. Concentrations of a semivolatile organic compound (SVOC), benzo(a)pyrene, detected in two samples, and a PCB, Aroclor 1260, detected in one sample, exceeded residential RBCs. Arsenic was the only chemical detected that exceeded both maximum background levels and the USEPA Region III residential and industrial RBCs.

The risk estimates for workers exposed to the detected chemicals were at the very low end of USEPA's target risk range. Due to the low risk estimate, no further action was taken.

High concentrations of arsenic and lead were found at one soil boring location at the eastern edge of the cleanfill area (the new commissary site). These analytical results prompted further investigation by USAG. In Fall 2002, a laboratory retest of one soil boring sample was performed to determine if possibly a lead-based paint chip fragment from the fill material was included in the soil sample, which would misrepresent the heavy metal concentrations at this sample location. The concentrations were still found to be above MDE and USEPA action levels. Background levels for arsenic in Frederick, including Fort Detrick, naturally occur above USEPA residential and industrial RBCs. Specifically, Area A has measured background levels of arsenic ranging from 5.31 to 71 mg/kg. The elevated arsenic level found at this soil boring location was within the background range for Area A, and no remediation was required.

In 2003, a test trenching investigation at this site revealed asbestos-containing material in one test trench. The buried asbestos-containing material and surrounding soil at this location were removed in May 2004.

Combustible Burn Pit (FTD 11) – A former combustible burn pit (150 ft. x 20 ft.) was reported to have been located in the southeast corner of Area A, approximately 500 ft. east of Building 1520 and approximately 140 ft. west of the A-3 outfall. The pit was reported to be used to burn scrap lumber, and it was also assumed that a petroleum product was used to ignite the material. The area is presently grass-covered. Surface soil samples reveal no evidence of past burning activities.

A Phase I soil investigation of the combustible burn pit site consisted of a surface geophysical survey. A Phase II soil investigation of the pit included three soil borings to determine if soil contamination was present at the surface (depths 2 ft. below ground surface [bgs] or less) and subsurface (depths greater than 2 ft. bgs) of the burn pit area. Both organics (VOCs, SVOCs, pesticides, and PCBs), and inorganics (arsenic, beryllium, copper, iron, lead, magnesium, mercury, and cyanide) were detected at low levels in the soil samples. Concentrations of VOCs, SVOCs, pesticides, or PCBs did not exceed USEPA Region III residential RBCs. At 5 to 6 ft. bgs there was no burn evidence (debris or disturbed soil), indicating that past burning activities have not contaminated soils at this depth. Due to the low risk estimate, no further action was taken.

During the time period of 1953-1955, DA records indicate that outdoor testing of a biological simulant (*Serratia marcescens*) was conducted on the southern portion of the NIBC. The DA records show the testing area to be approximately 5.7 acres in size, spanning a portion of the NIAID IRF site, the NBACC facility site, and Building 1434. *S. marcescens* is a common microbe that lives in soil, water, on plants, and in animals. It is a member of the family Enterobacteriaceae and a human pathogen responsible for a large percentage of nosocomial infections (nosocomial infections are those that originate or occur in a hospital or hospital-like setting). There has been no evidence that a hazardous condition exists at the site and anytime during the 50 years since the simulant testing ceased.

Western Area A Landfill (FTD 08) – Historical records allude to possible landfill materials present to the south and east of Building 538. Landfill materials were encountered and documented during the construction of Chandler Road in 1952. This waste was possibly placed there prior to 1947. The location of this landfill was not confirmed through geophysical surveys, and wastes were not encountered during the installation of several underground utility lines. All anomalies encountered were attributed to buried utilities, geological features (such as shallow bedrock), and interference from high magnetic field areas surrounding Building 538. Therefore, the *Fort Detrick RI Report, Area A, Revised Final* concluded that a buried landfill to the south and east of Building 538 does not exist due to the minimal historical documentation and lack of geophysical evidence.

Landfill Near Building 535 – Another landfill on the NCI-Frederick Main Campus was discovered during excavation for construction of Building 535 in 1992. Documentation for the site indicates that 518.93 tons of soil mixed with laboratory glassware, transite (non-friable asbestos-cement board), ash, and other building debris were removed from the landfill. USAG was fully informed about discovery of the landfill and participated in disposal of medical waste and clean soil excavated from the Building 535 site. An independent laboratory tested four representative samples of ash from the site for Toxicity Characteristic metals using appropriate EPA methodology. No metals were detected, and the limit of detection was less than the regulatory level under EPA and the State of Maryland hazardous waste regulations. NCI-Frederick, in cooperation with Fort Detrick, disposed of all excavated materials in full compliance with all Federal, State, local, and USAG regulations.

Laboratory Sewer System (FTD 03) – The Laboratory Sewer System underlying Area A is of potential environmental concern because of the possible contamination from past biological warfare liquid wastes and radioactive materials.

Building 568 TCE Spill (FTD 66) – The Building 568 TCE spill site is located in the southwestern portion of Area A. TCE was used at this building as a refrigerant. The refrigeration system was removed between 1970 and 1971. There were no visible leaks upon removal. The quantity of TCE, which may have spilled during the filling, operation, or maintenance of the system, is unknown; however leaks of mechanical seals were documented as early as 1964. Currently, a TCE plume exists in the groundwater. A Decision Document (DD) was signed in July 2001 requiring hydraulic containment of the plume and monitoring to verify that EPA maximum contaminant levels (MCL) for groundwater are not exceeded at the facility boundaries. A groundwater production well (with 1 backup well) is used to supply water for aquatic biological laboratories housed in Bldg 568. The current well usage is providing the required hydraulic containment. The Area A TCE plume is no longer migrating off-post above MCLs.

Building 190 Fuel Oil Plume (FTD 73) – Separate from the RI investigations at Area A, a No. 6 fuel oil plume near Building 190 is currently being investigated. Building 190 houses the Fort Detrick boiler plant, which commenced operation in the 1950s. The plant operates six boilers, all of which are fueled by natural gas with No. 6 fuel oil for a primary fuel. A tank farm consisting of ten 53,000-gallon No. 6 fuel oil underground storage tanks (USTs) was installed adjoining Building 190 between 1954 and 1956.

When the site of the tank farm was characterized to select the location for a 250,000-gallon No. 6 fuel oil AST in 1994, traces of No. 6 fuel oil were found in three out of four boreholes. The ten USTs were removed in early 1995; and according to the MDE records, several of them were leaking and free-phase petroleum product was observed floating on the water surface. Following these observations, groundwater monitoring was initiated to assess the extent of free-phase No. 6 fuel oil in the aquifer, and a Corrective Action Plan (CAP) was established (USACE, 1999). A fuel oil recovery skimmer was installed near Building 190 to meet MDE cleanup requirements (USACE, 2002a). The recovery well has yielded over 160 gallon of No. 6 fuel oil as of June 2005. A revised CAP was submitted to MDE in February 2006. The revised CAP proposes the installation of a new oil skimmer, a revised groundwater monitoring proposal, and a closure plan. A 2002 map shows that fuel oil contamination in the groundwater does not extend beyond Schertz Street, which runs north-south, over 3,300 ft. southwest of the proposed new USAMRIID facility sites. Groundwater in the area of the fuel oil spill flows to the southwest.

Buildings 940/950 Gasoline Storage Tank Leaks – Fort Detrick's Buildings 940 and 950 were historically used for vehicle fueling operations. Groundwater at both locations is contaminated with gasoline products from former leaking USTs. Building 940, a former motor pool, had two 12,000-gallon single-wall steel USTs. The USTs were removed in December 1991 after one tank was discovered to have leaked 3,900 gallons of gasoline. Building 950, the former Army Air Force Exchange Services (AAFES)

gas station, had five 8,000-gallon single-wall steel USTs. In June 1993, the five steel USTs were removed after the discovery of a 400 gallon gasoline leak. The USTs were subsequently replaced with three new 8,000-gallon double-wall fiberglass tanks. In November 2004, the Building 950 AAFES gas station was permanently closed. The three fiberglass USTs were removed in January 2005.

In 1992 and 1993, sampling results for groundwater monitoring wells in the vicinity of building 940/950 showed groundwater was highly contaminated with gasoline related compounds.

Based upon additional groundwater testing data collected from 1993 through 2005, it has been established that natural attenuation has significantly and successfully reduced groundwater contaminants for both Building 940 and 950 areas. Down-gradient monitoring (toward the southwest), has demonstrated that contamination is not migrating off Fort Detrick above EPA or MDE action levels. In March 2006, the Army requested the MDE's Oil Control Program to administratively close the Building 940 and 950 leak sites.

Potential Environmental Concerns in Area B

Area B Outdoor Simulant Testing Grid (B-Grid) (FTD 05) – A test grid was installed in Area B (~69 acres) in the late 1940s. The test grid was used to observe the dissemination of biological simulants that were either suspended, air dropped or dispersed as aerosols, with detonation using compressed gas or a small explosive charge. Biological simulants included *Serratia marcescens* and *Bacillus globigii* - non-pathogenic microorganisms that are easily detected. It is reported that limited outdoor testing of simulants may have begun as early as 1944. Sampling at the site has detected potentially elevated levels of arsenic that may be naturally occurring. Additional soil testing occurred in December 2004 to determine levels of arsenic in soil. Results indicated that arsenic was detected statistically significantly less than background. The Fort Detrick Partnering Team agreed on language for a closure document on 10 May 2005.

In September 2005, a draft final closeout document was presented to MDE. In January 2006 discussions, MDE stated that the Army should complete an RI and DD for this site. Fort Detrick is in the process of preparing the final RI document and a no further action DD for the site.

Ammunition Storage Area (B-Ammo) (FTD 07) – Prior to 1971, munitions storage and loading facilities were present on the eastern portion of Area B. There were six sub-areas, where munitions were stored in magazines, and a munitions loading building. The storage facilities consisted of eleven aboveground magazines, one earth-covered magazine, and three smaller magazines. The materials were removed, and the buildings were decontaminated in the 1970s. All of the magazines, except Building 1215, were dismantled in 1971. The site currently consists of pasture and storage areas for the USAMRIID animal farm. Initial sampling results for the site did not indicate releases of contaminants above RBCs of concern. In a 2001 EPA aerial photographic review, several disturbed areas were noted. In 2004, Fort Detrick collected additional background and five site characterization surface and sub-surface soil samples. Sampling results did not indicate the presence of disposal activities. The Fort Detrick Partnering Team agreed on 10 May 2005 that agreed that no disposal activity occurred at Area B-Ammo Original and therefore, there is no CERCLA release as a result of disposal activity and closure of the B-Ammo Original is reasonable with no action.

In September 2005, a draft final closeout document was presented to MDE. In January 2006 discussions, MDE stated that the Army should complete an RI and DD for this site. Fort Detrick is in the process of preparing the final RI document and a no further action DD for the site.

Area B Skeet Range (FTD 29) – The skeet range is located in Area B and extends fan-like north of a point in the southwest corner. It had been used by military and civilian personnel as a recreational skeet range since the 1950s. However, the skeet range was deactivated in 1999. Analytical results for surface and subsurface soil samples showed elevated concentrations of lead. In 2001, the ground surface of the skeet range was scraped to remove the majority of the lead shot and clay pigeon contamination. Soils that did not meet TCLP action levels for lead were removed as hazardous waste. The remaining soils were used as a daily cover material at the Fort Detrick Municipal Landfill. In 2005, surface soil confirmation samples were taken to determine the levels of lead and polycyclic aromatic hydrocarbons (PAHs) in soil. Samples indicated that an area close to the shooting stations contained significant quantities of clay pigeon debris and elevated PAHs. An additional post operation clean-up for pigeon debris was completed in August 2005. Subsequent sampling and risk analysis indicates that there is no longer an unacceptable human or ecological health risk for the site.

In November 2005, a draft final closeout document was presented to MDE. In January 2006 discussions, MDE stated that the Army should complete an RI and DD for this site. Fort Detrick is in the process of preparing the final RI document and a no further action DD for the site.

B-20 Detonation Areas (FTD 43) – There are two explosive ordnance disposal areas located in Area B: one in the northern area and the second in the southwestern area within the fan of the skeet range. Area B-20 North was used as a controlled burn area for the destruction of small amounts of explosives. The site is currently an open grassy field. Area B-20 South was also used as a controlled burn area for the destruction of small amounts of explosives. Surface and subsurface soil samples were collected in both areas. The study at B-20 South was completed. The absence of significant explosives concentrations or PAHs, indicates that former burning activities at the area have not resulted in site contamination; and that the lack of debris/disposal materials suggests that B-20 South is not a disposal area.

In December 2004, additional samples were taken at B-20 North. There were no explosives found in both surface and subsurface samples. For surface soil samples, arsenic exceeded background for Residential/Industrial RBCs. For subsurface samples, Arsenic was below background, but exceeded Residential/Industrial RBCs. Iron exceeded background and Residential RBC, but was below Industrial RBCs in both surface and subsurface samples. On 10 May 2005, the Fort Detrick Partnering Team agreed on a course of action to complete a closure document.

In September 2005, a draft final closeout document was presented to MDE. In January 2006 discussions, MDE stated that the Army should complete an RI and DD for this site. Fort Detrick is in the process of preparing the final RI document and a no further action DD for the site.

Area B-1 Landfill (FTD 48) – This 0.5-acre landfill is located in the northeastern portion of Area B. It was reported to have operated from 1948 to the mid-1970s, receiving unknown quantities of scrap metals, wood, and general refuse from laboratory remodeling and building demolition. All construction/demolition debris was decontaminated prior to disposal. The site is currently part of the Flair U.S. Army Reserve Center. The disposal site was not found to exist in the area identified by pre-RI information. However, within the area originally defined as B-1, no further investigation is required. The site has been closed out and no further action is required under the Installation Restoration Program/Defense Environmental Restoration Program (IRP/DERP).

Area B-11 Landfill (FTD 49) – Area B-11 is a 5.2-acre section of a larger 19.6 acre landfill complex including sites Area B-6 (FTD 69), Area B-8 (FTD 70), and Area B-10 (FTD 71). Area B-11 is located on the southwest side of Area B and consists of numerous disposal pits. The site is being investigated for soil and groundwater contamination. Area B-11 received wastes from Fort Detrick, U.S. Bureau of Standards, and Walter Reed Army Medical Center. Materials disposed included: metals, wood and

general waste from laboratory modifications and building demolitions, general housing refuse from Area A, general household refuse from the mid-1950s to the early 1970s, excess laboratory chemicals, TCE and perchloroethylene (PCE) drums, and radiological materials (including radioactive carbon, sulfur, and phosphorus compounds).

In 1992, TCE contamination was discovered off-post in residential wells above MCLs. Data from a RI indicated that Area B-11 was the likely source of the groundwater contamination. There is currently limited residential use of this groundwater as potentially impacted residences were connected to Fort Detrick or the City of Frederick potable water supplies or offered bottled water.

A DD was signed in FY 2000 for an interim removal action (IRA) at the source of the TCE and PCE contamination. From 2001 to 2004, the IRA was completed at four disposal pits within Area B-11. During the removal, 3300 tons of soil and waste were removed and disposed off site. In early 2002, heat-sealed vials containing live bacteria were discovered in the excavation. Some of the bacteria were identified as being human pathogens. The discovery of the vials led to significant changes in the scope of the project, including additional disposal costs, biological testing, and disinfection procedures. The IRA was completed in June 2004. All excavations were backfilled, and the site was covered with soil and reseeded. The remaining areas of the B-11 Landfill will need further sampling and investigation in order to determine future response actions. Intrusive investigations in the remaining landfill areas will be minimized due to the discovery of vials containing preserved pathogens during the B-11 IRA. It is anticipated no further removal actions will be performed for adjacent disposal areas.

Area B-11 was included in a Performance Based Contract (PBC) awarded in August 2004. The PBC requires that the contractor to achieve “remedy in place” (RIP) for this site by September 2008. It is anticipated that the selected remedy for this site will be a landfill cap.

Area B-2 Landfill (FTD 50) – This 1.2-acre landfill is located in the north-central portion of Area B. It operated between 1948 and the mid-1970s, receiving unknown quantities of scrap metals, wood, and general refuse from laboratory remodeling and building demolition. All construction/demolition debris was decontaminated prior to disposal. The area is currently open grassland used for grazing. Intrusive investigations in the landfill will be minimized due to the discovery of vials containing preserved pathogens during the B-11 IRA.

Area B-2 was included in a PBC awarded in August 2004. The PBC requires that the contractor to achieve RIP for this site by September 2008. It is anticipated that the selected remedy for this site will be a landfill cap.

Area B-3 Inactive Landfill (FTD 51) – This 8.5-acre landfill is located on the north side of Area B. Seven or eight unlined landfills operated from the 1950s to 1990. They received scrap metals, wood, general refuse from laboratory remodeling and building demolition, drums, herbicide and insecticide wastes, and autoclaved animal carcasses. Laboratory glassware is also present. All materials were reported to have been decontaminated prior to disposal. The current site is partially open grassland with the remainder overlaying the current permitted active landfill.

Intrusive investigations in the landfill will be minimized due to the discovery of vials containing preserved pathogens during the B-11 IRA. Area B-3 Inactive was included in a PBC awarded in August 2004. The PBC requires that the contractor to achieve RIP for this site by September 2008.

Area B-6 Landfill (FTD 69) – This landfill is currently undeveloped grassland located in the southwest corner of Area B. From 1948 to 1960, this area received construction material waste (e.g., scrap metal and wood) and autoclaved carcasses of large and small animals. All animal carcasses used in biological

agent research were routinely autoclaved, and some were incinerated prior to burial. Possible contamination of this area could include ash, heavy metals, medical waste, and/or biological agents.

Intrusive investigations in the landfill will be minimized due to the discovery of vials containing preserved pathogens during the B-11 IRA.

Area B-6 was included in a PBC awarded in August 2004. The PBC requires that the contractor to achieve RIP for this site by September 2008. It is anticipated that the selected remedy for this site will be a landfill cap.

Area B-8 Landfill (FTD 70) - This landfill is currently undeveloped grassland located on the western side of Area B. From 1948 to 1972, this area received a variety of wastes including construction materials (e.g., scrap metal and wood), general refuse, radiological materials, biological agent liquid waste, and sludge from Building 375 and Building 384. After biological warfare work was ceased during 1969 to 1972, stringent decontamination of all holding tanks in Buildings 375 and 384 was completed. Testing indicated that inorganic material from the holding tanks in Building 375 was found to contain *Bacillus anthracis*. This material was thoroughly sterilized with hypochlorite and repeatedly tested for anthrax growth after the sterilization procedure was complete. After demonstrating negative test results for anthrax growth, approximately 150 tons of sterilized liquid waste and decontaminated plant sludge was disposed of in the Area B-8 Landfill. Intrusive investigations in the landfill will be minimized due to the discovery of vials containing preserved pathogens during the B-11 IRA.

Area B-8 was included in a PBC awarded in August 2004. The site B-8 was also expanded in the PBC to include areas known as the Trenches North of B-8 and Area B-18. Area B-18 received a variety of waste up until 1950. The exact location of this landfill has not been determined; however, a ground-truthing survey of a tree area/sinkhole near Area B-8 revealed surface debris and waste. This may prove to be the true location of this disposal area. A more thorough survey and investigation of this sinkhole area are planned. The PBC requires that the contractor to achieve RIP for this site by September 2008. It is anticipated that the selected remedy for this site will be a landfill cap over the disposal areas.

Area B-10 and B-Grove Landfills (FTD 71) - This site is currently undeveloped grassland and forested land in the southwestern portion of Area B. From 1965 to 1970, this area received general housing refuse and autoclaved and incinerated animal carcasses. The tree-covered area making up the B-Grove portion of this site was also reported to be a disposal area for unregulated household trash and miscellaneous debris, such as metal containers and laboratory glassware. Intrusive investigations in the landfill will be minimized due to the discovery of vials containing preserved pathogens during the B-11 IRA.

Area B-10 and B-Grove was included in a PBC awarded in August 2004. The PBC requires that the contractor to achieve RIP for this site by September 2008. It is anticipated that the selected remedy for this site will be a landfill cap over the disposal areas.

Area B Groundwater – Area B groundwater is being investigated holistically and includes groundwater contamination contributed by all Area B restoration sites. Presently, there are two groundwater contamination plumes. A TCE/PCE plume extends from Area B-11 in an easterly direction beyond the installation boundary which is approximately one mile away. The exact dimensions of the plume are unknown due in part to the Karst geology that is present. Contamination has been found in off-post drinking water wells, and alternate water sources have been provided. The second plume exists near Area B-3. This plume consists of several volatile organic compounds detected at low levels and elevated levels of bis (2-ethylhexyl) phthalate. The contamination is currently limited to a few local downgradient monitoring wells. Area B-Groundwater was included in a PBC awarded in August 2004. The PBC requires that the contractor to achieve RIP for this site by September 2008 (Gortva, 2006b).

PCBs, Radon, Asbestos, Lead-based Paint

All ground mounted PCB and PCB-contaminated transformers at Fort Detrick have been replaced or retested. Pole-mounted transformers in good condition still remain in service throughout the Installation, and when these are removed, they will be tagged for testing. At that time, any PCB contaminated fluids or articles will be disposed of in accordance with applicable laws and regulations (Scigliano, 2006). No PCB contamination is known or expected at any of the sites, although there may be PCB-containing fluorescent light ballasts in buildings to be demolished (Gortva, 2006b).

Radon may be an issue for the proposed action since Frederick County is in a high radon area with levels expected to be above the suggested action level of 4 pCi/L (USEPA, 2006c). A previous survey done at the Installation identified radon above the action levels at several locations (Gortva, 2006b), and some buildings have undergone radon remediation (installation of an enhanced air ventilation system), which is an option in any building to reduce radon in basement areas to acceptable levels (Gortva, 2006b).

Asbestos and/or lead-based paint are likely to be present in older buildings. Any building constructed prior to the early 1980's may contain siding, floor tiles, shingles, insulation, ceiling material, mastic or other items that contain asbestos and may also contain lead-based paint. Any action that contains older structures that must be demolished will include sampling for the presence of suspect asbestos or lead-based paint prior to demolition.

Individual Project Site Concerns

Medical Bio-Defense Research Laboratory – This proposed facility is located on land with no past history of hazardous material use or waste disposal and no history of migration of hazardous substances or petroleum products from adjacent areas (DHS and USAG, 2004a; Gortva, 2006a). Any building demolition required for construction of this facility has been evaluated in the FEIS for the new USAMRIID facility (USAG 2006b).

Joint Bio-Medical RDA Management Center – This proposed facility would also be located on land with no past history of hazardous material use or waste disposal on the site itself. However, the TCE plume that originated at Building 568 (IRP Building 568 Spill Site, described above) is in the vicinity of this location and could be encountered during construction if dewatering is done for excavation of the site (USAG, 2006b; Gortva, 2006a). In addition, Buildings 817, 818, 820, and leased trailer 823 (all on the proposed site) will be demolished. Buildings 817 and 820 were constructed in 1944; Building 818 in 1951; and it is not known when the trailer was constructed (USAG, 2003). Therefore, these buildings could contain asbestos that had not been found during prior asbestos surveys, and/or lead-based paint and PCB-containing light ballasts (Gortva, 2006b).

Joint Reserve Center – This proposed facility would be located near an area of Area B that was thought to be an old disposal area (IRP Area B-1 Landfill Site described above). However, as previously mentioned, subsequent investigations that included soil borings and an electromagnetic survey found no evidence of buried waste or underground tanks, and a site close-out letter was issued in October 2004 (USAG, 2006b; Gortva, 2006a). As for building demolition, the development of this facility might require demolition of the existing Joint Reserve Center, which is an older structure that may contain asbestos and lead based paint, or PCB-containing light ballasts.

4.13.2 Environmental Consequences

For the purposes of assessing the significance of impacts related to hazardous and toxic substances, the following impact thresholds were developed:

No Effect – None of the above-listed conditions would occur.

Not Significant Effect – Action would result in an increase in the amount of materials or waste to be handled, stored, used, or disposed; but all hazardous or toxic materials and/or wastes could be safely and adequately managed in accordance with all applicable regulations and policies, with limited exposures or risks.

Significant Effect – Action would result in a substantial increase (more than 100%) in the amount of materials or waste to be handled, stored, used, or disposed of, and this could not be safely or adequately handled or managed by the proposed staffing, resulting in unacceptable risk, exceedence of available waste disposal capacity, or probable regulatory violation. Site contamination conditions would preclude development of the site for the proposed use.

4.13.2.1 No Action Alternative

No effects would be expected. Under the No Action Alternative, the proposed new BRAC facilities would not be constructed.

4.13.2.2 Realignment (Preferred) Alternative

Implementing the proposed action would result in no significant adverse effects in relation to hazardous or toxic substances. Impacts specific to the sites included in this BRAC EA are addressed below.

Medical Bio-Defense Research Laboratory – Not significant long-term and short-term adverse effects would be expected. Because of the large number of chemicals typically used in a research laboratory, it would be expected that the laboratory would generate small quantities of many different types of hazardous waste regularly. Based on the quantity of hazardous waste produced by the current USAMRIID laboratory in FY2005 (6,933 pounds per year; USAG, 2006b), and based on relative square footages of the laboratories (500,000 SF for USAMRIID, 84,310 for the proposed laboratory facility, about 17% of the USAMRIID size), it could be expected that the proposed facility would generate about 1,179 pounds of RCRA hazardous waste per year. This is about a 7% increase over the total amount of hazardous waste (16,716 pounds) generated by the entire Installation in FY2005 (USAG, 2006a).

In addition to RCRA hazardous waste, the research laboratory would also generate medical wastes regularly, as well as radiological wastes. Medical waste generation is estimated at about 28,000 pounds per year, which is less than a 2% increase over the current annual total Installation generation of 1,681,000 pounds (USAG, 2006b). All medical waste would be disposed of on-site in the Installation's medical waste incinerators, and the additional amount would represent a very small increment to the overall Installation generation rate, well within the capacity of the medical waste incinerators. Also, all waste contaminated or potentially contaminated with infectious material must be rendered non-infectious before disposal, either by chemical or physical (autoclave) methods. Based on this information, medical waste handling and disposal would result in a non-significant long-term impact.

Radiological waste generation amounts for the proposed research laboratory are not known. Based on the nature of the laboratory operations expected in the new facility, the amount of radiological waste could be from two to three times that currently generated by USAMRIID operations (Esteban 2006a,b). Since the existing USAMRIID facilities generated a total of 2,148 liters of low-level radiological waste in FY05 (USAG, 2006b), the proposed facilities could generate up to 6,444 liters. It is currently expected that all radiological waste would be shipped off-site for disposal in accordance with all applicable requirements (Hudlow 2006), resulting in minimal risk or exposure, so any adverse impacts should remain at non-significant levels.

Any demolition required for construction of the research laboratory has been evaluated in the FEIS for the new USAMRIID facility (USAG, 2006b). If any hazardous materials or wastes were used or generated during construction, they would be managed in accordance with applicable regulations, reducing any

short-term impacts to non-significant levels. After construction, any high radon levels would be mitigated to below the EPA action level by the installation of a ventilation system.

Joint Bio-Medical RDA Management Center of Excellence – Not significant long-term adverse effects would be expected, with some short-term impacts during construction, depending on whether or not contaminated groundwater is encountered, but still at non-significant levels. Because of the minimal use of hazardous materials and minimal waste generation in this proposed facility, there would be few long-term adverse impacts related to hazardous or toxic substances from the proposed facility's operation. Any hazardous wastes would consist of small amounts of items such as spent cleaners and waste paint. Based on their characteristics and applicable regulations, if these items are not able to be disposed of in the regular solid waste stream, then they would be collected and stored on site in accordance with applicable regulations, and taken to the 90-day storage area for eventual off-site disposal by a licensed hazardous waste contractor.

Because there is the potential for TCE groundwater contamination in this area, dewatering operations that would be required for any proposed subsurface construction or excavation would need to incorporate procedures for the detection of any contaminated water and its disposal in accordance with applicable regulations (Gortva, 2006). This would result in short-term, adverse effects, and the extent of the impact would depend on whether a large quantity of contaminated groundwater is encountered. In any case, however, the waste can be properly handled and safely disposed of, and the impact would not be significant. Non-significant short-term adverse impacts could also occur from the demolition of the older buildings on the site, due to the potential presence of asbestos, lead-based paint, and possible PCB-containing light ballasts. Any hazards related to these concerns would be addressed and minimized through proper site preparation, management, and waste disposal during demolition and site preparation for the new facility. All demolition would be performed in accordance with applicable regulations, including regulations for identification and handling of asbestos, lead-based paint contamination, or other hazardous wastes. Identified wastes would be disposed of off-site by a qualified contractor, in accordance with all applicable regulations. After construction, any high radon levels would be mitigated to below the EPA action level by the installation of a ventilation system.

Joint Reserve Center – Not significant long-term and short-term adverse effects would be expected, from construction and operation of this facility. Minimal hazardous waste would be generated from the administrative and training functions of this facility. Due to ongoing vehicle maintenance activities in the OMS, it would be expected that this facility would generate relatively small amounts of hazardous wastes regularly, such as discarded chemicals, small amounts of old gasoline, spill residues, and contaminated rags and absorbents. Safety-Kleen ® would recycle all spent parts washer solvents, as well as used antifreeze, keeping these out of the hazardous waste stream (Gortva, 2006). Used oil would also be handled separately, stored in an aboveground tank or container with secondary containment and collected periodically at the OMS facility by a recycling contractor (Gortva, 2006). Any hazardous wastes would be stored in at a satellite accumulation point in containers and with labels as required by applicable regulations, and taken to the permitted hazardous waste storage facility within the allotted time frame for disposal or recycling. Any spills or releases of hazardous wastes would be handled according to the Fort Detrick Integrated Contingency Plan (ICP) (Gortva, 2006).

The continued use, handling and storage of hazardous materials at this facility would result in long-term adverse impacts, but not significant impacts, since all materials would be stored in accordance with applicable regulations and in safe HAZMAT lockers, cabinets, or containers with appropriate containment. The generation of hazardous waste at this new facility would also result in non-significant short- and long-term adverse impacts, based on the potential for small spills and the slight increase in Fort Detrick's hazardous waste quantities that would be handled at the 90-day storage facility.

Assuming that there is no residual landfill debris on this site, construction impacts would be limited to non-significant short-term adverse impacts that could occur from the demolition of the former Joint Reserve Center due to the potential presence of asbestos, lead-based paint, and possibly PCB-containing light ballasts. Any hazards related to these concerns would be addressed and minimized through proper site preparation, management, and waste disposal during demolition and site preparation for the new facility. All demolition would be performed in accordance with applicable regulations, including regulations for identification and handling of asbestos, lead-based paint contamination, or other hazardous wastes. If any other buried wastes were found during construction on this site, these wastes would be evaluated by the Fort Detrick Environmental Office for proper handling and disposition in accordance with all applicable regulations. After construction, any high radon levels would be mitigated to below the EPA action level by the installation of a ventilation system.

4.14 HUMAN HEALTH AND SAFETY

4.14.1 Affected Environment

Use, handling, and storage of hazardous and toxic substances invoke concerns about human health and safety, including issues specific to the proposed biodefense research laboratory. This section addresses the regulations and procedures that will be followed to protect the health and safety of installation employees, contractors, and the general public during the construction and operation of the planned BRAC facilities, with primary emphasis on the proposed research laboratory.

4.14.1.1 General Safety – All Proposed Facilities

Fort Detrick and its tenants must adhere to Federal, DA, USAG, state, and local laws and regulations pertaining to occupational health and safety and environmental protection, including the safe use, handling, and disposal of etiological agents and other potentially hazardous materials. All activities of a potentially hazardous nature performed by either civilian or military personnel at DA work sites (including contractor sites) are governed by AR 385-10 *The Army Safety Program* 29 February 2000, which implements, by reference, all applicable Federal, State, and local regulatory requirements for occupational health and safety and environmental protection. AR 385-10 sets forth Army safety policies and standards, including safety inspections by the U.S. Department of Labor (DOL), the Occupational Health and Safety Administration (OSHA) of DOL, as well as by Army units. All biosafety level (BSL)-3 laboratories, which include the proposed Medical Bio-Defense Research Laboratory, must undergo inspection and certification by the Centers for Disease Control and Prevention (CDC) prior to commissioning.

Site-specific Standard Operating Procedures (SOPs) will be developed, approved, and implemented in accordance with AR 385-10. Each SOP will provide instructions for accomplishing a given task in a safe and consistent manner. Other regulations will provide requirements for facility engineering and work practice controls, personnel training, hazard communication, personal protective equipment (PPE) and protective clothing, waste-handling procedures, inspections, emergency preparedness, and other safety requirements (USAG, 2006b).

As previously described, activities conducted at the proposed laboratory facilities may require use of certain hazardous chemicals. Policies and procedures for the safe handling and use of hazardous and toxic chemicals are included in the requirements of OSHA regulations (40 CFR 1910.1450, *Occupational Exposure to Hazardous Chemicals in Laboratories*, and 29 CFR 1910.1200, *Hazard Communication Standard* (HAZCOM)). These regulations apply to all personnel who work with or may be exposed to hazardous chemicals under normal conditions of use, other than “laboratory use” (as defined in 29 CFR 1910.1450), or in a foreseeable emergency. In accordance with the OSHA regulations, written chemical

safety policies and laboratory-specific SOPs for the safe use, handling, and disposal of hazardous materials in work areas will be available for all laboratory personnel. During the construction phase of the proposed laboratory facilities, OSHA standards will be followed to ensure protection of worker health and safety.

The proposed laboratory facilities will require a Nuclear Regulatory Commission (NRC) license for research activities that will involve use of radioisotopes or a gamma irradiation cell. This type of research is subject to OSHA standards for radiological safety (29 CFR 1910.97, Nonionizing Radiation, and 29 CFR 1910.1096, Ionizing Radiation), AR 385-11, Ionizing Radiation Protection, and DoD Instruction 6055.8, Occupational Radiation Protection Program, 6 May 1996. Additional radiological safety requirements under 10 CFR 36, Licenses and Radiation Safety Requirements for Irradiators¹¹ also may apply under terms of NRC licenses.

4.14.1.2 Laboratory Safety

As stated above, the proposed laboratory must adhere to Federal, DA, USAG, State, and local laws and regulations pertaining to occupational health and safety and environmental protection, including the safe use, handling, and disposal of etiologic agents, and other potentially hazardous materials. In accordance with DA PAM 385-69, a committee will be established for oversight of biological safety. Also, a Facility Safety Plan (FSP) will be developed, which will detail the significant potential operational hazards and associated mitigation measures employed to ensure safety operations. The FSP will incorporate Federal, State, and local laws and regulations pertaining to occupational health, safety, and the environment, including the safe use, handling, transporting, and disposal of etiologic agents, chemicals, and other potentially hazardous materials. All laboratory personnel must acknowledge in writing that they have read and understood the contents of the FSP.

Biosafety

Operation of the proposed research laboratory must adhere to AR 385-69 *Biological Defense Safety Program* 31 December 1993 (32 CFR 626), DA Pamphlet (DA PAM) 385-69 *Biological Defense Safety Program* 31 December 1993, and Biosafety in Microbiological and Biomedical Laboratories (BMBL) standards (CDC/NIH, 1999) for Biosafety, National Fire Protection Association (NFPA) standards for fire prevention and life safety, and International Code Council standards. NFPA standards frequently refer to the various construction codes, such as the National Electric Code and National Plumbing Code.

The proposed facility would be designed, constructed, and operated to meet BSL-3 requirements. Biosafety Level 3 is applicable to clinical, diagnostic, teaching, research, or production facilities in which work is done with indigenous or exotic agents which may cause serious or potentially lethal disease as a result of exposure by the inhalation route. Laboratory personnel have specific training in handling pathogenic and potentially lethal agents, and are supervised by competent scientists who are experienced in working with these agents. All procedures involving the manipulation of infectious materials are conducted within biological safety cabinets or other physical containment devices, or by personnel wearing appropriate personal protective clothing and equipment.

The BMBL guidelines (CDC/NIH 1999) describe the laboratory practices, techniques, facilities, and equipment recommended containing etiologic agents of varying degrees of virulence. The DA has

¹¹ Irradiators are defined as facilities that apply radioactivity from sealed sources to objects or materials in air or water, with radiation dose rates exceeding 500 rads per hour at 1 meter (approximately 3.2 feet) from the sealed radioactive source. A rad (acronym for radiation absorbed dose) is the basic unit of absorbed dose equivalent to absorption of 0.01 joules per kilogram of absorbing material.

established regulations that mandate adherence to these guidelines. Therefore, work conducted by the proposed laboratory must be conducted in accordance with these guidelines and must meet all safety requirements in AR 385-69 and DA Pamphlet 385-69. The text below describes the safety procedures and practices and engineering features that would be expected in the proposed BSL-3 laboratory.

All experimental studies involving etiologic agents and/or toxins will be conducted in Class II or Class III biological safety cabinets (BSCs), and the animals must be contained in cages within Class III BSCs or in partial containment cages. The proposed laboratory facilities may include Class III BSCs, which prevent introduction of an etiologic agent into the laboratory air during manipulation of etiologic agents and laboratory animals by high-efficiency particulate air (HEPA) filtration of air exiting the cabinet and discharge directly into the laboratory exhaust system (CDC/NIH, 1999). BSCs in the laboratories and animal rooms must be maintained under negative pressure and will undergo semi-annual or annual certifications for performance, in accordance with BMBL guidelines.

In addition to use of BSCs or other primary containment barriers, personnel must use careful techniques and follow specialized guidelines to maximize worker safety (CDC/NIH, 1999; USAG, 2006b). PPE to be used in the biological containment suites includes gloves, respirators, goggles, face shields, positive pressure suits, and hearing protection as needed. Personnel must wear special laboratory clothing in BSL-3 and animal biosafety level (ABSL)-3 areas, including protective laboratory clothing such as solid-front or wraparound gowns, scrub suits, or coveralls. Gloves must be worn when handling infectious materials, infected animals, and when handling contaminated equipment; disposable gloves are not reused. Respiratory and face protection are used when in rooms containing infected animals (CDC/NIH, 1999).

Provisions in the FSP will restrict the flow of people, equipment, animals, and experimental materials (i.e. infectious materials and infected animals) into the biological containment suites to prevent a breach in containment or cross-contamination of adjacent areas. Entry will be limited to personnel directly involved with the work, as mandated in DA PAM 385-69. Authorized personnel must be informed of the potential hazards associated with entry and exit and the safeguards necessary for their safety. The suites must have signs posted on the entry doors indicating the BSL-3 designation, agent(s) in use, and individuals to contact in case of an emergency.

Safety protocol for BSL-3/ABSL-3 suites will include both engineering and work practice controls. The laboratories will be locked at all times. Two sets of doors must be entered to access biological containment areas. An electronic access control system will restrict entry to the laboratories from access corridors or other laboratories to authorized personnel. A clearly demarcated zone will separate the laboratory areas from non-laboratory areas (USAG, 2006b).

Personnel must change into long-sleeved laboratory clothing and pass through a room-sized airlock prior to entering a BSL-3 suite. Before leaving the BSL-3 laboratory, personnel must deposit their laboratory clothing in a laundry container, then shower with soap and water and change into street clothes in the anteroom. Additionally, personnel must wash their hair if they did not wear a cap in the suite. Shoes that are worn in the BSL-3 areas must be left in the change room (USAG, 2006b).

Potentially contaminated work materials must not be removed from biological containment suites until they are decontaminated by chemical disinfection or autoclaving in accordance with BMBL guidelines (CDC/NIH, 1999). Germicides will be used to disinfect BSCs, room surfaces, or exterior surfaces of certain items prior to their removal from BSL-3/ABSL-3 suites. A pass-through autoclave must be provided for decontamination of materials to be removed from the laboratory. The autoclave door that opens to the corridor outside of the biological containment suite must be sealed to the outer wall and automatically controlled so that it can only be opened after the autoclave sterilization cycle is complete. A pass-through surface decontamination system, fumigation chamber, or ultraviolet light treatment

chamber must be available for decontaminating materials that cannot be autoclaved. In addition, the airlock will be sealed and used to decontaminate large items prior to removal from a BSL-3/ABSL-3 suite (USAG, 2006b).

Items that cannot be autoclaved must be decontaminated using paraformaldehyde¹² (PFA), ethylene oxide, or other approved gaseous fumigant (CDC/NIH, 1999) to prevent the release of infectious microorganisms from containment areas. PFA will be used to decontaminate biological containment suites, including the BSCs and HEPA filters in the ventilation systems, in preparation for maintenance work. The decontamination procedure using PFA is as follows: Formaldehyde gas is produced by heating PFA flakes or prills, which effectively destroys the infectious substances present in the laboratories, equipment, materials, and air-handling systems. The formaldehyde gas is then neutralized using ammonium bicarbonate powder to prevent its release to the atmosphere. Before workers can reenter the biocontainment suites, the air must be tested to confirm that the formaldehyde concentration is below the Occupational Safety and Health Administration (OSHA) action level of 0.5 parts per million (USAG, 2006b).

Special Engineering Features

Laboratories designed to achieve BSL-3/ABSL-3 containment require special engineering features to control airflow. This can be accomplished under various design layouts. Each biological containment suite in the proposed laboratory facilities will consist of several rooms with individual temperature controls, each maintained under negative pressure (vacuum) to surrounding hallways to ensure a net flow of air into the suite. In addition, office space in the proposed laboratory facilities will be maintained under positive pressure to the hallway. Within each suite air pressure differentials will be maintained as follows: change rooms and entry airlock highest pressure, interior hallways next lower, and research laboratories and animal rooms lowest pressure, i.e., most negative. Each BSL-3/ABSL-3 suite will have a dedicated air supply and exhaust system with alarms, back-up supply compressors, and HEPA filters. Each room in the biological containment areas will have its own temperature control and sprinkler systems. The laboratories will have heat sensors mounted on the ceilings and visible and audible fire alarm systems (CDC/NIH, 1999).

The walls, floors, and ceilings of the BSL-3 laboratories will form a sealed internal shell that is pest-proof and facilitates cleaning and decontamination. All wall penetrations will be sealed, and the walls and floors will be painted with epoxy sealant. Emergency power will be provided for systems necessary to maintain the required safety and security of the laboratory (USAG, 2006b).

The laboratory will have steam autoclaves for sterilization. Materials exiting the laboratory will be decontaminated via a pass-through autoclave. The autoclave door that opens to the corridor outside of the suite will be sealed to the outer wall and automatically controlled to ensure that it cannot be opened until the autoclave sterilization cycle is complete. Also, the airlock may be sealed for decontamination of large items prior to removal from a BSL-3/ABSL-3 containment area (USAG, 2006b).

Floor drains will be filled with disinfectants or solutions appropriate for decontaminating the etiologic agent being studied in the laboratory. These drains will be connected to the liquid waste

¹² A quarantine exemption under the provisions of Section 18 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, must be granted by the USEPA for use of paraformaldehyde (PFA). All FIFRA registrations for use of PFA to control microbial growth in laboratories and to decontaminate animal facilities were canceled due to nonpayment of fees by the manufacturer. Quarantine exemptions are authorized for 3 years (USEPA, 2003). DoD and USDA have held exemptions for the use of PFA to decontaminate certain high-containment microbiological laboratories, including USAMRIID facilities.

decontamination/ holding tank system for liquid wastes from laboratory sinks, BSCs, autoclaves, showers, and toilets (USAG, 2006b).

A dedicated central vacuum system serving the BSL-3/ABSL-3 laboratories will contain several in-line HEPA filters designed for in-place decontamination and replacement. Liquid and gas services will be protected with traps and/or filters to prevent backflow contamination (USAG, 2006b).

The proposed new laboratory facility will be designed at least 10 to 25 percent more robust than the latest International Building Code requirements for wind, snow, and seismic events. Critical components of the design will be able to withstand the most severe events with minor repairable damage. Design features will include reinforced concrete internal walls in select areas which are above the required structural framing, as well as a strategic and internal placement of key areas to provide additional layers of protection against extreme weather events. The exterior enclosure of the proposed new laboratory will be in accordance with the International Building Code requirements for wind loads, and additionally, to withstand more severe loads for greater safety. All glass windows will be designed to meet the “break safe” criteria. The laminated glazing and reinforced framing on the proposed facilities’ windows will be far stronger than conventional double glazing. The glazing system will provide levels of protection exceeding the code requirements against flying debris from severe weather. The electrical systems will be designed to comply with all applicable NFPA, Institute of Electrical and Electronics Engineers, and Underwriters Laboratories (UL) codes/standards and latest engineering practices. In addition, redundant generator backup power may be provided to support the proposed facilities, as well as multiple substations within the building. The proposed new laboratory will also include a UL-listed Lightning Protection System, and battery or uninterruptible power supply backup to critical loads. Similarly, the mechanical systems as well as the electrical systems will be protected by underground utilities, with redundant sources, and routes to the building (USAG, 2006b).

Laboratory Occupational Health and Safety

AR 385-69 requires that protective measures for worker health and safety include training, education, vaccination (immunization), and the medical monitoring of personnel. OSHA regulations govern required training programs in bloodborne pathogens (29 CFR 1910.1030), hazard communication (29 CFR 1910.1200), and occupational exposure to hazardous chemicals in the laboratory (29 CFR 1910.1450). All personnel working in BSL-3 biological containment suites will be enrolled in a medical monitoring program and in a Special Immunization Program. This will include researchers and technicians, and operational support personnel (medical maintenance, veterinary medicine, veterinary pathology, facility engineering, security, and safety). Participants in the Special Immunization Program will be immunized with investigational or licensed vaccines, when available, before beginning any activity with etiologic agents. Prior to vaccination, Special Immunization Program participants are required to undergo complete medical evaluations and must receive medical clearance. They must be informed of possible adverse reactions to the vaccine and sign an informed consent document prior to vaccination. Joining the Special Immunization Program is considered as equivalent to human clinical trial status, and participation is voluntary. A worker who cannot be immunized for medical reasons when a vaccine is available for an etiologic agent is not permitted to work with that agent and will not be allowed in any laboratory where work with that agent is being conducted (USAG, 2006b).

Maintenance workers, engineering staff, and other support personnel who are required to enter BSL-3 facilities will receive biosafety training and may be enrolled in the Special Immunization Program. They must have specific authorization for such entry and are required to use appropriate PPE, even though decontamination of areas and equipment is required prior to service by the maintenance and engineering staff. Personnel determined to be at an increased risk of acquiring infections or for whom infection would

be unusually hazardous according to their medical baseline evaluations will be denied entrance into BSL-3 laboratories (USAG, 2006b).

Public Health and Safety and Emergency Services

Emergency preparedness and response will be addressed in a facility Emergency Response Plan (ERP) that will be integrated into the Fort Detrick Installation-wide emergency plans for response to bomb threats, power outages, and other man-made incidents as well as natural disasters (e.g. hurricane, flood, or earthquake). The ERP includes procedures for notification of, and response by, the laboratory and animal facility directors, laboratory workers, and designated emergency response personnel when an emergency occurs. The ERP is reevaluated at least annually, including exercises to test its effectiveness. (USAG, 2006b).

The Fort Detrick Provost Marshall's Office (PMO) is responsible for providing emergency services for the new laboratory. The Fort Detrick Fire and Emergency Services Division (F&ESD) emergency service include firefighting, emergency medical services, and hazardous materials response. (USAG, 2006b).

USAG has installed an emergency warning system for employees and residents of Fort Detrick in the event of severe weather or other emergencies through six sirens installed throughout the Installation and a live and digital voice messaging system. When activated, the warning system sounds the sirens and initiates live public address announcements and radio broadcasts (AM 1610). USAG has procedures in place for potential emergency events, which include both immediate notification of local residents with the emergency warning system and immediate notification of local news media. (USAG, 2006b).

Fort Detrick also coordinates emergency preparedness with local emergency service providers. In accordance with BMBL guidelines (CDC/NIH, 1999) and AR 385-69, emergency medical service is coordinated between the Army, Frederick County, and the Frederick County Volunteer Fire and Rescue Association, Inc. (FCVFRA). A Mutual Aid Agreement between the parties, which became effective 1 October 2002, includes provisions for emergency response and for notification of the public. In addition, a Memorandum of Understanding between Fort Detrick and the City of Frederick, effective 10 July 2001, allows the City of Frederick Police Department to assist the Fort Detrick PMO on the Installation in emergency situations that require additional law enforcement resources beyond those provided by the PMO. (USAG, 2006b).

The Frederick County, Maryland Local Emergency Planning Committee (LEPC) has developed response plans to an emergency or terrorist attack in the county. The LEPC is a cooperative effort consisting of a broad coalition between Frederick County, the City of Frederick, Fort Detrick, scientific, media, private medical representatives, private individuals, and the Frederick County Chapter of the American Red Cross. In the event of an emergency on the Installation, plans are in place for Fort Detrick emergency personnel and Frederick County emergency personnel to coordinate a unified response. Fort Detrick's and Frederick County's emergency services providers will coordinate and provide mutual assistance during a major natural disaster or a terrorist event (Frederick County LEPC, 2002; USAG, 2006b). Fort Detrick and Frederick County have established clear lines of authority and communication to be followed during emergency response activities. The Frederick County Commissioners and the County Public Safety Director will provide protection for the public during emergency incidents. The local Incident Commander or the County Hazmat Officer will communicate with the County Public Safety Director to ensure public notification of all pertinent matters. (USAG, 2006b).

This plan includes an implementation strategy at the local level for preparedness, response, recovery, and mitigation of bioterrorism. The main purpose of this program is to protect Frederick Memorial Hospital

and maintain its service as a medical facility for the community. The plan is consistent with the CDC draft *Guidelines for State and Local Public Health Bioterrorism Response Planners*, and the recommended guidelines of the DoD *Mass Casualty Care Strategy for Biological Terrorism Incidents*.

The Frederick County LEPC conducted its annual Emergency Response exercise in conjunction with the USAG Anti-terrorism/Force Protection (AT/FP) exercise on 17 November 2006. The exercise scenario simulated attempted entry into Fort Detrick through the Old Farm Gate, detonation of a vehicle-borne improvised explosive device, and release of a toxic chemical. The Fort Detrick response activated ERP force protection action sets, including response to mass casualties and patient treatment at the Barquist Army Health Center (BAHC) and support of the Installation response by the mission partners. The County Emergency Operations Center was activated to manage the response to the explosion and the chemical plume, test communications, and respond to the media. (USAG, 2006b).

This exercise was, by far, the most significant such exercise conducted to date, involving coordination of Frederick County and City of Frederick emergency service providers (police and fire departments) in support of the Fort Detrick F&ESD. It also tested coordination for support of BAHC by Frederick Memorial Hospital and evacuation plans for Frederick County Public Schools and Frederick Community College.

F&ESD personnel will be the first responders for a medical incident in the proposed laboratory facilities (other than a laboratory-acquired infection [LAI]) requiring removal of an individual from a laboratory area. They will become familiar with the operations and configurations of the proposed laboratory facilities by quarterly training exercises with the assistance of laboratory medical personnel. If appropriate, the F&ESD personnel will transfer the individual in medical distress to FCVFRA volunteers for transportation to a local hospital. Non-Fort Detrick emergency service personnel do not enter the laboratory areas.

Some of the research activities conducted in the proposed laboratory facilities will use animal models. The chief veterinary officer for the proposed laboratory facilities, who must be a board-certified veterinarian in Laboratory Animal Medicine, will have responsibility for animal care and use. These responsibilities will include being the principal advisor on animal care and use laws, and serving as chairman Laboratory Animal Care and Use Committee (LACUC).

All animal use at the proposed laboratory will be approved by the LACUC. Animal handling practices and the quality of laboratory animal care will be in accordance with standards set forth in the Guide for the Care and Use of Laboratory Animals (National Research Council, 1996), the U.S. Public Health Service Policy on Humane Care and Use of Laboratory Animals, and the Animal Welfare Act and its implementing regulation (9 CFR Subchapter A, parts 1 – 4). The proposed laboratory facility will also follow AR 40-33 The Care and Use of Laboratory Animals in DOD Programs 16 February 2005. Additionally, the animal facilities and programs will be fully accredited by the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC) International.

Animal care is characterized in SOPs related to environmental conditions; acquisition, quarantine, and distribution of animals; sanitation; sterilization; randomization and identification of animals; animal handling including sentinel and quality control; animal status and diagnostics; food and fluids; bedding, administration of test materials; anesthesia, treatment, and euthanasia; and sample collection.

Research involving rodents and lagomorphs (i.e., rabbits) will be performed in the biocontainment suites of the proposed laboratory facilities. Animals will be held in species-specific animal housing within

biocontainment animal rooms. The procedure for removal of rodents and lagomorphs from the biocontainment suites will involve euthanizing any live animals and then autoclaving the carcasses.

Accidents and Incidents

Any request to work with an etiologic agent and/or toxin must be approved and prior to beginning any work involving etiologic agents, a job safety evaluation and hazard analysis are required, in accordance with AR 385-69 and BMBL (CDC/NIH, 1999). These procedures, which must include examination of Maximum Credible Event scenarios, provide careful consideration of the range of potential consequences that might result from an accident or incident during a potentially hazardous activity. Such an analysis provides a way to assess whether existing safeguards are adequate to protect human health and the environment. The review will include a risk assessment on a case-by-case basis for each agent, to determine the specific safety requirements. In the event of an accident, review of the hazard analysis in follow-up reports provides a way to assess whether existing safeguards are adequate to protect human health and the environment. AR 385-40, *Accident Reporting and Records*, 1 November 1994, will require the immediate reporting of any accident or illness. (USAG, 2006b).

Transportation of Biological Agents and Registration of Facility

In accordance with 42 CFR 73 (*Additional Requirements for Facilities Transferring or Receiving Select Agents*), 9 CFR 121 (*Possession, Use and Transfer of Select Agents and Toxins*), and 7 CFR 331 (*Possession of Biological Agents and Toxins*), the proposed laboratory will be registered under the CDC Select Agent Program and the USDA Animal and Plant Health Inspection Service's Agriculture Select Agent Programs. The registration requires documentation and reports to CDC for all incoming and outbound transfers of the listed agents.

Packaging and shipment or transport of biological agents will continue to be conducted in accordance with the requirements of 42 CFR 72 (*Interstate Shipment of Etiologic Agents*), 49 CFR 171-180, AR 190-17 (*Biological Select Agents and Toxins Security Program*, 6 September 2006), AR 385-69 (*Biological Defense Safety Program*), and other applicable Federal, State, and local regulations. Proper primary and secondary containers will be used by laboratory personnel to package etiologic agents and/or toxins. Prior to transport by commercial carrier, the packaged etiologic agents will be sent to the USAG Transportation Office for a chain-of-custody record. Researchers are prohibited from transporting etiologic agents on their person (USAG, 2006b). Risks associated with commercial transportation of select agents or toxins are regulated under 42 CFR 73 in accordance with U.S. Department of Transportation (USDOT) regulations (49 CFR 172.800-804).

Safety Inspections

Safety inspections are integral to laboratory operations, in accordance with the requirements in AR 385-69, AR190-17, and BMBL (CDC/NIH, 1999). The Basic Checklist from DA Pamphlet 385-69 (32 CFR 627) will be utilized for inspections of the laboratories and animal and support facilities. This will include physical standards and procedural requirements, as well as applicable regulatory requirements under OSHA and security provisions under 42 CFR 72 and 42 CFR 73. In accordance with DA Pamphlet 385-69, records that detail the following must be maintained for 3 years: safety audits and corrective measures, SOP reviews, risk assessments of new procedures, training records, testing and certification records for laboratory safety equipment, safety committee meeting minutes, and comments made by outside auditors or inspectors. Supervisors are responsible for conducting inspections of their work areas on a weekly basis. Monthly inspections of BSL-3 facilities will be conducted in accordance with AR 385-69.

Laboratory Security

The security of the operation of the proposed new laboratory facilities will be in accordance with the requirements set forth in the *USA PATRIOT Act of 2001* (Public Law 107-56), *Public Health Security and Bioterrorism Preparedness and Response Act of 2002* (Public Law 107-188), *Agricultural Bioterrorism Protection Act of 2002, Additional Requirements for Facilities Transferring or Receiving Select Agents* (42 CFR 73), *Interstate Shipment of Etiologic Agents* (42 CFR 72), DoD Directive 5210.88, *Safeguarding Biological Select Agents and Toxins*, DoD Instruction 5210.89, *Minimum Security Standards for Safeguarding Biological Select Agents and Toxins*, and AR 190-17, *Biological Select Agents and Toxins Security Program*.

The Fort Detrick PMO has responsibility for security services for the Installation. Access to the proposed laboratory facilities will be controlled through three concentric rings of security. The outer ring is comprised of the four gates described in Section 4.11.1.1 and the Installation's outer security fence. USAG will provide the middle ring of access controls surrounding the NIBC. The inner ring will be comprised of physical security measures at the proposed laboratory facilities, including continuous monitoring by security personnel 24 hours per day, 7 days per week. Access will be permitted only to authorized individuals. (USAG, 2006b).

The potential impacts of terrorist threats at Fort Detrick are addressed and properly evaluated by means of ongoing Threat Assessments and annual Vulnerability Assessments. The Vulnerability Assessment documents and associated details will not be available for public review, since that would make all security measures public knowledge and available to potential terrorists.

In accordance with AR 190-17, Vulnerability Assessments for Fort Detrick are conducted annually. In addition, a Joint Services Vulnerability Analysis is conducted by personnel from other DoD facilities at three year intervals. The USAG's Security, Plans, Operations and Force Protection Office (SPO&FPO) has studied the potential threats to current and future organizations and facilities at Fort Detrick. Specific vulnerabilities can not be published for obvious reasons; however, mitigating actions against credible threats have been put in place including: hardening of entry points, multiple checkpoints on approach or access to buildings, fences, offset distances for parked vehicles, armed guards, and other randomized security measures. The design features of the proposed new laboratories will incorporate similar and additional mitigations against credible threats. Separate vulnerability assessments specifically for the proposed new facilities will also be conducted annually.

The Physical Security Plan for the proposed laboratory facilities will be site-specific. It will be based on a threat analysis and the Vulnerability Assessment, and it will meet or exceed the minimum security standards of DoD Instruction 5210.89. In addition to physical security, it will address security for data and the information technology system, security policies for personnel, policies governing access to Biological Select Agents and Toxins (BSAT) areas, specimen accountability, receipt of BSAT into the laboratories, transfer or shipping of BSAT from the laboratories, emergency response, and reporting of incidents, injuries, and breach of security. The Physical Security Plan will set forth responsibilities for associated personnel training and periodic performance testing of the security systems.

A site-specific Physical Security Plan for the proposed laboratory facilities will be developed during the detailed design. Policies and procedures in this plan will be revised as necessary, based on mandatory reviews occurring at least annually and after any incident or change in the regulatory requirements. After consideration of potential threats, individually and collectively, USAG's SPO&FPO, in coordination with the Installation Commander, U.S. Army Anti-terrorism / Force Protection (ATFP) representatives and

Health Facilities Planning Agency (HFPA) representatives, decided to design the proposed laboratory facilities and the NIBC to a medium level of protection (LOP).

In accordance with AR 190-17, the Physical Security Plan for the proposed laboratory facilities will provide for an armed Security Force to perform the physical security requirements. The training requirements for members of this Security Force include both security skills and facility-specific training. The Physical Security Plan also includes provisions for increasing physical security measures and procedures for BSAT facilities in the event of a major disruption such as natural disasters, national emergencies, or increased threat from terrorist or criminal elements to address early detection of attempted intrusions, thefts, or interruptions of normal security operations. In such contingencies, a Response Force under the PMO will be activated to preserve human life, deny unauthorized access, and restore normal activity.

Access Control

The proposed laboratory facilities building will be designed to consolidate the laboratories as much as possible and to separate the BSAT areas from public areas of the building. It will be divided into security zones, with each area of increasing hazard having a corresponding level of increasing security. The Physical Security Plan will identify methods for secure access (e.g., electronic locking keys, combination keypads, and/or biometrics) and monitoring controls (e.g., video surveillance cameras), in accordance with the Physical Security Standards mandated by AR 190-17. Records will be kept of all entries into Select Agent areas, including visitors and maintenance or service workers. Procedures will be in place for reporting and removing unauthorized persons. Building security will include procedures, automatic access controls and security screening equipment in accordance with the Physical Security Standards of AR 190-17 at each security level. Entry will be restricted by multiple layered security systems. The access control systems, including alarms and closed circuit television cameras, will be monitored 24 hours per day, 7 days per week.

The proposed new laboratory will utilize equivalent or improved (with respect to those of the existing NIBC facilities like USAMRIID) procedures and equipment for BSAT security and accountability. The buildings will be designed with a centralized receiving area for maximum safety and minimum security hazards associated with damaged or unknown packages. All incoming packages will be inspected visually and/or by noninvasive techniques, e.g., X-ray, before admittance into the biological containment suites. Procedures will be in place for handling suspicious packages as prescribed by Federal and state law enforcement agencies. All packages containing specimens, bacterial or viral isolates, or toxins will be opened only by authorized personnel, with appropriate training and using BSCs or other appropriate containment devices.

Incident Reporting

The proposed laboratory facilities Physical Security Plan will include policies and procedures for reporting and investigating all unintentional injuries, breaches of security measures (e.g., unauthorized personnel in restricted areas or missing BSAT), unusual or threatening phone calls, or other incidents. If materials containing a BSAT are discovered to be missing, released outside the laboratory, involved in a worker exposure or infection, or misused, USAG and other appropriate authorities will immediately be notified.

Transportation Security

The laboratory's security plans will address the risks associated with commercial transportation of BSAT regulated under 42 CFR 73 in accordance with U.S. DOT regulations (49 CFR 172.800-804). This plan will include material packaging, training required of personnel involved in shipping, receiving, packaging, handling, or transporting hazardous materials, and a list of authorized shippers. BSAT in custody of the laboratory will not be left unattended or unsecured prior to or during transportation. Transfer of BSAT will be in accordance with 42 CFR 73.16, 49 CFR 170–180, and DoD 4500.9–R *Defense Transportation Regulation, Part II, Cargo Movement, Chapter 204, Hazardous Material*. All mailings will be in accordance with the U.S. Postal Service Domestic Mail Manual 601.10: *Mailability-Hazardous Materials*.

Biosurety

A biosurety program will be developed for the proposed laboratory and will comply with AR 190-17, *Biological Select Agents and Toxins Security Program*, dated 6 September 2006, and DoD Directive 5210.88, *Safeguarding Biological Select Agents and Toxins*, dated 11 February 2004. The program will address agent accountability, security, personnel reliability, and safety.

The proposed laboratory facilities will subscribe to guidelines being established by the National Science Advisory Board for Biosecurity (NSABB) for the identification and conduct of research and professional codes of conduct for scientists and laboratory workers. The objective of the NSABB is to minimize the possibility that knowledge and technologies emanating from vitally important biological research will be misused to threaten public health or national security. The NSABB is chartered to have up to 25 voting members with a broad range of expertise in molecular biology, microbiology, infectious diseases, biosafety, public health, veterinary medicine, plant health, national security, biodefense, law enforcement, scientific publishing, and related fields, as well as nonvoting *ex officio* members from 15 participating Federal government agencies and departments, including DoD.

Agent Accountability

In accordance with DoD Instruction 5210.89 (*Minimum Security Standards for Safeguarding Biological Select Agents and Toxins*), the proposed laboratory facilities will establish a secure inventory database system to account for BSAT registered with, and withdrawn from, the Department of Health and Human Services (DHHS)/CDC and/or the USDA Animal and Plant Health Inspection Service for certified activities at its BSL facilities, and a register of current and previous Responsible and Alternate Responsible Officials. This BSAT registry will include an accounting procedure to ensure adequate control of BSAT and to maintain an up-to-date inventory of seed stocks and BSAT in long-term storage at the proposed laboratory facilities, in accordance with the *USA PATRIOT Act of 2001* (Public Law 107-56). The BSAT registry will include data on location, use, storage method, inventory, records of internal and external transfers (sender, recipient, date, and quantity), further distribution, and records of destruction (method, quantity, date, and contact information). Accurate and up-to-date records of authorizations for entry into limited-access areas will also be maintained.

Access to BSAT is restricted to specifically designated laboratory personnel. Milliliter quantities of BSAT will be stored and secured in restricted-access areas. Only individuals who are cleared to work with BSAT will have access to these areas. The BSAT registry will be verified quarterly. Any request to work with an etiologic agent must be approved by the laboratory director and safety office. Upon completion of the approved work, the BSAT will be disposed of by autoclaving or by chemical treatment (USAG, 2006b).

BSAT accountability has the objective that all BSAT stocks in the facility are registered and can be precisely located, including both working and archived stock. However, biological agents do not lend themselves to exact counts. Microorganisms are replicating entities. In the case of bacterial and viral agents, physical particle counts do not correspond with the number of viable organisms in the culture, and the viability of most biological agents, including spore preparations, degrades over time. In addition, various types of containers may be used to store agents, depending on the storage volume requirements for specific experimental studies, the method of preservation, and the characteristics of the agent.

Agent accountability will rely on the laboratory workers to maintain accurate records in laboratory notebooks to track working and reference stocks of the specified agents in and out of storage, and to recording consumption in the experimentation. This will be enhanced by the policies and procedures for limited access to BSAT.

Personnel Reliability

Security ultimately depends on the dependability and trustworthiness of the laboratory workers. The DoD Biological Personnel Reliability Program (BPRP) will ensure that each person who has access to BSAT meets the highest standards of reliability. Only BPRP-certified and approved individuals can be authorized to escort and/or supervise the access of appropriately cleared and authorized personnel to BSAT. In addition, all BSAT security guards assigned to the proposed laboratory facilities must either be enrolled in the DoD BPRP and meet requirements defined in AR 50–6, *Chemical Surety* or satisfy the Individual Reliability Program requirements of AR 190–56, *Army Civilian Police and Security Guard Program*, as required under AR 190-17.

Procedures for certification of personnel under the BPRP, as specified in DoD Instruction 5210.89, will include investigative and adjudication processes. Individuals with duties requiring BPRP certification will be evaluated on a continuing basis.

4.14.2 Environmental Consequences

For the purposes of assessing the significance of impacts related to human health and safety, the following impact thresholds were developed:

No Effect – None of the above-listed conditions would occur.

Not Significant Effect – Action would result in an impact to human health and/or safety; however, all hazardous or toxic materials and/or wastes could be safely and adequately managed in accordance with all applicable regulations and policies, with limited exposure or risks.

Significant Effect – Action would result in a substantial impact to human health and/or safety. Exposure to hazardous or toxic materials would likely occur, resulting in extensive harm or death.

4.14.2.1 No Action Alternative

No effects would be expected. Under the No Action Alternative, the proposed laboratory facilities would not be constructed.

4.14.2.2 Realignment (Preferred) Alternative

Implementing the proposed action will result in no significant adverse effects on human health and/or safety. Although adverse human health and safety impacts may potentially occur both during construction/demolition and operation of the proposed new facilities, compliance with applicable

regulations (as described in Section 4.14.1.2) will mitigate adverse impacts to the workforce and the public to less than significant levels.

Health and safety hazards would exist during the construction/demolition phases of any of the proposed facilities, particularly those with potential site contamination issues and/or buildings containing asbestos or other special hazards. Potential impacts to the health and safety of construction workers will be minimized by adherence to accepted work standards and OSHA regulations (29 CFR 1926, *Safety and Health Regulations for Construction*), resulting in no significant adverse impacts from construction activities.

Similarly, no significant impacts to the health and safety of workforce are anticipated during the operational phase. The research activities at the proposed new laboratory facilities will involve using etiologic agents and/or toxins that are capable of causing human disease and the use of laboratory animals that may be infected with etiologic agents transmissible to humans. The inherent risks of these activities to worker health and safety will be mitigated by adherence to engineering controls and work practices to contain and isolate etiologic agents described in BMBL guidelines (CDC/NIH, 1999), the FSP, AR 385-69, DA Pamphlet 385-69, and numerous other Federal, State, and local regulations (see Section 4.14.1.2). Engineering controls that meet or exceed BMBL guidelines will prevent etiological agents from contaminating laboratory equipment. Work practice controls used to prevent contamination external to containment areas include disinfecting work surfaces, floors, and drains and segregating and autoclaving waste material, work clothes, and other material prior to removal. Regular medical monitoring will be provided for those employees engaged in work with etiological agents. To the extent that licensed or investigational vaccines are available, individuals working in those laboratories will be offered immunization. Workers unable to undergo vaccination for medical reasons will not be permitted to work with the associated etiologic agents and will not be permitted entry into containment suites where vaccinations are required. Significant impacts to worker health resulting from similar work have not been observed. The limited number of documented cases of laboratory acquired infections during the last 10 years in biomedical laboratories throughout the U.S. demonstrates the effectiveness of these and other mitigation measures (USAG, 2006b).

Release of an etiologic agent to the environment (for example, by emission with exhaust air from the biological containment facilities or by escape of an infected laboratory animal) could potentially expose workers elsewhere on Fort Detrick or nearby residents to risk of infection or disease. These risks will be mitigated by adherence to BMBL standards (CDC/NIH, 1999) for engineering controls and work practices for biological containment, as discussed in Section 4.14.1.2. There have been no documented instances of infection or disease in communities adjacent to biodefense research facilities similar to the proposed new facilities resulting from the conduct of these types of activities.

Accidents during shipment of etiologic agents to or from the proposed laboratory facility could potentially expose members of the public outside Fort Detrick to risk of infection or disease. These risks will be mitigated by adherence to the regulations for the transportation of etiologic agents, as discussed in Section 4.14.1.2. There have been no known instances of infection or disease resulting from accidents related to transportation during more than 60 years of shipping of infectious materials through postal services or regulated common carriers in the U.S. (USAG 2006b).

Fort Detrick is a secure installation, as documented in Section 4.14.1.2. The potential impacts of terrorist threats at Fort Detrick are addressed and properly evaluated by means of ongoing Threat Assessments and annual Vulnerability Assessments. The Vulnerability Assessment documents and associated details will not be available for public review, since that would make all security measures public knowledge and available to potential terrorists. In accordance with AR 190-17, *Biological Select Agents and Toxins*

Security Program, which became effective September 6, 2006, Vulnerability Assessments for Fort Detrick, including the NIBC, are conducted annually. Separate vulnerability assessments specifically for the proposed laboratory facilities will also be conducted annually. In addition, a Joint Services Vulnerability Analysis is conducted by personnel from other DoD facilities at three year intervals.

Potential exposure of the public to an etiologic agent due to incidents such as theft or sabotage will be mitigated by the biosurety program for the proposed new laboratory incorporating agent accountability, security, personnel reliability, and safety in accordance with AR 190-17.

The risk of accidental release of a biological agent to the environment due to an external accident or natural disaster will be mitigated by building construction standards, redundancy of safety equipment and emergency procedures, operational safeguards, and monitoring systems, as discussed in Section 4.14.1.2.

The risk of inadvertent transmission of diseases from biosafety laboratory workers at the proposed laboratory facility to other workers, family members, or the general public also will be remote. Laboratory acquired infections are rare, as indicated by the limited number of documented cases during the last 10 years in biomedical laboratories throughout the U.S. Training of personnel, management and oversight of laboratory operations, and medical surveillance of personnel, as described in Section 4.14.1.2, will be the principal components for preventing inadvertent transmission of infectious agents.

The risk to laboratory workers from laboratory air re-entrainment at the proposed laboratory facility will be negligible. To ensure that the exhaust design is adequate, specific design specifications will be incorporated into the design of the laboratory to reduce the likelihood that air exhausted from any of the chemicals hoods will not be recaptured by the clean air intakes.

4.15 CUMULATIVE EFFECTS SUMMARY

A cumulative impact is defined as “the impacts on the environment that result from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertake such other action” (40 CFR 1508.7). The section goes on to note: “such impacts can result from individually minor but collectively significant actions taking place over a period of time.” Cumulative impacts associated with implementation of the Realignment (Preferred) Alternative would include any impacts from other on-going mission actions that would be incremental to the impacts of constructing and operating the three different BRAC projects at Fort Detrick. Section 5.2.19 of the USAMRIID FEIS (USAG, 2006b) provides additional discussion on cumulative effects associated with implementation of projects listed below.

Several new projects may occur simultaneously with construction activities for the Proposed Action, including:

- Projects identified in the 2003 Installation Master Plan for Fort Detrick;
- Cogeneration Utility Plant (CUP) by Chevron Energy Solutions Company and Keenan Development (CK);
- Veterans Affairs Community-Based Outpatient Clinic (CBOC);
- U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) Facilities;
- National Biodefense Analysis and Countermeasures Center (NBACC) Facility;

- Research Acquisition Building, U.S. Medical Research and Materiel Command (USAMRMC), Medical Research Acquisition Activity (USAMRAA), and Medical Materiel Development Activity (USAMMDA).

4.15.1 No Action Alternative

Implementation of the No Action Alternative would avoid new impacts that could interact with the impacts of other past, present, and reasonably foreseeable actions. Therefore, there would be no cumulative impacts associated with the No Action Alternative.

4.15.2 Realignment (Preferred) Alternative

Land Use

The proposed action is consistent with the mission of Fort Detrick and siting of activities as outlined in the Installation Master Plan. The Master Plan allows for the future establishment of projects and facilities, such as the NIBC. The Master Plan EA preliminarily assessed that overall operational environmental impacts were deemed to be beneficial as a result of implementing the Land Use Plan for Fort Detrick, which consists of a number of projects for construction and operation of new facilities and infrastructural improvements within the Installation (USAG, 2003).

Aesthetic and Visual Resources

The proposed laboratory will affect the viewshed of the historic USDA buildings, but the building is expected to be consistent with the aesthetic quality of the surrounding buildings. The remaining proposed projects are not expected to interfere with the viewshed of any historic buildings and are also expected to be consistent with the aesthetic quality of the surrounding buildings. As a result, these projects will not adversely cause significant impacts when added cumulatively to the effects of other construction.

Air Quality

Cumulative impacts to air quality would be associated with construction of the proposed projects. Increase in annual emissions from the construction and demolition activities from the proposed actions would not be significant, making up no more than ten percent of the available regional emission inventory for VOCs or NO_x. Additionally, neither NO_x, VOCs, nor PM_{2.5} would exceed their respective *de minimis* level during construction or operation of the proposed projects.

Noise

Impacts to noise levels at the Installation would be associated with construction activities and increased traffic. Increased noise levels during construction would be temporary, while noise associated with increased traffic would be long term, transient, and distributed throughout the day. Therefore, cumulative impacts associated with baseline noise levels would be minimal in the long term and a result of the additive effect of increased traffic.

Geology and Soils

Topography, geology, and soil impacts are site-specific and are not affected by cumulative development in the region. Cumulative impacts would only occur if development immediately adjacent to the site affected these resources on the site, or if development on the site affected geologic resources of the site where other development may occur. Because sites of the proposed construction projects located near the project area are primarily flat or gently rolling terrain, and would likely require only minor leveling and grading, no significant effects to topography or geology would occur. In addition, given that the majority

of soils at Fort Detrick have been previously disturbed or modified, and mitigation measures would be enacted to rehabilitate those soils disturbed during construction activities, no significant effects to topography, geology, and soils are expected. As a result, the construction projects proposed within the Installation would not likely have any significant cumulative impacts, to the geology, topography, or soils within or immediately adjacent to the project area.

Water Resources

Cumulative impacts to water resources and soil erosion associated with stormwater run-off would not be significant. These impacts would be minimized through the proper use of required BMPs as outlined in required Erosion and Sediment Control Plans and Stormwater Management Plans.

Biological Resources

Cumulative impacts to biological resources would not be significant. Some species may be discouraged from the area through loss of habitat, dust, erosion, and/or noise. However, there are no rare, threatened, or endangered species present on Fort Detrick, as discussed in Section 4.8.1.3. Positive cumulative impacts to the local plant and animal ecology would result from the afforestation and reforestation requirements by creating high quality habitat.

Cultural Resources

Prior to the BRAC action, the USAMRIID project will demolish NRHP eligible Buildings 1412, 1414, and 1415 to clear the site for future USAMRIID facilities. The site may also be used for the Bio-medical Laboratory. The cumulative effect of the demolition of these buildings would be significant and adverse; however, an MOA under Section 106 with the Maryland SHPO has been completed and the recordation process identified in the MOA has mitigated the adverse effect.

Socioeconomics

All cumulative construction projects are likely to have minor economic benefits for the region. As seen from the results of the EIFS model, construction activity contributes to increases in sales volume (although, these increases lie within the RTV positive and negative extremes). Additional construction activity related to all cumulative projects would also contribute to an increased sales volume, and an increase in the number of temporary jobs directly related to construction activity. Operations of these new facilities would have only minor socioeconomic impacts: there would be more jobs created, higher sales volume, and an increase in the permanent population. However, these increases are not likely to exceed the positive RTV values for the ROI calculated by the EIFS model.

Transportation

Operation of the proposed facilities would add to the existing traffic demand for transportation infrastructure inside and outside the Installation. The cumulative effect of the additional traffic would add to the existing traffic congestion observed at the off-post roads. The recent upgrades to the access control points took into consideration the traffic growth from foreseeable future concurrent projects such as the ones listed above and therefore are expected to operate within their capacities. Cumulative impacts would be non-significant considering the improvements mentioned above; however, it is recommended that once the projects reach the final design stage a traffic impact study is conducted to identify any potential transportation projects that would improve the traffic operation.

Utilities

Operation of the proposed facilities would add to existing demand for utilities and waste management services on the Installation. The demand for utilities generated by other projects has been assessed (USAG, 2006b) and utility impacts estimated in this document are consistent with that assessment. As discussed in Section 4.12.2, the demand for the Research Laboratory, RDA Management Center, and Reserve Center is not large compared to existing demand. The projections for other projects (USAG, 2006b, Table 2-2) show that demand for these three projects is also considerably less than projected demand for the other new projects such as USAMRIID.

- Potable water demand for the three projects evaluated by this EA adds approximately one percent to total demand. The demand from these three projects and all other new projects, when added to existing demand, is projected to use only 86% of available water supply and treatment capacity. Therefore, cumulative potable water impacts are not expected to be significant.
- Wastewater discharges from the three projects would be approximately 4.4 million gallons annually compared to 89 million gallons from other new projects; the three projects represent less than 5 percent of the total from new projects.
- Power for the Research Laboratory is estimated as 3 million kWh annually; power for the RDA Management Center is offset by demolition of an equal amount of energy-inefficient buildings, and the Reserve Center, which currently uses approximately 272,000 kWh annually, could be conservatively estimated to increase in proportion to a five-fold increase in space to approximately 1.3 million kWh annually. When compared to an estimated 35 million kWh for the other new projects, the three projects represent approximately 11 percent of new demand.
- Solid waste from the RDA Management Center and Reserve Center would be municipal, not medical, and has not been quantitatively assessed. However, the Research Laboratory is projected to generate 73,000 pounds of municipal waste and 28 thousand pounds of medical waste. Other new projects would generate 1,208,000 pounds of municipal waste and 297 pounds of medical waste. The other new projects at Fort Detrick generate 16 times more municipal waste and more than 10 times the amount of medical waste of the Research Laboratory, which would be expected to be a greater generator of municipal waste than the small administrative RDA Management Center. The Reserve Center would not be expected to generate additional waste, as its mission and number of personnel do not grow.

Therefore, the conclusion is that the additive effects of the Research Laboratory, RDA Management Center, and Reserve Center to utilities at Fort Detrick are not sufficient to be the cause for the cumulative impacts to utilities of new projects at Fort Detrick to be considered significant.

Hazardous and Toxic Substances and Human Health and Safety

Impacts related to hazardous and toxic materials use and associated human health and safety impacts would increase with the addition of the other facilities listed above, especially the USAMRIID laboratory facilities. However, in all cases, provisions and procedures will be in place for the proper handling, storage, and disposal of hazardous or toxic materials and wastes, and waste amounts would not exceed expected capacities. Adherence to applicable environmental and health and safety standards would minimize risk to the public and the employees of the facilities. Therefore, cumulative impacts would be expected to be long-term, but would not exceed the significant level.

4.16 MITIGATION SUMMARY

None of the predicted effects of the proposed action would result in significant impacts; therefore, mitigation is not needed. However, following requirements and permits would be necessary in implementing the projects identified in the analysis:

Construction/Demolition Waste Management

To ensure environmentally sound waste management practices, the contractors will be required to submit a waste management plan within 15 days of the contract award. This project-specific plan must be coordinated with waste management objectives for Fort Detrick as a whole. The contractors must make every effort to reduce overall construction and demolition waste by recycling materials whenever possible and adhere to the requirement for 50 percent minimum diversion of construction and demolition waste by weight from landfill disposal. Contractors must also comply with AR 200-1 (*Environmental Protection and Enhancement*) regarding storage, treatment, and disposal of toxic and hazardous materials and dispose of all waste generated during construction and demolition at an approved facility off the Installation.

Best Management Practices (BMPs)

During construction of the proposed actions, BMPs would be employed to minimize particulate matter from becoming airborne at the project site in compliance with Code of Maryland Regulations (COMAR) pertaining to *Particulate Matter from Materials Handling and Construction* (COMAR 26.11.06.03D).

Air Quality Requirements

Fort Detrick is located in a moderate ozone non-attainment area and in a non-attainment area for PM_{2.5}. Because nitrogen oxides (NO_x) and sulfur dioxide (SO₂) emissions at Fort Detrick surpass the State-established threshold levels, Fort Detrick is considered a “major source” for permitting purposes under the CAA (USAG, 2003). The Clean Air Act CAA requires that a NSR evaluation be prepared before construction and installation of any new permitted major sources or any major modifications of permitted major sources in non-attainment areas that have the potential to cause significant increases of criteria pollutants (NO_x, SO_x, carbon monoxide [CO]), lead [Pb], volatile organic compounds [VOCs], and particulate matter [PM]).

The CAA requires that a PSD evaluation be prepared before construction and installation of certain types of listed sources in attainment areas that have the potential to emit certain threshold quantities of criteria pollutants. Air quality permits to construct are required for generators greater than 500 horsepower (hp) or 373 Kilowatt (kW) and for fuel burning equipment greater than or equal to 1 Million British Thermal Unit (MMBtu)/hour (hr). Air quality permits to operate are required for fuel burning equipment and hot water heaters with maximum rated capacities of 50 MMBtu/hr or more (USAG, 2006a). If NSR or PSD permits are required to construct the proposed BRAC projects, then it will be the responsibility of Fort Detrick to obtain the necessary permits.

Erosion and Sediment Control, and Stormwater Management

An erosion and sediment control plan for land clearing, grading, or other earth disturbance approved by the MDE is required under COMAR 26.17.01 for construction activities involving more than 100 cubic yards or more than 5,000 SF (0.11 acre). If the area disturbed is more than one acre, a general permit under the NPDES is also required for discharge of stormwater during the construction period.

Stormwater management measures are required for projects that disturb more than 5,000 SF on Federal property according to COMAR 26.17.02 and the *Maryland Stormwater Management Guidelines for State and Federal Projects*. The stormwater management facilities must be designed consistent with the *2000 Maryland Stormwater Design Manual Volumes I and II*, and be constructed in accordance with a project plan approved by MDE.

The Medical Biological Defense Research Laboratory, which will be located in drainage area A-4, would be expected to comply with the regional management plan for Area A-4. The location of the Joint Bio-Medical RDA Management Center will probably inhibit the inclusion of this facility into a regional stormwater management basin. Due to the limited available area adjacent to the facility, innovative stormwater management features will need to be evaluated. Site-specific stormwater management features will need to be considered for the Joint Reserve Center development, such as stormwater ponds or bio-infiltration measures.

Forestation Requirements

All construction on Fort Detrick is subject to the Installation's Forest Conservation Plan (FCP), to ensure compliance with the Maryland Forest Conservation Act (FCA) (COMAR 08.18.04) and the Forest Resource Ordinance of Frederick County. The FCP, which is on file with the Maryland Department of Natural Resources (MDNR), details the amount of forested land that will be retained, reforested or afforested and identifies the location in Area B where new tree plantings would be conducted to meet forestation requirements.

Under the Maryland FCA, a forestation requirement must be met for projects that are 40,000 SF (approximately 0.92 acres) or greater, for grading or sediment control permits.

In addition, any specimen tree in the landscape that is removed will be replaced at least 2:1 depending on the size of the tree (Boyland, 2006a).

Fort Detrick, as a military installation, falls under the Institutional Development Area classification, which has a 15 percent afforestation threshold. In addition, any construction project that requires clearing of existing forested land would have a reforestation requirement.

The Fort Detrick FCP requires afforestation amounting to 15 percent of the total disturbed area in the proposed action plus reforestation at a ratio of 2 acres planted for each acre cleared, to be planted in trees in the designated areas on Area B. A landscape credit will require an area 35 feet x 2,500 feet to be planted as a buffer or screen.

Funding for reforestation/afforestation would be included in the proposed action. The funds can be transferred to USAG for addition to the Forestation Contract already in place. In addition to planting, the FCP requires provision for maintenance of the plantings with a survival rate of 65 percent at the end of a two-year maintenance period.

5.0 FINDING AND CONCLUSIONS

5.1 FINDINGS

5.1.1 Consequences of No Action Alternative

Under the No Action Alternative, the proposed new BRAC facilities would not be constructed, and no environmental impacts would occur.

5.1.2 Consequences of Realignment (Preferred) Alternative

The proposed action would not have any significant adverse effects or impacts on any of the environmental or related resources areas at Fort Detrick or to areas surrounding the Installation. A summary of impacts by resource area for the No Action Alternative and the Realignment (Preferred) Alternative is provided in Table 5-1.

5.2 CONCLUSIONS

None of the predicted effects of the proposed action would result in significant impacts. Therefore, the results of the analyses warrant issuance of a FNSI.

Table 5-1. Summary of Effects of the Proposed Action and the No Action Alternative

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
Land Use			
<i>Regional Geographic Setting and Location</i>	No effect	No effect.	No effect.
<i>Installation Land</i>	No effect	Effects are not significant; all proposed projects occur within Fort Detrick boundary.	Effects are not significant; all proposed projects occur within Fort Detrick boundary.
<i>Surrounding Land</i>	No effect	No effect.	No effect.
<i>Current and Future Development in the Region of Influence</i>	No effect	Effects are not significant; all projects occur within Fort Detrick boundary; short-term construction requirements add financial capital to local and regional economy.	Effects are not significant; all projects occur within Fort Detrick boundary; increase in personnel living off-post adds financial capital to the local and regional economy.
Aesthetic and Visual Resources	No effect	Effects are not significant.	Effects are not significant.
Air Quality			
<i>Ambient Air Quality Conditions</i>	No effect	Effects are not significant - temporary emissions during construction do not exceed <i>de minimis</i> levels	Effects are not significant- operational emissions do not exceed <i>de minimis</i> levels
<i>Air Pollutant Emissions at Installation</i>	No effect	Effects are not significant – emissions during construction are temporary	Effects are not significant – Emissions do not exceed <i>de minimis</i> levels

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Regional Air Pollutant Emissions Summary</i>	No effect	Effects are not significant – Temporary emissions do not exceed ten percent of the allowable limits laid out by the SIP	Effects are not significant – Emissions do not exceed ten percent of the allowable limits laid out by the SIP
Noise	No effect	Effects are not significant. Increased temporary noise from construction would not exceed applicable noise standards.	Effects are not significant. Long-term noise from increased vehicle use/traffic would not exceed applicable noise standards
Geology and Soils			
<i>Geologic and Topographic Conditions</i>	No effect	Effects are not significant; minor leveling and grading required.	No effect.
<i>Soils</i>	No effect	Effects are not significant; majority of soils are already disturbed or modified.	No effect.
<i>Prime Farmland</i>	No effect	No effect; no lands suitable for classification as prime farmland.	No effect; no lands suitable for classification as prime farmland.
Water Resources			
<i>Surface Water/Wetlands</i>	No effect	Effects are not significant. Impacts due to erosion and sedimentation would be mitigated through an approved Sediment and Erosion Control Plan.	Effects are not significant. No impacts on wetlands, and adverse impacts on surface waters from increased stormwater would be mitigated through regulatory compliance.
<i>Hydrogeology/ Groundwater</i>	No effect	Impacts are not significant. Possible impacts due to the potential for minor oil and antifreeze spills, leaks from vehicles, and pollutant leaching as a result of demolition activities.	Impacts are not significant. Possible impacts due to the potential for minor oil and antifreeze spills, leaks from vehicles, etc.
<i>Floodplains</i>	No effect	No effect	No effect
<i>Coastal Zone</i>	No effect	No effect	No effect
Biological Resources			
<i>Vegetation</i>	No effect	Effects are not significant from removal of vegetation	No effect
<i>Wildlife</i>	No effect	Effects are not significant from removal of vegetation	No effect
<i>Threatened & Endangered Species</i>	No effect	No effect	No effect
<i>Wetland Habitat</i>	No effect	No effect	No effect
Cultural Resources			

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Built Environment</i>	No effect	Effects are not significant. Potential minor impacts to viewsheds and settings of historic buildings can be anticipated.	Effects are not significant. Potential minor impacts to viewsheds and settings of historic buildings can be anticipated.
<i>Archaeology</i>	No effect	No effect	No effect
<i>Native American Resources</i>	No effect	No effect	No effect
Socioeconomics			
<i>Economic Development</i>	No effect	Effects are not significant; 50% of jobs created will be directly caused by construction, most of which will be temporary.	Effects are not significant; minor increases in jobs, sales volume, and personal income
<i>Demographics</i>	No effect	Effects are not significant; insignificant increases in ROI population of a temporary nature.	Effects are not significant; minor increases in the ROI population.
<i>Housing</i>	No effect	No effect.	Effects are not significant; minor increase in demand for housing.
<i>Quality of Life</i>	No effect	No effect.	Effects are not significant; small number of additional children to be absorbed by ROI school system.
<i>Environmental Justice</i>	No effect	No effect.	No effect.
<i>Protection of Children</i>	No effect	No effect.	No effect.
Transportation			
<i>Roadways and Traffic</i>	No effect.	Effects are not significant; transitory increase in traffic due to construction vehicles	Effects are not significant; increased traffic from additional workforce
<i>Installation Transportation</i>	No effect.	No effect; there are no plans to implement an internal shuttle in the future.	No effect; there are no plans to implement an internal shuttle in the future.
<i>Public Transportation</i>	No effect.	Effects are not significant; no increase in transit ridership is expected during construction.	Effects are not significant; no significant increase in transit ridership is expected as a result of implementing the action.
Utilities			
<i>Potable Water Supply</i>	No effect	Requires normal short-term disruptions from utility extensions; effect are not significant	Impacts not significant; comparatively small demand would not be cause for system or regulatory limits to be exceeded.
<i>Wastewater System</i>	No effect	Requires normal short-term disruptions from utility extensions; effects are not significant	Effects are not significant; comparatively small discharges would not be cause for system or regulatory limits to be exceeded.

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Stormwater System</i>	No effect	Requires normal short-term disruptions from utility extensions; effects are not significant	Effects are not significant; compliance with all State and Federal guidelines.
<i>Energy Sources</i>	No effect	Requires normal short-term disruptions from utility extensions; effects are not significant	Effects are not significant; comparatively small demand would not cause system overloads or shortages.
<i>Communications</i>	No effect	Requires normal short-term disruptions from utility extensions; effects are not significant	Effects are not significant; communication requirements can be provided.
<i>Solid Waste</i>	No effect	Requires normal short-term disruptions from utility extensions; effects are not significant	Effects are not significant; required landfill space not large comparatively; adherence to approved solid waste handling procedures prevents adverse effects during operations.
Hazardous and Toxic Substances			
<i>Hazardous Materials Use, Handling and Storage</i>	No effect	Effects are not significant.	Effects are not significant with proper handling; minimal use except in lab and OMS
<i>Hazardous Waste Generation, Storage, and Disposal</i>	No effect	Effects are not significant; little hazardous waste from construction	Effects are not significant with proper disposal; sufficient disposal capacity available
<i>Site Contamination Issues</i>	No effect	Effects are not significant; site contamination issues unlikely but can be handled if encountered	No effect.
Human Health and Safety	No effect	Effects are not significant following OSHA and other standards	Effects are not significant with BSL 3 standards and procedures maintained in lab
Cumulative Impacts			
<i>Land Use</i>	No effect	Effects are not significant; projects are consistent with Installation Master Plan.	Effects are not significant; projects are consistent with Installation Master Plan.
<i>Aesthetic and Visual Resources</i>	No effect	Effects are not significant; projects would follow Installation Master Plan design guidelines.	Effects are not significant; projects would follow Installation Master Plan design guidelines.
<i>Air Quality</i>	No effect	Effects are not significant; increase in annual emissions would not exceed <i>de minimis</i> thresholds.	Effects are not significant; increase in annual emissions would not exceed <i>de minimis</i> thresholds.
<i>Noise</i>	No effect	Effects are not significant; minimal increase in noise levels that would not exceed applicable noise standards.	Effects are not significant; minimal increase in noise levels that would not exceed applicable noise standards.

Resource	No Action Alternative	Realignment (Preferred) Alternative	
		Construction	Operation
<i>Geology and Soils</i>	No effect	Effects are not significant; majority of soil have been previously disturbed; mitigation measures would be implemented to off-set soil disturbance.	Effects are not significant; majority of soil have been previously disturbed; mitigation measures would be implemented to off-set soil disturbance.
<i>Water Resources</i>	No effect	Effects are not significant; impacts minimized through use of required BMPs.	Effects are not significant; impacts minimized through use of required BMPs.
<i>Biological Resources</i>	No effect	Effects are not significant; creation of habitat through afforestation and forestation requirements.	Effects are not significant; creation of habitat through afforestation and forestation requirements.
<i>Cultural Resources</i>	No effect	Adverse effects from historic building demolitions by the USAMRIID project have been mitigated by the recordation process as agreed to in an MOA with the Maryland SHPO.	No significant effects.
<i>Socioeconomics</i>	No effect	Effects are not significant; increase in sales volume and temporary jobs.	Effects are not significant; creation of jobs, increase in sales volume and increase in permanent population.
<i>Transportation</i>	No effect	Effects are not significant; recent upgrades to access control points accommodate foreseeable future projects.	Effects are not significant; recent upgrades to access control points accommodate foreseeable future projects.
<i>Utilities</i>	No effect	Effects are not significant; requires normal short-term disruptions from utility extensions.	Cumulative effects would not be significant; relatively small utility requirements compared to other projects.
<i>Hazardous and Toxic Substances</i>	No effect	Effects are not significant with adherence to applicable standards and regulations.	Effects are not significant with adherence to applicable standards and regulations.
<i>Human Health & Safety</i>	No effect	Effects are not significant with adherence to applicable standards and regulations.	Effects are not significant with adherence to applicable standards and regulations.

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6.0 LIST OF PREPARERS

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Numerous Fort Detrick staff contributed to this EA, including Rod Sheffer with the Fort Detrick Environmental Office. Mr. Sheffer served as the primary Installation-POC for this effort.

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10.0 ACRONYMS AND ABBREVIATIONS

AAALAC	Association for Assessment and Accreditation of Laboratory Care
AAFES	Army Air Force Exchange Services
ABSL	animal biosafety level
ACHP	Advisory Council on Historic Preservation
AFRC	Armed Forces Reserve Center
AFMESA	Air Force Medical Evaluation Support Activity
AFMLO	Air Force Medical Logistics Office
AIRFA	American Indian Religious Freedom Act
APE	Area of Potential Effect
AOCs	Areas of Concern
AQI	Air Quality Index
AR	Army Regulation
ARPA	Archaeological Resource Protection Act
AT/FP	Anti-terrorism/Force Protection
bgs	below ground surface
BAHC	Barquist Army Health Center
BMBL	<i>Biosafety in Microbiological and Biomedical Laboratories</i>
BMPs	Best Management Practices
BPRP	Biological Personnel Reliability Program
BRAC	Base Closure and Realignment
BSAT	Biological Select Agents and Toxins
BSC	biological safety cabinet
BSL	Biosafety Level
CAA	Clean Air Act
CAAA	Clean Air Act Amendment
CAP	Corrective Action Plan
CBMS	Chemical Biological Medical Systems
CDC	Centers for Disease Control and Prevention
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERL	Construction Engineering Research Laboratory
CFR	Code of Federal Regulations
CK	Chevron Energy Solutions Company and Keenan Development
COMAR	Code of Maryland Regulations
CO	carbon monoxide
COL	Colonel
COPC	chemicals of potential concern
CPAC	Civilian Personnel Advisory Center
CUP	Cogeneration Utility Plant
CWA	Clean Water Act
dba	decibels on an A-weighted scale
DA	Department of the Army
DA PAM	Department of the Army Pamphlet
DD	Department of Defense (forms only)
DERP	Defense Environmental Restoration Program
DHHA	Department of Health and Human Services
DHS	Department of Homeland Security
DoD	Department of Defense
DOIM	Directorate of Information Management

DOL	Department of Labor
DRMS	Defense Reutilization Marketing Service
EA	Environmental Assessment
EIS	Environmental Impact Statement
EIFS	Economic Impact Forecast System
EO	Executive Order
ERP	Emergency Response Plan
ESA	Endangered Species Act
ESRI	Environmental Systems Research Institute
EUL	Enhanced Use Leasing
°F	degrees Fahrenheit
F&ESD	Fort Detrick Fire and Emergency Services Division
FCA	Forest Conservation Act
FCP	Forest Conservation Plan
FCRDC	Frederick Cancer Research and Development Center
FCVFRA	Frederick County Volunteer Fire and Rescue Association
FDA	Food and Drug Administration
FEIS	Final Environmental Impact Statement
FNSI	Finding of No Significant Impact
FSP	Facility Safety Plan
FWPA	Federal Water Pollution Act
ft.	foot/feet
FY	fiscal year
GIS	Geographic Information Systems
gpm	gallons per minute
HAZCOM	Hazard Communication Standard
HEPA	high-efficiency particulate air
HHRA	Human Health Risk Assessment
HMMO	Hazardous Material Management Office
hp	horse power
HUC	Hydrologic Unit Codes
HVAC	Heating, ventilating and air-conditioning
ICP	Integrated Contingency Plan
ICRMP	Integrated Cultural Resource Management Plan
IDG	Installation Design Guide
INRMP	Integrated Natural Resource Management Plan
IRA	Interim removal action
IRP	Installation Restoration Program
ITE	Institute of Transportation Engineers
JRCAB	Joint Readiness Clinical Advisory Board
kV	kilovolt
kWh	kilowatt hours
LACUC	Laboratory Animal Care and Use Committee
LAI	laboratory-acquired infection
LEPC	Local Emergency Planning Committee
LOP	level of protection
MARC	Frederick Maryland Rail Commuter
MCL	Maximum Contaminant Level
MD	Maryland
MDE	Maryland Department of the Environment
MDNR	Maryland Department of Natural Resources

mg/kg	milligrams per kilogram
MMBtu	Million British Thermal Unit
MWCOG	Metropolitan Washington Council of Governments
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NBACC	National Biodefense Analysis and Countermeasures Center
NCI	National Cancer Institute
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NIBC	National Interagency Biodefense Campus
NIH	National Institutes of Health
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
NRC	Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NSABB	National Science Advisory Board for Biosecurity
NSR	New Source Review
O ₃	ozone
OMS	Organized Maintenance Shop
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbons
Pb	lead
PBC	Performance Based Contract
PCB	Polychlorinated Biphenyl
PCE	perchloroethylene
PCPI	per capita personal income
PFC	Private First Class
PL	Public Law
PM _{2.5}	particulate matter with a diameter less than or equal to a nominal 2.5 micrometers
PM ₁₀	particulate matter with a diameter less than or equal to a nominal 10 micrometers
PMO	Provost Marshal Office
POC	Petroleum products, Oils and Lubricants
PPE	Personal Protective Equipment
ppm	parts per million
PSD	Prevention of Significant Deterioration
rad	radiation absorbed dose
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RDA	Research, Development, and Acquisition
RDTE	Research, Development, Testing, and Evaluation
RI	Remedial Investigation
RIP	Remedy in Place
ROI	Region of Influence
SAP	satellite accumulation point
SDWA	Safe Drinking Water Act
SF	square foot/feet
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO ₂	sulfur dioxide

SOP	Standard Operating Procedure
SPO&FPO	Security, Plans, Operations and Force Protection Office
SVOC	semivolatile organic compound
TCE	trichloroethylene
TMDL	Total Maximum Daily Load
TOCs	total organic compounds
tpy	tons per year
TSCA	Toxic Substance Control Act
UL	Underwriters Laboratories
USACE	U.S. Army Corps of Engineers
USACEHR	U.S. Army Center for Environmental Health Research
USAG	U.S. Army Garrison
USAMRAA	U.S. Army Medical Research Acquisition Activity
USAMRMC	U.S. Army Medical Research and Materiel Command
USAMRIID	U.S. Army Medical Research Institute of Infectious Diseases
USC	U.S. Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
UST	underground storage tank
VOCs	volatile organic compounds
WTP	Water Treatment Plant
WWTP	Waste Water Treatment Plant

APPENDICES

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APPENDIX A

SECRETARY OF DEFENSE'S JUSTIFICATION FOR RECOMMENDED REALIGNMENT ACTIONS AT FORT DETRICK

- This action will co-locate Army, Navy, Air Force and Defense Agency program management expertise for non-medical chemical and biological defense research, development and acquisition (each at Aberdeen Proving Ground, MD) and two separate aspects of medical chemical and biological research; medical biological defense research (at Fort Detrick, MD). It will promote beneficial technical interaction in planning and headquarters-level oversight of all defense biomedical R&D, fostering a joint perspective and sharing of expertise and work in areas of joint interest; create opportunities for synergies and efficiencies by facilitating integrated program planning to build joint economies and eliminate undesired redundancy, and by optimizing use of a limited pool of critical professional personnel with expertise in medical product development and acquisition; foster the development of common practices for DoD regulatory interactions with the US Food and Drug Administration; and facilitate coordinated medical systems lifecycle management with the medical logistics organizations of the Military Departments, already co-located at Fort Detrick.

- This recommendation creates Joint Centers of Excellence for Battlefield Health and Trauma research at Fort Sam Houston, TX; Infectious Disease research at Walter Reed-Fort Glen Annex, MD; Aerospace Medicine research at Wright-Patterson AFB, OH; Regulated Medical project development & acquisition at Fort Detrick, MD and Medical Biological Defense research at Fort Detrick, MD.; and Chemical Biological Defense research, development & acquisition at Aberdeen Proving Ground, MD. These actions will increase synergy, focus on joint needs and efficient use of equipment and facilities by co-locating Tri-Service and Defense activities performing functions in chemical-biological defense and medical RDA. Fort Sam Houston is the best location for the Center for Battlefield Health and Trauma because it is the only current biomedical S&T location that also includes a military trauma center, providing enhanced translational research opportunities and ability to recruit and retain physicians/scientists. Walter Reed Army Medical Center, Forest Glen Annex, is the CONUS hub of the worldwide Army and Navy activities in infectious diseases of military significance. Fort Detrick, MD, is the site of an Interagency Biodefense Campus and the military's only Bio-Safety Level 4 containment facilities for medical research. The realignment of Air Force Aerospace medical and non-medical R&D to Wright-Patterson AFB, OH, with co-location of associated education and training activities relocated in another recommendation, makes this location most suitable for a joint center for Aerospace Medical Research. Fort Detrick, MD is home of Tri-Service medical logistics as well as the Department's largest Medical RDA management activity. Edgewood Chemical and Biological Center, Aberdeen Proving Ground, is home to the military's most robust infrastructure supporting research utilizing hazardous chemical agents. These actions will also reduce the use of leased space within the National Capital Region, and increase the force protection posture of the realigning activities. Specific benefits occurring as a result of this recommendation include:
 - Promote beneficial technical and management interaction in the functional research areas of combat casualty care including combat dentistry and maxillofacial care, infectious

disease, aerospace medicine, medical and non-medical chemical and biological defense research, as well as in the functional area of medical development and acquisition, fostering a joint perspective and sharing of expertise and work in areas of joint interest.

- Build joint economic and optimize use of limited pools of critical professional personnel with expertise in unique mission areas.

- Co-location of combat casualty care research activities with related military clinical activities of the trauma center currently located at Brooke Army Medical center, Fort Sam Houston, TX, promotes translational research that fosters rapid application of research findings to health care delivery, and provides synergistic opportunities to bring clinical insight into bench research through sharing of staff across the research and health care delivery functions. The availability of a co-located military trauma center also provides incentives for recruitment and retention of military physicians as researchers, and is a model that has proven highly successful in civilian academic research centers.

- Reduce the number of DoD animal facilities.

- Provide increase opportunities to share management and scientific support functions across Services and reduce costs.

- Foster the development of common practices for DoD regulatory interactions with the US Food and Drug Administration.

- Facilitate coordinated medical systems lifecycle management with the medical logistics organizations of the Military Departments, already co-located at Fort Detrick.

- Promote jointness, enable technical synergy, and position the Department of Defense to exploit a center-of-mass of scientific, technical, and acquisition expertise with the personnel necessary to provide defense against current and emerging chemical and biological warfare threats.

- Complete earlier consolidations of military Service Chemical Biological Defense programs into a joint, consolidated Chemical Biological Defense program.

- Directly support the Department's Strategy for homeland defense and Civil Support.

- This recommendation transforms Reserve Component facilities in the State of Maryland. The implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.
- This recommendation is the result of a State-wide analysis of Reserve Component installations and facilities conducted by a team of functional experts from Headquarters, Department of the Army, the Office of the State Adjutant General, and the Army Reserve Regional Readiness Command.
- This recommendation closes one Army Reserve Center and one Organizational Maintenance Shop in Frederick, MD and constructs a multi service, multi functional armed Forces Reserve Center and Organizational Maintenance Shop on Fort Detrick, MD. This recommendation reduces military manpower and associated costs for maintaining existing facilities by reducing the number of separate DoD installations by relocating to an existing base.
- This recommendation provides the opportunity for other Local, State, or Federal organizations to partner with the Reserve Components to enhance Homeland Security and Homeland Defense at a reduced cost to those agencies.

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APPENDIX B

AIR QUALITY APPLICABILITY ANALYSIS

This air quality applicability analysis was conducted to identify potential increases or decreases in criteria air pollutant emissions associated with the proposed construction of the realignment of Fort Detrick, Maryland. Since the project will occur within a U.S. EPA designated ozone and particulate matter (2.5 microns) non-attainment area, it is subject to the Federal conformity requirements. The purpose of the analysis is to further determine the applicability of the Federal General Conformity Rule established in 40 CFR, Part 93 entitled: *Determining Conformity of Federal Actions to State or Federal Implementation Plans* to the action.

The Federal conformity rules were established to ensure that Federal activities do not hamper local efforts to control air pollution. In particular, Section 176(c) of the Clean Air Act (CAA) prohibits Federal agencies, departments or instrumentalities from engaging in, supporting, licensing, or approving any action, in an area that is in non-attainment of the National Ambient Air Quality Standards (NAAQS), which does not conform to an approved State or Federal implementation plan. Therefore, the agency must determine whether or not the project would interfere with the clean air goals in the State Implementation Plan (SIP).

1.0 Project Description

The following describes the BRAC-related projects assessed in this EA.

Medical Bio-Defense Research Laboratory (Project #64273): A Medical Bio-Defense Research Laboratory and conditioned warehouse support space would be constructed to provide facilities for consolidated defense research laboratory, animal holding capability and administrative space to support BRAC-05 re-stationing actions at Fort Detrick. This project would establish the Joint Center of Excellence for Biological Defense Research in accordance with BRAC-05 recommendations.

The medical biological defense research and supporting functions currently being conducted at Forest Glen Annex, Maryland, and in leased space within the National Capital Area would be relocated to Fort Detrick. A review of existing facilities at Fort Detrick indicates that there are no buildings of opportunity available to support the increase in biomedical research and animal holding capabilities directed by the BRAC-05 re-stationing actions.

The approved conceptual site is in accordance with the Installation Master Plan and located strategically adjacent to the US Army Medical Research Institute of Infectious Diseases (USAMRIID) on the National Interagency Biodefense Campus.

The laboratory would contain 84,310 SF, and the laboratory storage would contain 4,000 SF. These facilities would provide additional research laboratory, laboratory support, vivarium, vivarium support, and administrative space. Approximately 122 personnel would be added to the daily workforce of Fort Detrick. The new building would meet biosafety (BSL) level 3.

However, there is uncertainty regarding the potential construction of the new Medical Bio-Defense Research Laboratory. In the event that this new Medical Bio-Defense Research Laboratory is not constructed, the organizations that may have occupied this facility may be located in the remaining space of existing USAMRIID building #1425 or other USAMRIID facilities. This EA assumes construction of

the new Medical Bio-Defense Research Laboratory. This will ensure that any impacts associated with implementation of this project can be adequately identified and analyzed as a portion of the BRAC EA required by NEPA. If a determination is made that the new Medical Bio-Defense Research Laboratory will not be constructed, subsequent NEPA documents that tier off of this EA will be prepared in the form of an EA or a Record of Environmental Consideration and update RONA.

Joint Bio-Medical RDA Management Center of Excellence (Project # 64275): In accordance with the recommendations of BRAC-05, a Joint Bio-medical RDA Management Center would be constructed to provide administrative and operational space for activities to be relocated to Fort Detrick, MD. Related medical administrative activities are currently located at various locations within Maryland and Washington, DC.

The following medical administrative activities would be relocated to Fort Detrick, MD: Naval Bureau of Medicine, Code M2, from the Potomac Annex; and the Joint Project Manager for Chemical Biological Medical Systems (CBMS) from Thomas Johnson Drive, Frederick, MD. Currently, there is no adequate, permanent administrative space available at Fort Detrick to accommodate these relocations. This project would accommodate these activities with the construction of a new permanent multi-story administrative facility at Fort Detrick within the planned administrative campus.

The approved site is in accordance with the Installation Master Plan and is located adjacent to the primary administrative functions of the Headquarters, US Army Medical Research and Materiel Command, US Army Medical Research Acquisition Activity, and the Joint Medical Logistics Center.

The building would be a new permanent multi-story administrative facility and contain 22,660 SF. Approximately 103 personnel would be added to the daily workforce of Fort Detrick. Buildings 817, 818, 820, and leased trailer 823 would be demolished (approximately 23,850 SF). The project also includes 30,000 SF of paving, utility relocations, and a regional stormwater pond.

Joint Reserve Center (Project #64931): As part of the BRAC-05 recommendations, an Armed Forces Reserve Center (AFRC) would be constructed to replace the PFC Flair Memorial AFRC located in Area B of Fort Detrick. Primary facilities would include an Organizational Maintenance Shop (OMS) and unit storage building. Buildings will be of permanent construction with HVAC systems, plumbing, mechanical systems, security systems, and electrical systems. The PFC Flair Memorial AFRC, which consists of a training buildings and an OMS, would be closed and all Army Reserve and Marine Corps Reserve units would be relocated to the new consolidated AFRC and OMS on Fort Detrick, Maryland.

The current AFRC is 51 years old and cannot meet the Reserve component training or maintenance requirements for the assigned units. Built in 1956, the PFC Flair Memorial AFRC is 15,589 SF in size and provides a 100-member training facility. This proposed AFRC would provide a 200-member training facility that realigns Army Reserve, National Guard, and Marine Corps Reserve units. The new facility would provide administrative, educational, assembly, library, learning center, vault, weapons simulator, and physical fitness areas for three Army Reserve units and two Marine Corps Reserve units. The maintenance shop would provide work bays and maintenance administrative support. The project would also provide adequate parking space for all military and privately-owned vehicles.

The approved conceptual site is in accordance with the Installation Master Plan and located near the existing AFRC in Area B of Fort Detrick. An existing building may be demolished and a new building constructed adjacent to the demolition site, tripling existing square footage to meet BRAC requirements. The proposed AFRC building would contain 58,647 SF; the maintenance shop 8,999 SF; and the unit storage 4,458 SF, for a total of 72,104 SF. No additional personnel would be added to the daily workforce of Fort Detrick; however, the center would accommodate up to 200 personnel for reserve activities and

serve a full time duty staff of 15-22 personnel. Necessary utility connections, site drainage features, and approximately 666 SY of paving would be added.

2.0 Meteorology/Climate

Temperature is a parameter used in calculations of emissions for air quality applicability. Climate at Fort Detrick can be characterized as a humid, continental climate with a mean high temperature of 86°F (30°C) in July and a mean low temperature of 20°F (-7°C) in January. Summers are warm with periods of high humidity and winters are cold, with periods of snow cover (World Climate, 2005).

3.0 Current Ambient Air Quality Conditions

The EPA has classified the Washington, DC - Maryland - Virginia area, including the area of the proposed project (Frederick County, Maryland), as in moderate non-attainment for the criteria pollutant ozone and non-attainment for the criteria pollutant particulate matter (2.5 microns).

4.0 Air Quality Regulatory Requirements

The EPA defines ambient air in 40 CFR Part 50 as “that portion of the atmosphere, external to buildings, to which the general public has access.” In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 Clean Air Act Amendments (CAAA), the EPA has promulgated NAAQS. The NAAQS were enacted for the protection of the public health and welfare, allowing for an adequate margin of safety. To date, the EPA has issued NAAQS for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO₂), particles with a diameter less than or equal to a nominal 10 micrometers (PM₁₀), ozone (O₃), nitrogen dioxide (NO₂), and lead (Pb). USEPA promulgated a standard for fine particulates (PM_{2.5}) in April 2005; however, PM_{2.5} *de minimis* thresholds are not yet finalized. Areas that do not meet NAAQS are called non-attainment areas.

The EPA classified the Washington, DC - Maryland - Virginia area, including the project area, as in moderate non-attainment for ozone and non-attainment for PM_{2.5}. The NAAQS for both pollutants are presented in Table 1.

Table 1. Ambient Air Quality Standards for Ozone

Pollutant	Federal Standard	Maryland Standard
Ozone (O ₃) ¹ 8-Hour Average	0.08 ppm	0.08 ppm
Particulate Matter (PM _{2.5}) ¹ 24-Hour Average	65 µg/m ³	65 µg/m ³
Annual Geometric Mean	15 µg/m ³	15 µg/m ³

¹ Federal primary and secondary standards for this pollutant are identical.

Sources: USEPA, 2006a; MDE 2002

To regulate the emission levels resulting from a project, Federal actions located in non-attainment areas are required to demonstrate compliance with the general conformity guidelines established in 40 CFR Part 93 *Determining Conformity of Federal Actions to State or Federal Implementation Plans* (the Rule). The project area is located within a PM_{2.5} and a moderate ozone non-attainment area; therefore, a General Conformity Rule applicability analysis is warranted.

Section 93.153 of the Rule sets applicability requirements for projects subject to the Rule through establishment of *de minimis* levels for annual criteria pollutant emissions. These *de minimis* levels are set according to criteria pollutant non-attainment area designations. Projects below the *de minimis* levels are not subject to the Rule. Those at or above the levels are required to perform a conformity analysis as established in the Rule. The *de minimis* levels apply to direct and indirect sources of emissions that can occur during the construction and operational phases of the action.

Direct emissions are those caused by, or initiated by, the Federal action that occur at the same time and place as the action. Indirect emissions are those caused by the action, but which occur later in time and/or at a distance removed from the action itself, yet are reasonably foreseeable and the Federal agency responsible for the action can maintain control as part of the actions program responsibility. To determine the applicability of the Rule to this action, emissions must be estimated for PM_{2.5} and for the ozone precursor pollutants nitrogen oxides (NO_x) and volatile organic compounds (VOCs). Annual emissions for these compounds were estimated for the project to determine if it would be below or above the *de minimis* levels established in the Rule. The *de minimis* level for moderate ozone areas is 100 tons per year (tpy) for VOCs and 100 tpy for NO_x.

As mentioned above, the rules governing an applicability analysis for PM_{2.5} and *de minimis* levels are in the process of promulgation by EPA. During this interim period, EPA believes it is appropriate for Federal agencies to use the PM₁₀ *de minimis* level of 100 TPY as a surrogate for PM_{2.5} *de minimis* levels in their General Conformity applicability analysis. Since PM_{2.5} emissions are a subset of PM₁₀ emissions, PM_{2.5} emissions will always be less than PM₁₀. Under EPA's guidance, if an action's direct or indirect emissions of PM_{2.5}, a General Conformity determination would be required if annual emissions exceed the 100 TPY threshold. Berger will be alert to potential ramifications for the EA as the rules finalize, and conduct whatever additional analyses are appropriate.

In addition to evaluation of air emissions against *de minimis* levels, emissions are also evaluated for regional significance. A Federal action that does not exceed the threshold emission rates of criteria pollutants may still be subject to a general conformity determination if the direct and indirect emissions from the action exceed ten percent of the total emissions inventory for a particular criteria pollutant in a non-attainment or maintenance area. If the emissions exceed this ten percent threshold, the Federal action is considered to be a "regionally significant" activity, and thus, the general conformity rules apply.

5.0 Conformity Applicability Analysis

This project construction- and operations-related General Conformity analysis needs to be performed for the proposed construction at Fort Detrick. This conformity analysis and air emissions evaluation will follow the criteria regulated in *40 CFR Parts 6, 51, and 93, Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule* (November 30, 1993).

5.1 Construction Phase Emissions

Construction emissions would result from the operation of heavy equipment, the commuter vehicle traffic from the construction crew, and the painting of parking spaces. The project would utilize a mix of heavy equipment for construction, mainly associated with preparing the site for the building and utility relocation.

5.1.1 Emissions from Heavy Equipment

Annual emissions were calculated for various types of diesel construction vehicles using EPA's document *Exhaust Emission Factors for Nonroad Engine Modeling—Compression-Ignition* (Report No. NR-009A,

1998). Truck emission levels were calculated using EPA's *MOBILE6* model for an average temperature of 54° F (12.2° C). The total annual emissions, in tons per year, were determined for each vehicle based on the number of vehicles used and the number of operating hours per year. It was assumed that construction activities for the building would last approximately 40 months (800 workdays) Construction personnel were assumed to commute an average of 60 miles (97 km) per day over the 40 months. Emissions factors used for construction vehicles, under all alternatives, are shown in Table 2.

Table 2. Emissions Factors for Construction Vehicles

Construction Vehicle Type	Emissions Factors lbs/hr-vehicle		
	PM ₁₀	NO _x	VOCs
Grader	0.134	1.53	0.116
Concrete Truck	0.190	2.94	0.225
Front End Loader	0.238	3.45	0.198
Paver	0.109	1.30	0.100
Vibratory Roller	0.125	1.49	0.112
Pneumatic Tire Roller	0.122	0.94	0.097
Steel Wheel Roller	0.122	0.94	0.097
Concrete Pumper Truck	0.190	2.94	0.225
Backhoe	0.176	1.52	0.245
Crane	0.117	1.17	0.112
Pick-up Truck	0.011	0.974	0.976
Dump Truck (heavy duty)*	0.164	10.55	0.507
Excavator	0.198	3.154	0.155
Scraper	0.342	5.258	0.276
Delivery Truck (Medium)*	0.84	1.339	1.605
Delivery Truck (Heavy)*	0.094	1.317	3.723

*units are in grams/mile/vehicle (lb/km/vehicle)

For this project, it was assumed that pick-up trucks, delivery trucks, and dump trucks would be utilized. It was assumed that delivery trucks and pick-up trucks would travel 26 miles per trip, making three trips a day, for a total of 80 miles a day traveled by pick-up truck. Dump trucks would travel 16 miles per trip, making 18 trips (9 trucks, 2 trips each) a day when used during trenching activities, making 288 miles traveled daily.

5.1.1.1 Calculations for Construction Emissions

Using the emissions factors in Table 2, annual construction emissions were calculated for the proposed construction at Fort Detrick. Using the assumptions described above, the annual emissions in tons per year of PM₁₀, NO_x and VOCs for construction emissions were calculated for each vehicle type using the appropriate equations displayed in Table 3.

Table 4 summarizes the total annual emissions for the heavy equipment used during construction based upon hours of usage, for each alternative.

Table 3: Equations for Construction Emissions Calculations

Emission Source	Equation	Sample Calculation
Heavy Equipment Emissions, On-Site Activities	(# of vehicle type) (Emission factor) (Total # of days in operation) (percent usage) (hours/day) (1 ton/2000 lbs) = TPY of air emissions	(1 grader) (1.53 lbs/hr/vehicle) (6 days in operation) (100% usage) (8 hours/day) (1 ton/2000 lbs) = 0.04 TPY of NO_x emissions
Construction Crew, Commuting	(# of vehicles) (#miles/day) (#days) (emissions factor grams/mile) (1 lb/453.59 grams) (1ton/2000 lb) = TPY of Vehicle Emissions	(75 vehicles) (60 miles/day) (240 days) (0.592 grams/mile/vehicle) (1 lb/453.59 grams) (1ton/2000 lb) = 0.70 TPY NO_x of Vehicle Emissions

Table 4. Total Emissions from On-Site Construction Activity –Proposed Action Alternative

Construction Vehicle Type	Number of Vehicles	Length of Operation (days)	Total Annual Emissions –TPY (kgpy)		
			PM ₁₀	NO _x	VOCs
Grader	1	22	0.009	0.11	0.013
Concrete Truck	1	60	0.046	0.71	0.05
Front End Loader	1	17	0.014	0.19	0.003
Paver	1	4	0.002	0.01	0.001
Vibratory Roller	1	40	0.016	0.20	0.014
Pneumatic Tire Roller	1	4	0.001	0.01	0.001
Steel Wheel Roller	2	7	0.004	0.03	0.002
Concrete Pumper Truck	1	240	0.182	2.82	0.22
Backhoe	1	484	0.683	2.94	0.47
Crane	1	180	0.084	0.84	0.08
Pick-up Truck	5	2400	0.012	0.206	0.21
Dump Truck *	9	51	0.001	0.067	0.00
Excavator	1	14	0.011	0.011	0.17
Scraper	6	81	0.664	1.70	0.09
Delivery Truck	1	72	0.005	0.009	0.01
Delivery Truck (Heavy)*	1	648	0.005	0.075	0.21
Total Emissions			1.76	10.29	1.77

5.1.2 Emissions from Construction Crew Workers

Emissions from construction personnel traffic were calculated using the EPA’s *MOBILE6*. It is assumed that the construction crew would consist of approximately 75 workers over a 40 month (800 workdays) time period. For a conservative analysis, it was assumed each person will drive to the site. It is assumed that the average number of workers (75) will drive approximately 60 miles each day. Based on *MOBILE6*, the emission factor for PM_{2.5} is 0.011 grams/mile/vehicle, NO_x is 0.592 grams/mile/vehicle

and VOCs is 0.639 grams/mile/vehicle for the average fleet in Frederick County, Maryland. It was found that the total emissions associated with the commuter vehicles from the construction crew are approximately 0.70 tpy of NO_x, 0.76 tpy of VOCs, and 0.01 tpy of PM10.

5.1.3 Emissions from Painting Activities

When calculating VOCs emissions from painting building structures and parking spaces, it was assumed that water-based latex paint would be used with a VOC content of one pound per gallon and one gallon of paint covers approximately 300 SF. Three coats of paint will be applied (one primer and two finish) to approximately 240,200 SF of interior surfaces. Based on these assumptions approximately 2,402 gallons of paint are needed. Interior painting will create approximate VOCs emissions of 1.20 tpy.

Emissions from painting parking spaces were based on four-inch wide stripes. It was assumed that the average parking space is 9 feet wide by 19 feet long and every two parking spaces share a common line. Approximately 20 SF would be painted for every two parking spaces. For parking spaces, it was assumed that alkyd paint would be used with a VOC content of three pounds per gallon and one gallon of paint covers approximately 200 SF. One coat of paint would be applied to the parking surfaces. Based on the construction of 230 parking spaces at the facility, the amount of area to be painted, gallons required, and approximate VOCs emissions for painting parking spaces would be 0.02 TPY.

5.1.4 Summary of Construction Emissions

After emissions analysis was performed for all aspects of construction, the totals were added to determine the combined construction emissions. Table 5 displays a summary of the findings compared to the *de minimis* values for the proposed action alternative.

Table 5. Total Emissions from Construction Related Activities –Proposed Action Alternative

Construction Activity	Total Emissions (TPY)			<i>De minimis</i> values –TPY		
	NO _x	VOCs	PM10	NO _x	VOCs	PM10
Use of Heavy Equipment (on –site construction)	10.29	1.40	1.76	100	100	100
Construction Crew Workers	0.70	0.76	0.01			
Painting	NA	1.22	NA			
Total Emissions from Construction	10.99	3.38	1.77			

5.2 Operational Emissions

5.2.1 Heating Source Emissions

Given that there was no estimated energy usage given in the DD1391s provided for the projects proposed at Fort Detrick, energy usage was estimated based on previously conducted environmental assessments where energy usage for similar facilities, office/administrative facilities in this case, were known. The estimate generated for the combined annual natural gas usage for boilers and water heaters was

approximately 55 standard cubic feet (SCF) of natural gas per square foot of office space. Furthermore, using the EPA's *AP-42 Fifth Edition, Compilation of Air Pollution Emission Factors Volume I, Chapter 1: Stationary Sources, Supplement D* (EPA, 1998), the emission factors for NO_x, VOCs, and PM₁₀ were determined for the facility boilers and water heaters. For NO_x emissions, the facility boilers and water heaters fall in the category of small, uncontrolled boilers that emit 100 lb NO_x /10⁶ SCF of natural gas. The emission factor for VOCs was found to be 5.5 lb/10⁶ SCF of natural gas. The emission factor for PM₁₀ was found to be 7.6 lb/10⁶ SCF of natural gas. Additionally, the RDA Center will receive steam heat from the 190 boiler plant and will therefore be fueled partially by fuel oil and partially by natural gas. The 190 boiler plant falls under the category of No. 6 oil fired, normal firing boilers. Using the EPA's *AP-42 Fifth Edition, Compilation of Air Pollution Emission Factors Volume I, Chapter 1: Stationary Sources, Supplement E* (EPA, 1998), the emissions factors for NO_x, Total Organic Compounds (TOCs), and PM10 were determined to be 47 lb/10³ gal, 1.04 lb/10³ gal, and 58.36 lb/10³ gal, respectively. Given these emission factors and the stated natural gas and fuel oil demands based on 178,156 SF of space between the three proposed facilities, the emissions of NO_x, VOCs/TOCs, and PM₁₀ were calculated to be 0.575 TPY, 0.028 TPY, and 0.159 TPY, respectively. Equation and sample calculation are displayed below in Table 6.

Table 6: Equations for Heating Emissions Calculations

Emission Source	Equation	Sample Calculation
Heating, Natural Gas	(Sq ft of office space) (55 SCF) (1sq ft/10 ⁶) (Emission factor) (1 ton/2000 lbs) = TPY of air emissions	(72104 sq ft) (55 SCF) (100 lb NO _x /10 ⁶ SCF) (1 ton/2000 lbs) = 0.20 TPY of NO_x emissions
Heating, Fuel Oil (No. 6)	(Sq ft of office space) (.75 Gal) (1sq ft/10 ³) (Emission factor) (1 ton/2000 lbs) = TPY of air emissions	(22,000 sq ft) (.75 Gal) (47 lb/10 ³) (1 ton/2000 lbs) (halved)* = 0.099 TPY of NO_x emissions
* The total emissions from heating 22,000 sq ft of office space are halved because the building is heated by both steam and oil.		

Operation of the facilities with the incoming units will also create additional waste. No new incoming units will be employed at the AFRC and therefore there will be no increase in waste. Likewise, the RDA Center will see a negligible increase in municipal waste. The laboratory will experience an increase in municipal waste by 73,000 pounds annually. The laboratory will also increase medical waste by an estimated 28,000 pounds. Given the annual incinerator emissions and the tons of waste burned in 2004, the emissions factor of tons of NO_x for every ton of waste is 0.0024 tons. The emissions factors for VOCs and PM10 are 6.6x10⁻⁶ and 0.0028, respectively. Given these factors and the projected increase in waste, the incinerators are expected to increase by 0.121 TPY NO_x, 0.003 TPY VOCs, and 0.141 TPY PM₁₀.

5.2.2 Vehicle Emissions from Daily Commuters

Vehicle emissions from visitor vehicles are based on the MOBILE6 air modeling program, estimating the emissions per vehicle per mile traveled. The MOBILE6 modeling program takes into account the vehicle age, average speed, and vehicle type to create average emission factors to be used in an overall analysis. The analysis assumed that the annual average temperature is 54°F (12.2°C). Based on this assumption, the emissions factors for NO_x and VOCs from average vehicles are provided in Table 7.

Table 7. Emission Factors for Visitor Commuter Vehicles

Pollutant	Emissions Factor - grams/mile/vehicle (lbs/km/vehicle)
NO _x	0.59
VOCs	0.64
PM ₁₀	0.011

The annual emissions in tons per year of PM₁₀, NO_x, and VOCs for commuter emissions were calculated using the appropriate equations displayed in Table 8.

Table 8: Equations for Operations Emissions Calculations

Emission Source	Equation	Sample Calculation
Operations, Visitor Commuters	(# of vehicles) (# of trips/day) (#miles/trip) (#days/year)= #miles/year (#miles/year) (emissions factor grams/mile) (1 lb/453.59 grams) (1ton/2000 lb) = TPY of Vehicle Emissions	(225 vehicles) (2 trips/day) (25 miles/trip) (240 days/year) = (2.7 million miles/year) (0.59 g/mile/vehicle) (1 lb/453.59 grams) (1 ton/2000 lbs) = 1.76 TPY

The site would increase present staff levels by 225 employees and it is assumed that they would commute approximately 50 miles round trip to Fort Detrick. Based on these assumptions, the daily additional vehicle emissions are shown in Table 9.

Table 9. Emissions from Daily Vehicle Traffic

Total Annual Emissions – TPY		
PM ₁₀	NO _x	VOCs
0.03	1.76	1.90

5.3 Regional Significance

Air emissions were also evaluated to determine regional significance. The *Plan to Improve Air Quality In The Washington, DC-MD-VA Region: State Implementation Plan (SIP), “Severe Area SIP” Demonstrating Rate of Progress for 2002 and 2005; Revision to 1990 Base Year Emissions; and Severe Area Attainment Demonstration for the Washington DC-MD-VA Nonattainment Area* (MWCOG, 2004) sets forth daily target levels of 339.3 tons per day of VOCs and 539.0 tons per day of NO_x for the Washington Metropolitan ozone non-attainment region. Although the 8-hour ozone standard has been approved for use instead of the 1-hour ozone standard, the 8-hour SIP has not yet been finalized. Therefore, pursuant to EPA regulations and in accordance with the Metropolitan Washington Air Quality Committee, the 1-hour SIP remains valid as a basis for comparison of emissions (MWCOG, 2005). The increase in annual emissions from the construction and demolition activities would not make up ten percent or more of the available regional emission inventory for VOCs or NO_x and would not be regionally significant. Air quality impacts are therefore not considered to be significant.

5.4 Overall Results

Table 10 summarizes the total emissions associated with the realignment construction at Fort Detrick. Construction related emissions would be temporary and only occur during the 40-month construction period for the facility. Operational emissions associated with the operation of boilers for heating the facility would be long-term and occur throughout the life of the facility. When compared to the *de minimis* values for this non-attainment area of 100 tpy each for NO_x, PM₁₀ and VOCs, the emissions associated with implementation of the proposed action fall below the *de minimis* values for all alternatives evaluated. As a result the proposed project, under the Proposed Action Alternative, is not subject to the General Conformity Rule requirements.

Table 10. Total Emissions from the Proposed Action

Activity	Construction Emissions (TPY)			Operation Emissions (TPY)			Combined Emissions (TPY)		
	NO _x	VOCs	PM10	NO _x	VOCs	PM10	NO _x	VOCs	PM10
Heavy Equipment (building/parking)	10.52	1.42	1.77				10.52	1.42	1.77
Construction Crew Commuting Vehicles*	0.70	0.76	0.01				0.70	0.76	0.01
Painting	NA	1.22	NA				NA	1.22	NA
Stationary Heating Unit (boiler and water heater)				0.575	0.028	0.159	0.575	0.028	0.159
Incinerator Increase				0.121	0.003	0.141	0.121	0.003	0.141
Daily Commuter Traffic				1.76	1.90	0.03	1.76	1.90	0.03
TOTALS							13.69	5.33	2.12
Construction Crew Commuting Vehicles and Daily Commuter Traffic represent only the emissions increase associated with the implementation of the Proposed Action									

Air Quality Applicability Analysis References

- Maryland Department of the Environment. 2002. *Maryland Air Quality Report – 2002 Status Report and Long-Term Trends*.
- RS Means. 2001. *Facilities Construction Cost Data*. RS Means Company Inc: Kingston, MA.
- U.S. Environmental Protection Agency. 1998a. *Compilation of Air Pollutant Emission Factors, Volume I, Chapter 1 Supplement D: Stationary Sources, AP-42, 5th edition*.
- U.S. Environmental Protection Agency. 1998b. *Exhaust Emission Factors for Nonroad Engine Modeling-Compression-Ignition, Report No. NR-009A* . February 13, 1998, revised June 15, 1998.
- U.S. Environmental Protection Agency. 1997. *MOBILE6 Emission Factor Model, for Trucks year 2002 Vehicle Emissions*.
- U.S. Environmental Protection Agency. *National Primary and Secondary Ambient Air Quality Standards*. 40 CFR Part 50.
- U.S. Environmental Protection Agency. *Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Developed, Funded or Approved under Title 23 U.S.C. or the Federal Transit Act*. 40 CFR Part 51, Subpart T.
- U.S. Environmental Protection Agency. *Designation of Areas for Air Quality Planning Purposes, Subpart C: Section 107 Attainment Status Designations*. 40 CFR Part 81.

GENERAL CONFORMITY – RECORD OF NON-APPLICABILITY

Project/Action

Name: Implementation of BRAC 05 Realignment at Fort Detrick, MD

Project/Action

Identification Number:

Project/Action

Point of Contact: Robert P. Craig, P.E.
Chief, Environmental Management Office
Telephone: (301) 619-8345

Begin Date: September 23, 2005

End Date: September 15, 2011

General Conformity under the Clean Air Act, Section 176 has been evaluated for the project described above according to the requirements of 40 CFR 93, Subpart B. The General Conformity Rule applies to Federal actions occurring in regions designated as being in non-attainment for the NAAQS or attainment areas subject to maintenance plans (maintenance areas). Threshold (*de minimis*) rates of emissions have been established for Federal actions with the potential to have significant air quality impacts. If a project/action located in an area designated as non-attainment exceeds these *de minimis* levels, a general conformity analysis is required. Frederick County is designated as moderate Ozone (8-hour) and Particulate Matter (2.5 microns) non-attainment area thus the VOCs, NO_x and PM_{2.5} thresholds apply. PM_{2.5} thresholds have not yet been promulgated by the EPA and therefore emissions are bound by the current PM₁₀ standards.

A General Conformity Analysis of this project/action is not required because:

Total direct and indirect emissions from this project/action have been estimated at:

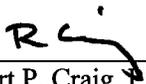
NO_x: 13.45 tons; VOCs: 5.31 tons; PM_{2.5}: 2.1 tons

and are below the *de minimus* levels established in 40 CFR 93.153 (b) of:

NO_x: 100 tons; VOCs: 100 tons; PM₁₀: 100 tons

Furthermore, the project/action is not considered regionally significant under 40 CFR 93.153 (i). Frederick County is in attainment for criteria pollutants PM₁₀, CO, SO₂ and Pb and therefore these pollutants are not subject to conformity review.

Supporting documentation and emissions estimates can be found in Section 4.4 and Appendix B of the Environmental Assessment document.



Robert P. Craig, P.E.
Chief, Environmental Management Office

APPENDIX C

ECONOMIC IMPACT FORECAST SYSTEM (EIFS) MODEL

1.0 Socioeconomic Impact Assessment

Socioeconomic impacts are linked through cause-and-effect relationships. Military payrolls and local procurement contribute to the economic base for the region of influence (ROI). In this regard, renovation, demolition, and construction of family housing at Fort Detrick would have a multiplier effect on the local and regional economy. With the proposed action, 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.

2.0 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 ROI. 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 is developed under a joint project of the U.S Army Corps of Engineers (USACE), the U.S. Army Environmental Policy Institute (AEPI), and the Computer and Information Science Department of Clark Atlanta University, Georgia. EIFS is an on-line system, and the EIFS Web application is hosted by the USACE, Mobile District. The system is available to anyone with an approved user-id and password. University staff and the staff of USACE, Mobile District are 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.

3.0 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 proposed action, including not only the direct and secondary changes in local employment, but also those personnel who are initially affected by the military action. Income is the total change in local wages and salaries due to the proposed action, which includes the sum of the direct and indirect wages and salaries, plus the income of the civilian and military personnel affected by the proposed action. Population is the increase or decrease in the local population as a result of the proposed action.

4.0 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 inputs and output data and the RTV values for the ROI. These data form the basis for the socioeconomic impact analysis presented in Section 4.10.2.2.

EIFS REPORT: FORT DETRICK

Forecast Input Category	Forecast Input Data	Forecast Output Category	Result	RTV*
Change In Local Expenditures	\$42,550,000	Sales Volume – Direct	\$37,558,510	
Change In Civilian Employment**	183	Sales Volume – Induced	\$72,487,920	
Average Income of Affected Civilian	\$60,000	Sales Volume – Total	\$110,046,400	1.32%
Percent Expected to Relocate	100	Income – Direct	\$17,396,100	
Change In Military Employment**	42	Income – (Induced)	\$12,296,690	
Average Income of Affected Military	\$39,560	Income – Total (place of work)	\$29,692,790	0.61%
Percent of Military Living On-post	31	Employment – Direct	379	
Employment Multiplier	2.93	Employment – Induced	297	
Income Multiplier	2.93	Employment – Total	676	0.73%
		Local Population	560	
		Local Off-base Population	528	
		Total Population	1088	0.31%

*Note: The following are the RTV boundaries for the Fort Detrick ROI: Sales Volume (-7.31% to 7.44%), Income (-6.18% to 12.83%), Employment (-4.76% to 7.76%) and Population (-1.36% to 1.79%).

**Although 91 of the 225 incoming personnel will not be coming from outside the ROI, they were included in this analysis due to the difficulty of breaking the remainder down into the category of civilian or military. The difference, however, is small, and does not significantly impact the results of the analysis.

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APPENDIX D

CONSULTATION LETTERS AND RESPONSE FROM AGENCIES

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DEPARTMENT OF THE ARMY
HEADQUARTERS, US ARMY GARRISON
810 SCHREIDER STREET
FORT DETRICK, MD 21702-5000

REPLY TO
ATTENTION OF

June 29, 2006

Environmental Management Office

Ms. Lori Byrne
Maryland Department of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401

Dear Ms. Byrne:

The Department of the Army (DA) is preparing an Environmental Assessment (EA) for the proposed construction of several facilities resulting from Base Realignment and Closure (BRAC) recommendations. On September 8, 2005, the Defense Base Closure and Realignment Commission ("BRAC Commission") recommended that certain realignment actions occur at Fort Detrick in Frederick, Maryland. These recommendations were approved by the President on September 23, 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. To enable implementation of these recommendations, the Army proposes to provide necessary facilities to support changes in force structure at Fort Detrick.

The EA will analyze and document environmental effects associated with the Army's proposed realignment actions at Fort Detrick. The EA is being prepared in strict accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508); Army Regulation (AR) 200-2; and the Army 2006 Base Realignment and Closure Manual for Compliance with the National Environmental Policy Act.

The following presents the BRAC-related projects planned as part of the realignment actions and their locations on Fort Detrick (see enclosure).

a. **Medical Bio-Defense Research Lab.** A Medical Bio-Defense Research Lab and conditioned warehouse support space would be constructed to provide facilities for consolidated defense research laboratory, animal holding capability and administrative space to support BRAC-05 re-stationing actions at Fort Detrick. This project would establish the Joint Center of Excellence for Biological Defense Research in accordance with BRAC-05 recommendations. The approved conceptual site is in accordance with the installation Master Plan and strategically located adjacent to the US Army Medical Research Institute for Infectious Diseases (USAMRIID) on the National Interagency Biodefense Campus. The laboratory would contain 84,310 square feet, and the laboratory storage would contain 4,000 square feet.

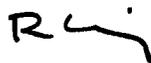
b. **Joint Bio-Medical RDA Management Center of Excellence.** In accordance with the recommendations of BRAC-05, a Joint Bio-medical RDA Management Center would be constructed to provide administrative and operational space for activities to be relocated to Fort Detrick, MD. The approved site is in accordance with the installation Master Plan and strategically located adjacent to the primary administrative functions of the Headquarters, US Army Medical Research and Materiel Command, US Army Medical Research Acquisition Activity, and the Joint Medical Logistics Center. The building would be a new permanent multi-story administrative facility and contain 22,200 square feet. The project provides for 30,000 square feet of paving, utility relocations, and a regional storm water pond.

c. **Joint Reserve Center.** As part of the BRAC-05 recommendations, an Armed Forces Reserve Center (AFRC) would be constructed to replace the PFC Flair Memorial AFRC located in Area B of Fort Detrick. Primary facilities would include an Organizational Maintenance Shop (OMS) and unit storage building. The approved conceptual site is in accordance with the Installation Master Plan and located near the existing AFRC in Area B of Fort Detrick. A new building would be constructed adjacent to the existing site, tripling existing square footage to meet BRAC requirements. The proposed AFRC building would contain 58,647 square feet; the maintenance shop 8,999 square feet; and the unit storage 4,458 square feet, for a total of 72,104 square feet. Existing buildings could be either demolished or reused for other purposes in the future.

In accordance with the National Environmental Policy Act, Endangered Species Act, and Fish and Wildlife Coordination Act, an evaluation of the potential effects (both beneficial and adverse) associated with implementing this action is required. Upon reviewing our current "Integrated Natural Resource Management Plan" (INRMP, 2001) as well as our draft INRMP that is nearing finalization, it is my understanding that this BRAC action will not have any adverse impact upon threatened or endangered species, or upon critical habitat. I respectfully request your input concerning any natural resources concerns regarding this action that I might have overlooked.

I would like to thank you in advance for your cooperation in this matter. Your prompt consideration and response would be greatly appreciated. Please provide any comments on issues you feel the Army should consider in its EA to: Mr. Rod Sheffer, Fort Detrick Environmental Office, 810 Schreider Street, Fort Detrick, MD, 21702-5000. If you need additional information, please call Mr. Sheffer at (301) 619-3152. Thank you for your cooperation.

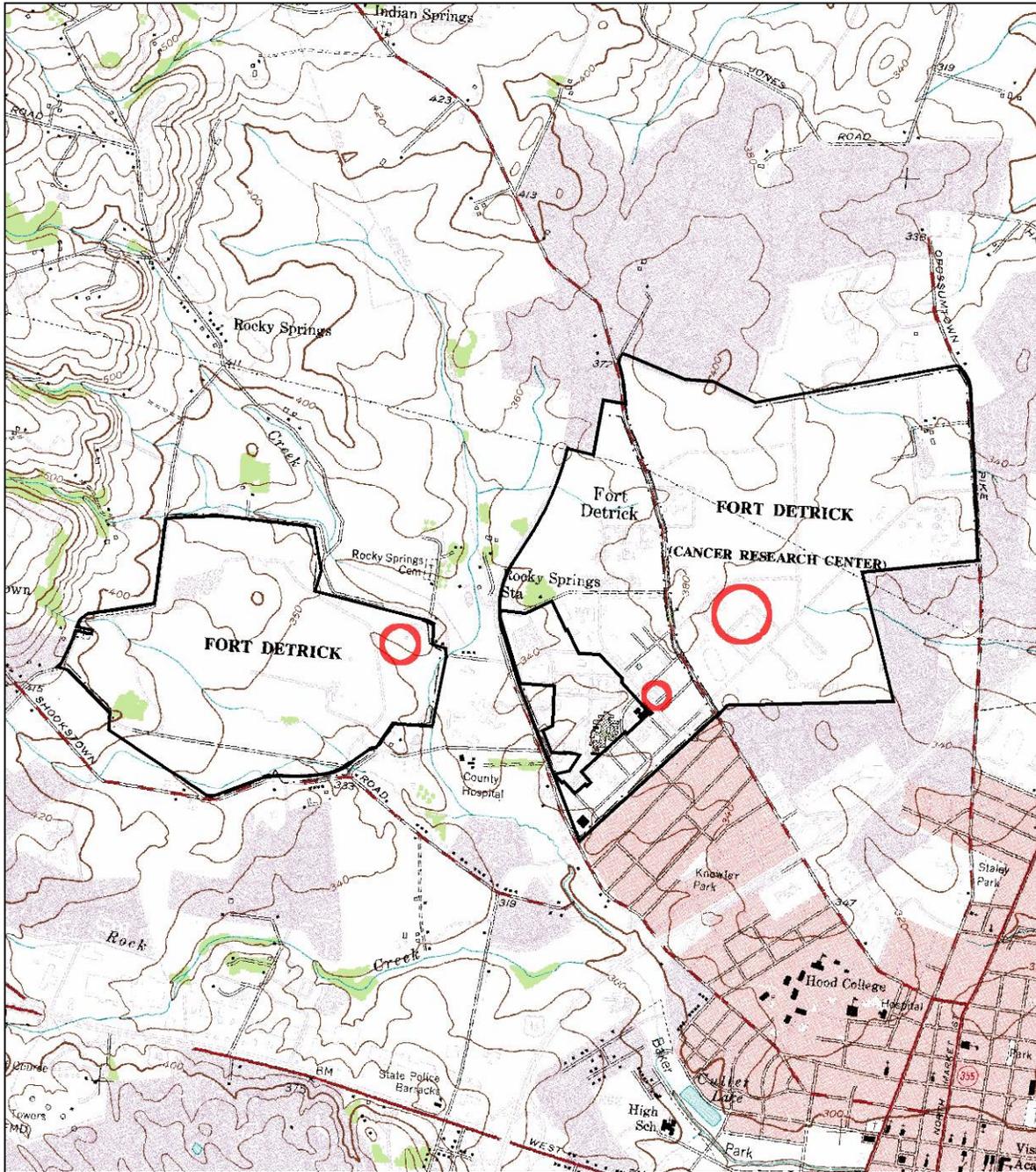
Sincerely,



Robert P. Craig, P.E.
Chief, Environmental Management Office

Enclosure

Enclosure Project Locations for BRAC Proposed Action Alternative



Legend

- Project_Areas
- Fort Detrick Boundary

0 1,000 2,000 3,000 Feet

Fort Detrick Quadrangle Map (Frederick Quad)

Sources: Fort Detrick, GeoCommunity, ESRI
Coordinate System: NAD 1983, Maryland
State Plane, Feet
Prepared By: The Louis Berger Group

MAP INDEX

QUAD INDEX

Marysville Quad	Colombo Furnace Quad	Woodstock Quad
Middletown Quad	Frederick Quad	Walkersville Quad
Point of Rocks Quad	Ducksters Quad	Urbans Quad

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DEPARTMENT OF THE ARMY
HEADQUARTERS, US ARMY GARRISON
810 SCHREIDER STREET
FORT DETRICK, MD 21702-5000

REPLY TO
ATTENTION OF

June 29, 2006

Environmental Management Office

Mr. John P. Wolfin
Field Supervisor
U.S. Fish & Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

Dear Mr. Wolfin:

The Department of the Army (DA) is preparing an Environmental Assessment (EA) for the proposed construction of several facilities resulting from Base Realignment and Closure (BRAC) recommendations. On September 8, 2005, the Defense Base Closure and Realignment Commission ("BRAC Commission") recommended that certain realignment actions occur at Fort Detrick in Frederick, Maryland. These recommendations were approved by the President on September 23, 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. To enable implementation of these recommendations, the Army proposes to provide necessary facilities to support changes in force structure at Fort Detrick.

The EA will analyze and document environmental effects associated with the Army's proposed realignment actions at Fort Detrick. The EA is being prepared in strict accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508); Army Regulation (AR) 200-2; and the Army 2006 Base Realignment and Closure Manual for Compliance with the National Environmental Policy Act.

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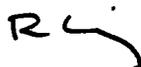
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In accordance with the National Environmental Policy Act, Endangered Species Act, and Fish and Wildlife Coordination Act, an evaluation of the potential effects (both beneficial and adverse) associated with implementing this action is required. Upon reviewing our current "Integrated Natural Resource Management Plan" (INRMP, 2001) as well as our draft INRMP that is nearing finalization, it is my understanding that this BRAC action will not have any adverse impact upon threatened or endangered species, or upon critical habitat. I respectfully request your input concerning any natural resources concerns regarding this action that I might have overlooked.

I would like to thank you in advance for your cooperation in this matter. Your prompt consideration and response would be greatly appreciated. Please provide any comments on issues you feel the Army should consider in its EA to: Mr. Rod Sheffer, Fort Detrick Environmental Office, 810 Schreider Street, Fort Detrick, MD, 21702-5000. If you need additional information, please call Mr. Sheffer at (301) 619-3152. Thank you for your cooperation.

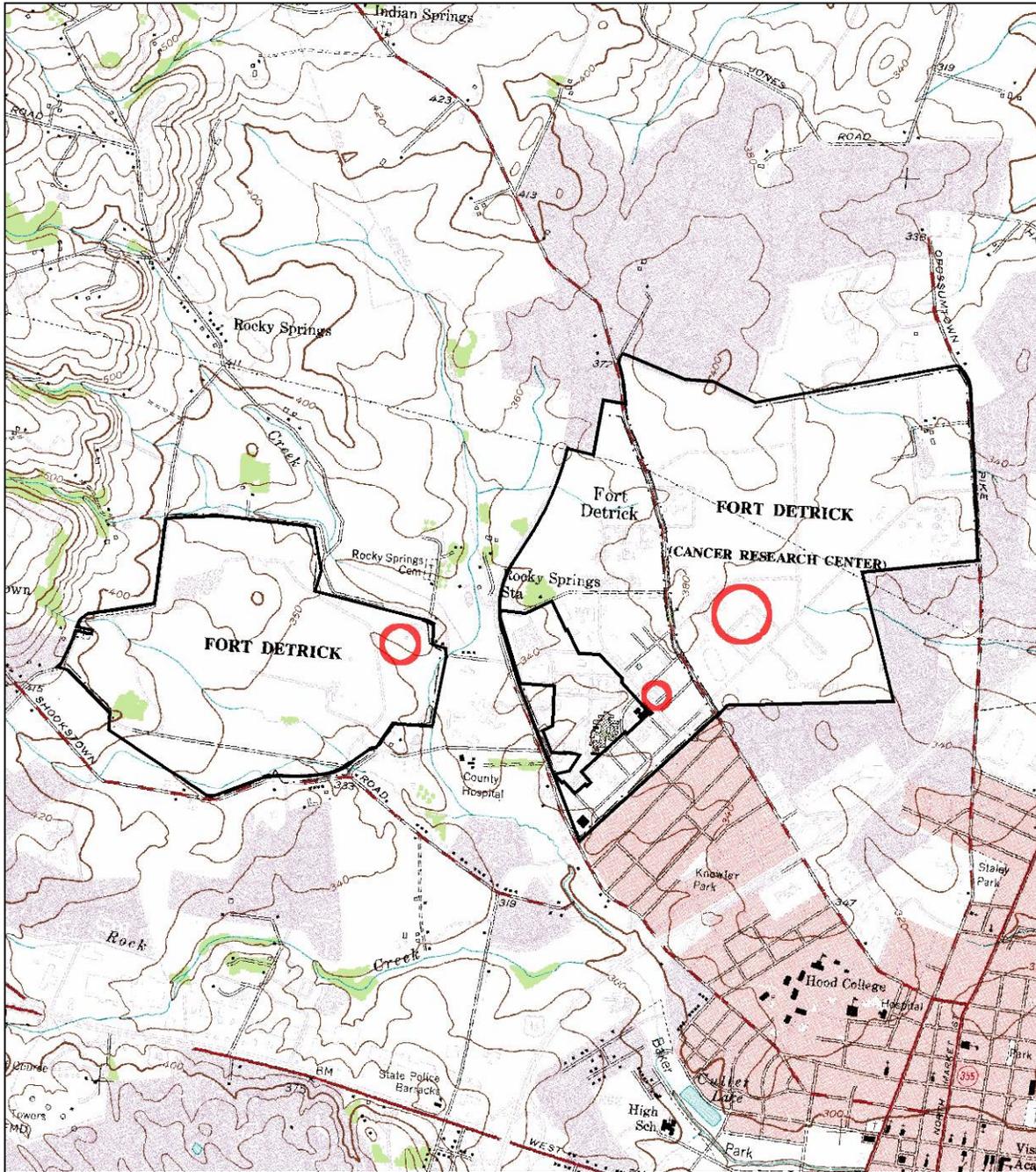
Sincerely,



Robert P. Craig, P.E.
Chief, Environmental Management Office

Enclosure

Enclosure Project Locations for BRAC Proposed Action Alternative



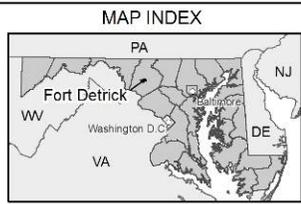
Legend

- Project_Areas
- Fort Detrick Boundary

0 1,000 2,000 3,000 Feet

Fort Detrick Quadrangle Map (Frederick Quad)

Sources: Fort Detrick, GeoCommunity, ESRI
Coordinate System: NAD 1983, Maryland
State Plane, Feet
Prepared By: The Louis Berger Group



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Robert L. Ehrlich, Jr., Governor

Michael S. Steele, Lt. Governor

C. Ronald Franks, Secretary

September 15, 2006

Mr. Robert P. Craig, P.E.
Chief, Environmental Management Office
Department of the Army
Headquarters, US Army Garrison
810 Schreider Street
Fort Detrick, MD 21702-5000

RE: Environmental Review Statement for Proposed Realignment Actions at Fort Detrick, Frederick County, Maryland.

Dear Mr. Craig:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER #2006.1615.fr

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APPENDIX E

**MEMORANDUM OF AGREEMENT,
NATIONAL INTERAGENCY BIO-DEFENSE CAMPUS,
DEMOLITION OF BUILDINGS 1412, 1414, AND 1415**

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DEPARTMENT OF THE ARMY
HEADQUARTERS, US ARMY GARRISON
810 SCHREIDER STREET
FORT DETRICK, MD 21702-5000

September 29, 2006

REPLY TO
ATTENTION OF

Environmental Management Office

Mr. Raymond V. Wallace
Historic Preservation Technician
Office of Federal Agency Programs
Advisory Council on Historic Preservation
1100 Pennsylvania Avenue NW, Suite 809
Washington, DC 20004

Dear Mr. Wallace:

Attached is a letter from the Maryland Historical Trust and a signed Memorandum of Agreement to mitigate the adverse effect of the demolition of three historic buildings at Fort Detrick, Buildings 1412, 1414 and 1415.

The recordation process was completed earlier as stated in the Memorandum of Agreement. We understand that in filing a copy of the agreement with you and the Maryland Historical Trust, our Section 106 responsibilities will be complete.

Please be advised that a copy of this letter is being provided to Mr. J. Rodney Little at the Maryland Historical Trust. If you have any questions or require further assistance, please feel free to contact my Cultural Resources Manager, Ms. Betty Boyland, who may be reached at 301-619-2033, or by e-mail at betty.boyland@amedd.army.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "R P Craig".

Robert P. Craig, P.E.
Chief, Environmental Management Office

Enclosures



Maryland Department of Planning
Maryland Historical Trust

Robert L. Ehrlich, Jr.
Governor

Michael S. Steele
Lt. Governor

Audrey E. Scott
Secretary

Florence B. Burian
Deputy Secretary

September 1, 2006

Mary R. Deutsch
Department of the Army
Headquarters, Fort Detrick
810 Schreider Street
Fort Detrick, MD 21702-5000

Re: Memorandum of Agreement
National Interagency Bio-Defense Campus
Demolition of Buildings 1412, 1414, and 1415

Dear Colonel Deutsch:

Thank you for your continuing consultation with the Maryland Historical Trust (Trust) regarding the National Interagency Bio-Defense Campus (NIBC). It is our understanding that Fort Detrick has evaluated alternatives and determined that construction of the NIBC will require the demolition of three historic buildings. Buildings 1412, 1414, and 1415 are significant for their association with important Cold War-era research, and they contribute to the Fort Detrick Survey District, Maryland Inventory of Historic Properties number F-3-161, a collection of non contiguous resources that are eligible for listing in the National Register of Historic Places.

To assist Fort Detrick with compliance with 36 CFR 800, we have prepared the enclosed Memorandum of Agreement to mitigate the adverse effects of the NIBC on historic properties and to document the Army's compliance with the National Historic Preservation Act. If you have any questions, comments, or revisions, please contact Jonathan Sager at jsager@mdp.state.md.us or 410-514-7636. Otherwise, we recommend that you sign the document and provide fully executed copies to the Advisory Council on Historic Preservation (ACHP) and the Trust for our records. Filing a copy of the agreement with the ACHP will complete your Section 106 responsibilities for this undertaking.

Thank you for providing us this opportunity to comment. We appreciate your efforts and cooperation throughout the Section 106 consultation for this undertaking and look forward to working with you on other projects in the future.

Sincerely,

J. Rodney Little
Director/State Historic
Preservation Officer

enclosure
JRL/JES
200601839
CC: Betty Boyland (Fort Detrick), with enclosure



MEMORANDUM OF AGREEMENT
BETWEEN U.S. ARMY GARRISON AT FORT DETRICK
AND THE
MARYLAND STATE HISTORIC PRESERVATION OFFICER
REGARDING THE
NATIONAL INTERAGENCY BIO-DEFENSE CAMPUS
FORT DETRICK, FREDERICK COUNTY, MARYLAND
SUBMITTED TO THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
PURSUANT TO 36 CFR PART 800

WHEREAS, the U.S. Army Garrison at Fort Detrick (Fort Detrick) proposes to construct the National Interagency Bio-defense Campus (Undertaking); and

WHEREAS, the Undertaking requires demolition of Buildings 1412, 1414, and 1415 (Historic Buildings); and

WHEREAS, the Historic Buildings are contributing elements of the "Fort Detrick Survey District" (Maryland Inventory of Historic Properties number F-3-161), which is eligible for listing in the National Register of Historic Places; and

WHEREAS, Fort Detrick has considered alternative plans to avoid, minimize, and mitigate the adverse effects of the Undertaking; and

WHEREAS, Fort Detrick consulted with the Maryland State Historic Preservation Officer (MD SHPO) in accordance with Section 106 of the National Historic Preservation Act, 16 USC 470 (the Act), and its implementing regulations (36 CFR Part 800); and

WHEREAS, Fort Detrick has notified the Advisory Council on Historic Preservation (ACHP) of the adverse effect of the Undertaking and the ACHP has declined to comment or participate in consultation;

NOW, THEREFORE, Fort Detrick and the MD SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the Undertaking on historic properties.

Stipulations

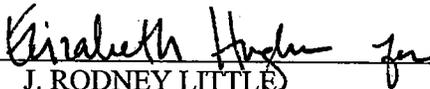
Fort Detrick will ensure that the following stipulations are implemented:

- I. **Recordation:** Fort Detrick has documented the significance and integrity of the Historic Buildings through the following materials provided to the MD SHPO and added to the Maryland Inventory of Historic Properties in March 2006: narrative descriptions of buildings, historic context documenting the association of the buildings with Cold War Era research, selected reduced-size plans and other historic illustrations of the buildings, and archival 35mm black-and-white photographs.
- II. **Professional Qualifications:** The materials in Stipulation I above were prepared in accordance with *The Standards and Guidelines for Architectural and Historical Investigations in Maryland* and under the supervision of an individual meeting the Secretary of the Interior's Professional Qualifications Standards as an Architectural Historian, Historic Architect, or Historian (see FR 44738-9 or 36 CFR Part 61).

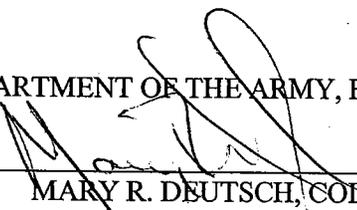
- III. Duration: This agreement shall take effect on the date of the last signature. It will remain in effect until five (5) years after said date. If the agreement has not been implemented within five years of the date of execution, the signatories may agree to extend the terms of the agreement and time for implementation.
- IV. Amendments: Either signatory to this agreement may propose to the other signatory that it be amended, whereupon the parties will consult to consider such an amendment. No amendment shall be valid unless agreed to in writing by both signatories.
- V. Termination: If either signatory determines that the terms of this agreement cannot be carried out and the agreement is not amended pursuant to Stipulation IV: *Amendments*; either signatory may terminate it. In this event, Fort Detrick will either execute a new agreement with the MD SHPO or request the comments of the ACHP in accordance with 36 CFR Part 800.
- VI. Dispute Resolution: Should the MD SHPO object to any action carried out or proposed by Fort Detrick pursuant to this agreement, Fort Detrick shall consult with the MD SHPO to resolve the objection. If Fort Detrick determines that the objection cannot be resolved, Fort Detrick shall notify the ACHP and request its recommendations in the matter. The ACHP shall provide recommendations to Fort Detrick within 30 days. Any ACHP recommendations provided in response to such a request will be taken into account by Fort Detrick, with reference to the subject of the dispute. Fort Detrick's responsibility to carry out all actions under this agreement that are not the subjects of the dispute will remain unchanged.
- VII. Failure of Implementation: In accordance with all applicable sections of 36 CFR Part 800, Fort Detrick shall ensure that the undertaking is carried out in accordance with the terms of this agreement. If Fort Detrick is unable to implement the terms of this agreement, the agreement may be terminated in accordance with Stipulation V: *Termination*.

Execution of this agreement by Fort Detrick and the MD SHPO, its subsequent acceptance by the ACHP, and the implementation of its terms, evidence that Fort Detrick has afforded the ACHP an opportunity to comment on the Undertaking and that Fort Detrick has taken into account the effects of the Undertaking on historic properties.

MARYLAND STATE HISTORIC PRESERVATION OFFICER

BY:  DATE: 9.5.2006
J. RODNEY LITTLE
Director/State Historic Preservation Officer

DEPARTMENT OF THE ARMY, FORT DETRICK

BY:  DATE: 25 Sept 06
MARY R. DEUTSCH, COL, MS
Commander, US Army Garrison, Fort Detrick, MD